

José Sérgio Gabrielli de Azevedo

‘Let’s not downgrade petroleum now’

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When an economist from Bahia, José Sérgio Gabrielli de Azevedo, 57 years old, appeared on the national political scene at the beginning of President Lula’s first term, because of his appointment to be Petrobras’s director of finance and investor relations, some inquired, with a certain irony, not to say sarcasm, where had he been hidden for so long as, in spite of having such a good curriculum, he was completely unknown. Four years later, the last two – after the departure of José Eduardo Dutra – as President of Petrobras, it would be hard for anyone to question his competence at the helm of the company that in 2006 recorded a profit of R\$ 25.9 billion and reached a market value of R\$ 230 billion, a 33% appreciation compared to the previous year. And it is to be noted that, throughout this year, the largest Brazilian company and one of the biggest oil companies in the world, it faced some disagreeable political turbulence, in particular with Bolivia. Petrobras’s President faced up to it gallantly.

Apparently, until arriving at Petrobras, Gabrielli had always been an academic. When 25, 26 years old, even before doing his doctorate at Boston University, which he started in 1976, he had already become a professor at the Faculty of Economics at the Federal University of Bahia (UFBA) while concluding his master’s degree there. After his stay in the United States, when with sophisticated methods of econometrics, he pored over the financing of the Brazilian state-owned companies, he went back to his old school. After passing through all the stages of his teaching career at the institution, he became Director from 1996 – 2000. His path at UFBA was to be completed with the position of Pro-rector for Research and Postgraduate Studies, in 2002, soon after a spell in London for postdoctoral studies.

In fact, in parallel to his successful academic life, Gabrielli had always exercised his political side, having a liking for it, up to a point, but he was certainly imbued as well with a notion of politics as a mission, which left a strong mark on a good – perhaps the best – number of the 1968 generation. As a militant in that vibrant student movement at the end of the 60s, achieving prominence in legal positions, like that of president of the Central Directory of Students (DCE) in Bahia, and also with underground connections, given his link with Popular Action (AP in the Portuguese acronym), a clandestine party then in transit between the Catholic left – its place of origin – and the Marxist domains, Gabrielli ended up facing a period in prison in 1970. Then at the end of the decade, he found himself naturally amongst the founders of the Workers’ Party (PT) and, a few years later, in 1990, as a disciplined member of the party, he accepted the candidacy for Governor of the State of Bahia, an extremely arduous and wearying task, all the more so when his strongest adversary was the all-powerful Senator Antonio Carlos Magalhães – predictably the winner in that campaign.

There are even less known facts about the past of Petrobras’s president. For example, in 1970, he spent a short time working in journalism, as international editor of the newly founded newspaper *Tribuna da Bahia* [Tribune of Bahia] which under the editorial command of Quintino Carvalho, from Rio de Janeiro, intended to bring some fresh air to the Bahian press. And there is one story from this time, amongst so many others, that delighted the colleagues of the temporary journalist: one night, the fearsome Colonel Luís Artur de Carvalho, for many years the superintendent of the Federal Police in Bahia, for some reason had gone to the *Tribuna*’s newsroom. And, sighting

Gabrielli at the back of the large place of work, shouted: “Mr. Gabrielli, how is the AP going?” And he, without losing his cool: “Sending lots of news, colonel”. Of course, an international news editor would then be dealing all the time with telegrams from AP, the Associated Press.

But it is the future that José Sérgio Gabrielli talks of in this interview for *Pesquisa FAPESP*. He addresses the challenges that the problem of the global climate changes brings to an oil-producing company like Petrobras, foresees the chance of a privileged situation for the country in the area of biofuels, thinks that it makes no sense to downgrade petroleum, which is integrated so very deeply with contemporary life such as it is, and makes an extremely singular comparison between Petrobras’s Research Center and the 16th century School of Sagres, at the same time as he talks, full of enthusiasm, about Petrobras’s research network with the Brazilian universities and its great potential for generating knowledge.

■ *Isn’t it nonsense for a President of a fossil fuel products company to speak about protection of the environment, as was seen, for example, when you went to the Davos Economic Forum, in January?*

— At the forum, I took part in an event called Energy Summit, which brings together the main oil companies and the main electricity companies in the world. There are 30 people at the most. And, in this forum, discussions about climate change, prospects for growth in the demand for oil, and energy conservation are absolutely fundamental. What is the position of the oil industry today? First, the understanding that the oil age will not be replaced by another fuel because of its depletion, but because economically viable alternative fuels are going to appear.



■ *Which?*

— Several. At this moment, biofuels are appearing, along with a whole perspective of greater efficiency in automobiles and greater conservation of energy. This involves an urban policy that minimizes the use of the individual vehicle and is also effective from the point of view of the main problem in the world with regard to emissions: the loss of energy in buildings, the use of fuel for generating electricity, the basis for heating and cooling of dwellings and other buildings. And there we have coal, natural gas, fuel oil... The most recent report from the UN puts vehicles in second place in terms of emissions. And afterwards, significantly, comes deforestation and forest fires. The sources are various, and their identification makes it possible to adopt the policies required for each one of them, and, accordingly, to visualize possibilities of the effects and the successes in fighting the more real warming, instead of staying with one culprit, downgrading that culprit...

■ *Or nurturing the fantasy that they will manage to take all the fossil fuel out of the world's vehicle circulation system...*

— Yes, that is a bit of a fantasy. Today, rather, it is important to call attention to the fact that clean water and clean air are fundamental for life. Modern human life would not exist without oil.

■ *And, in a way, that today constitutes a paradox. How to face up to it?*

— There is simply not one way how. We have to minimize the impact of oil production on the environment and make more efficient use of oil by increasing the use of cleaner sources to generate energy.

■ *In your claim that modern life does not exist without oil, the reference is to what?*

— I am talking about transport, generation of energy and petrochemicals. Look around you, in modern life, we are going to find oil in practically everything we can think of.

■ *And that will remain so, in your view, for many decades or centuries, perhaps.*

— Centuries, I think not. I think decades. Today, the demand for oil in the world is more or less balanced – 82 to 84 million barrels of oil a day is the supply and also the demand. The forecast growth for demand is around 1.6%, 1.8% a year, and that is also the growth in supply. So there is no reason for saying that there is going to be a big problem in this area. The reserves known today indicate 70, 80 years of production. On the other hand, there is a growing use of new technologies to recover mature fields and to produce oil in situations that were impossible

a short time ago. We are producing at a depth of over 1,800 meters, and we are drilling at a depth of over 6 thousand meters. We have a well in the Gulf of Mexico with a depth of 11 kilometers in shallow water. And we have every expectation here in Brazil of exploration in the pre-salt, that means, below the layer of salt that has 6 thousand meters of rock, which is 2 kilometers of salt...

■ *But does it not seem to you, in view of the equation that is being put together in environmental terms, this ultra-sophisticated technology for exploration tends to be a bit useless?*

— It becomes viable because the price of oil is high. But given this same factor, alternatives are going to appear: there is growing viability of energy from biofuels, from wind power, solar power, energy from the waves of the sea, and nuclear energy. If the price of oil falls, many of these nascent technologies cease to be viable.

■ *When one thinks of Brazil's energy grid for 2030, it is said that hydroelectric energy should continue to account for 50% of the total.*

— Hydroelectric energy today accounts for 85% of the electricity grid and some 47% in the energy matrix as a whole. But Brazil is an exceptional case, because it is perhaps one of the biggest countries in the world, and the only one with so much renewable fuel in the energy matrix, thanks to hydroelectric energy and to alcohol. It is enough to think that 40% of Brazilian gasoline, or its equivalent in terms of energy, is alcohol.

■ *Even so, when one measures the future Brazilian energy matrix, a good deal of the use of oil is raffled off, isn't it?*

— Yes. And that creates two great challenges in the matter of fuel replacement. One is connected with biofuel, both ethanol and biodiesel. They are going to replace gasoline and diesel, which are going to be left over, or, in the case of diesel, we are going to stop importing. Accordingly, Petrobras has to deal with this.

■ *Does that mean that Petrobras will have to reduce its production in some way?*

— No, not to reduce. Petrobras has to find a destination for its production, because, unlike others, the oil industry is not a Ford-type industry that is adjusted by the speed of the transmission belt. It is an industry in which investments are made to work at 100%. So, it is a question of finding new destinations. For example, here in Rio de Janeiro we are making a petrochemical complex that is going to use heavy oil directly to produce petrochemicals, with technology that is new in the world. Nobody does that, everybody uses natural gas

or naphtha, but we are going to do it. This way, we may decrease the production of fuel oil and also stop having a problem with gasoline and diesel, gasoline and naphtha. The forecast is to begin production in 2012. The other alternative is to find ways for using this kind of oil and gasoline and diesel in other markets. The world is going to continue to demand this for transport. We produce 2 million barrels, the world consumes 85 million. Our target for 2011 is to produce 2.3 million barrels of oil.

■ *And how does Petrobras today forecast the destination of this production?*

— By 2011, we are going to construct this petrochemical complex and a new refinery in the Northeast, in particular to optimize the production of diesel. Then we are going to have 350 million additional barrels of processing capacity. We are going to increase the capacity of the present-day refineries by over 200 thousand barrels, and, in an integrated manner, we are going to increase the production of biodiesel and alcohol. We have bought 800 million cubic meters of biodiesel, or 800 billion liters a year. And, from 2008 onwards, we are going to produce 150 million cubic meters.

■ *With regard to transport, do Petrobras's forecasts establish what is the proportion of use of each one of these fuels?*

— It is difficult to talk precisely. Today, in the market for gasoline, roughly 40% is alcohol, as I said, because it is 25% of anhydrous alcohol, plus the hydrated alcohol. In diesel, we will be between 2% and 5%. We have a growing compressed natural gas fleet. The problem with this gas that it has an unbalanced relative price, meaning, it makes no sense to have that fuel which Brazil has least of, with the price sky high.

■ *And there are political questions in relation to the gas that do not seem very simple*

— The growth in the demand for compressed natural gas is probably going to see a reduction. Its share in the energy matrix as a whole went up from 4%, 5% to 8%, in three years. The prospect is for gas in this matrix to reach perhaps 10% of the total Brazilian energy matrix. And I think that we will have a far larger portion of biofuel here in Brazil than in the rest of the world, where it is going to come to about 10% of the market in 2015. The other alternative forms, wind power, solar energy etc., really account for a very small share.

■ *But then nuclear power comes on stage. Minister Sérgio Rezende is once again talking emphatically about the Brazilian nuclear program.*

— Without a shadow of doubt, nuclear power is the cleanest we have, although it is also the most dangerous, because it does not heat

up slowly and gradually, but brutally and explosively, both from the point of view of accidents and from the point of view of its non-pacific use. The regulation and the follow up of any program are key elements for its balance. Furthermore, nuclear power has another serious problem, which is the waste, its reuse, which still has to be resolved.

■ *In the meantime, in the oil industry...*

— In the oil industry, considering the proven reserves in the world today, those that have a 90% probability of being developed commercially, we have 60, 70 years of production there. If we also look at the possible reserves, those with a 50% probability of development with present-day technology and commercial conditions, that will be more than 150 years. If we also put the probable ones, there is an enormous production horizon.

■ *And if the possibility of mature fields is added...*

— Yes, taking into account technological development for recovering mature fields that is going to be induced by the high prices of oil – the so-called secondary recovery in which CO₂ is injected into the well to produce more oil –, considering the heat technology to step up the recovery of oil, in short, more sophisticated and expensive technologies, and if we include in the panorama of the future production the bituminous sands of Canada and the extra-heavy oil of Venezuela, we arrive at a time horizon of 200 years of oil production... No technological challenge is very great in the long term, and everything is going to depend, in great measure, on the behavior of oil prices. Let's remember that our alcohol became viable 30 years ago based on price, and afterwards there was a crisis because of the question of price. When the price of oil rose, we established the Proálcool policy. And, from the production of sugarcane, we established a policy in the automobile industry. When the price of oil fell and, simultaneously, the price of sugar went up, Proálcool became unviable.

■ *By unveiling this broad horizon, is your intention to allude to a possibility of burning oil less aggressive to the environment?*

— No, what I am saying essentially is that oil is not going to leave the stage because it is going to finish, rather it may become economically unviable because in the future there will be other cleaner and more economically viable sources.

■ *But which cleaner sources and processes effectively have the volume to replace the importance that oil has in the world energy matrix*

— Pulp, for example – the production of pulp from an enzymatic process using vegetable waste. This technology is very embryonic at

the moment, both in the capacity for producing enzymes, in the capacity for capturing this waste, in the actual processing of the pulp, or in the process of transporting its results. But it can be developed. Another example: hydrogen, which involves a technological revolution, not only with the fuel. The main limitation that I see in this technology is that it requires another engine, it requires a transformation in the fleet of automobiles, with a new conception. For me, then, it is further off than biofuel. As to the advances in energy conservation, we have today technologies already available, but still expensive, for building intelligent buildings, windowpanes adapted with nanotechnology etc., that reflect, that repel the heat and sometimes reduce by up to 60% the use of energy in a building.

■ *Does the problem concern heating more, or cooling*

— Both, because buildings have to be heated in the winter and cooled in the summer. There is today a whole urban dynamic in the big metropolises, aiming at minimization in using energy for transport, a whole policy for expanding the mass transportation network, in parallel to the development of more efficient engines for domestic use in refrigerators, more efficient stoves, light bulbs etc. There is therefore a conservation movement that is going to diminish the impact of fossil fuels, together with a movement to expand production from cleaner sources.

■ *Nevertheless, I insist: how does Petrobras, the company that at the beginning of the 1950s began to construct the Brazilian dream of self-sufficiency in oil in the country, now attained, and that has, besides immense economic weight, an extraordinary sociocultural importance in our nation, adjust its strategic plan to the current theme of risk from the climate change?*

— In our strategic plan prior to the IPCC panel, since 2004, 2005, we were already putting Petrobras's vision, as of 2011, as world leader in the biofuel area. We have as a strategic target positioned ourselves in this market, for pro-active reasons and for defensive reasons. In the first case, we think that this market is going to grow. And the defensive reasons relate to the following: as there are going to be shifts, it is better for us to do the shifting than being shifted by the others. It is, incidentally, absolutely incredible, when we go to a meeting like the one in Davos, to see the image that Petrobras has at that level. It is seen as a company that has been taking care of this field for a long time. We have a patent in alcohol transport, an alcohol duct, we have technology for treating acidity in the refinery and in the tanks, we have in the automobile industry a lot of experience in producing automobiles using al-



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cohol, more than any other country in the world, we have logistics set up for the distribution of alcohol, and all this puts Petrobras in a position of great prominence. So, from the point of view of Petrobras, this is a sector that is not going to be the main one for investment, but it will be very important also in relative terms of capital. In the case of biodiesel, there is another dimension to the program to which I would like to draw attention here, which is the social dimension. Carbon emission is predominantly from the Northern Hemisphere, even though its growth is larger in the Southern Hemisphere. And look: if, amongst the various ways of reducing this emission, it will be necessary to expand biofuels, unless in this search a technological revolution is produced in the Northern Hemisphere, which may happen, on the basis of present-day technology the greatest probability of increasing the production of biofuel sources lies within the Southern Hemisphere. And based on various plants, like the castor plant, oleaginous plants, the physic nut, the sunflower etc. etc. That is going to make the balance of fuel geopolitics change a bit.

■ *Do you firmly believe that?*

— I do believe it, and, as I said, biofuel is going to represent something like 10% of the world fuel market. So we are talking of 8 million barrels a day, and that is equivalent to four times Petrobras's current production of oil. So that is going to cause a change in the role of South America in the geopolitics of the sector.

■ *Even with disturbances on the continent?*

— That's part of life, there's no way. But there aren't any more disturbances than in Iran, Iraq, the Middle East. But there is another component to which I'd like to call attention here: the agricultural production of a fuel commodity isn't the same thing as that of a food or industrial commodity. First, stability in supply has to be clear, it has to be more than for a food commodity, because there are fewer replacements.

■ *That means that whoever is in such production has a total guarantee of sale.*

— Precisely, since there has to be an ongoing flow of supply. Second: there has to be a long-term contract structure, which isn't common in this market. So we will have special logistical, distribution channels. We are going to have a series of transformations in North-South relations, and we are going have to overcome the protection mechanisms of the European Community and of the United States for their farmers, who are less efficient than those in the South. That makes this production inefficient from the point of view of overall production. We are going to have to speed

up the Doha Round etc., and here we are not going to work with protection, but with efficiency of the productivity. But there lies another problem: given the scale of fuel, that has a great impact on the planted area. And biofuels are going to compete with foods in some places, as has already happened. That is the case of the Mexican tortilla: the price of corn goes up, the price of tortilla goes up. Accordingly, in the expansion of the planted area, care has to be taken not to make food production unviable. The second problem: deforestation. Obviously, this ought to be done in the areas that have already been deforested.

■ *But if we talk here about soybeans, sugarcane etc., we have a frontier that is already very extensive.*

— In Brazil, yes, but there's the rest of the world. In short, we will have to be more efficient in the use of the land already deforested to produce more. And there's a third problem: water. Agriculture is a large user of water, and if it increases, we may reach strangulation in the supply of water. So there has to be a global view of this problem, because there's no partial solution. A State policy – and I am talking about the State nationally and in international relations – with market mechanisms. Policies that are clearly State policies, for planning, for repression, for regulation, with a policy on prices, on penalties.

■ *Isn't this a case of a difficult equation to resolve?*

— Very difficult. On the international plane, we have the United States, on the one hand refusing to admit that they are causers of the problem, and, on the other hand, the potential producers of biofuels with a short-term view, just breaking down the trade barriers, without...

■ *The potential producers are Brazil...*

— Brazil, India and China. There is a growth in the demand for unclean energy in these countries. Particularly in China, there is a prospect of thousands of thermal power stations using coal. These are problems that need to be put onto the discussion table internationally and in each nation. Besides this, the carbon credit mechanism is interesting, but completely insufficient for facing up to the problem. Briefly, it means buying the right to emit CO₂. You can't count on that in the long term. More restrictive measures, of contention, are necessary. And technology has an absolutely key role in this question, both for conservation and for biofuels and even for carbon sequestering in the production of fossil fuels. There's the reinjection of CO₂ and various technologies under development that sequester carbon in oil production. At an initial stage.

■ *I would like to address Petrobras's research networks program, which uses the so-called special participations, 1% of the company's revenue from production, to invest R\$ 1 billion for research at universities in the next few years.*

— There is R\$ 1.4 billion in funds for the next three years. The program covers 26 thematic areas relating to oil, gas and biofuel – not just referring to their production – and six regional areas, aimed at the kind of problem that we have in the different regions of the country. This involves 72 research institutions. There is very diverse research, into bacteria, for example, basic chemical reactions, materials, nanotechnology.

■ *Nevertheless, isn't it very tied to the traditional fuels?*

— No, we have research on biofuels. And if we go back to Cenpes, we are doing research into pulp, with sulfur-absorbing anaerobic bacteria etc.

■ *What is the view of the president of Petrobras about Cenpes?*

— Petrobras has today, without any doubt, the largest technological research and development center in the country and in South America. We have 3 thousand people working there. What is the logic of Cenpes? It's the logic of the School of Sagres...

■ *That's an absolutely startling idea! Why a reference to the 16th century?*

— The School of Sagres combined the operational expertise of the sailor with the knowledge of learned academics and with the dreams of the cartographers. And that is a key element: combining perspectives of dreams with the interests of the industry in getting results and being focused, and with academic research and with scientific knowledge in general – that is Cenpes. And it is successful because it combines basic knowledge with application. It is not a university research center, but applied, but it has a scientific basis. It's a company research center, and it works well. That means that it has a very great possibility to develop knowledge. But it never has been isolated – and that is another important detail. Neither in relation to other company research centers, nor in relation to academic centers in Brazil. It has created a very intense research network with all the important universities in Brazil. And so this applied research of Petrobras has spread over Brazilian and international universities. But to our mind, it has become insufficient, because it wasn't institutional, it was group to group, researcher to researcher. The idea of setting up the institutional network that we began in 2005 aims at increasing the capacity for generating research and

knowledge in this system in the entire country. And it is a network, because each piece has at least four institutions. There is generally a key institution, because it is the leader, and others that it is going to pull in, from Amazonas to Rio Grande do Sul.

■ *Taking advantage of your associations, if Cenpes brings the School of Sagres, what is the model for the institutional network?*

— The Internet. What characterizes the Internet is the network structure in which the rupture of one node does not break the other.

■ *Our own country has for some time already been experiencing the research network structure to produce leaps forward in the generation of knowledge. These things happened following FAPESP's Genome Program, launched in 1997, almost ten years ago, therefore.*

— Precisely, that was the basis for genomics...

■ *So, via Cenpes, we arrive at a marriage between the classical benchmark of the School of Sagres and the more contemporary benchmark of the virtual network. If it doesn't work, at least it is an idea full of humor.*

— Yes... The School of Sagres is concentrated on a hub, and the network is diversified, fragmented and decentralized. And our challenge is precisely to link one model to the other in a productive manner. There is no doubt that we are going to carry on with applied research at Cenpes, and we are going to complement this advance by pulling in the whole of this network. And in some way we hope to irrigate the Brazilian business system with the idea of innovation.

■ *Was the research network thought of following the long experience of Petrobras's current management at university?*

— In part. It was a combination of that with the experience of Cenpes and the experience of Petrobras's areas. In the discussion at director level, university experience was important – not only mine, but also the experience of director Ildo Sauer, who is from USP. The interactive process existed and, as happens in Petrobras, things were the result of a collective definition process. And the network is nothing new or original, internationally. There are various similar experiments from the major oil companies.

■ *Should the network remain concentrated on Brazil?*

— At this moment we are concentrated on Brazil, but we are not closed, because this network has and must have contacts and relations with the whole world, otherwise it fails to work. I insist that one great difference between models from the past and this network now

is that the latter is based on institutional relations. There are contracts signed with the institutions in which a specific management structure for these contracts is provided.

■ *And can Petrobras demand results?*

— Yes, of course it can, by not paying in the next period. Petrobras works on the basis of measurement bulletins, and the money is 100% Petrobras's.

■ *Petrobras is accused, even though in an ironic and playful way, of being stronger in the country's cultural policy than the Ministry of Culture. It would thus have the know-how for doing something similar in science and technology...*

— Petrobras's cultural programs are aligned with the policies of the Ministry of Culture. In the case of the CNPq, of Capes etc., the picture is different, because we are making an investment in a subset of the areas in which these institutions act.

■ *To close, doesn't the discussion about global changes put Petrobras before a fundamental dilemma on growth?*

— No, I don't see it like that. The oil industry in the world, in the last 150 years, has been responsible for the shape of modern life. Without it, the world would not be what it is today. There wouldn't be the planes we have, the cars, the means of transport would be different, the kinds of energy other, the means of generating electricity, everything... So, you can't downgrade it, OK? Without oil, we wouldn't have the petrochemical industry. It's a good thing to dot the i's. In the case of Brazil, Petrobras has had, ever since its first moments, a very intense connection with the development of the country. In its essence, it has a relationship with Brazilian industry, with facing up to the problems of inequality, with nationality, national affirmation, independence. All these are fundamental values in Petrobras's strategy and life. It resisted and it supported, it had a love / hate relationship with Proálcool – without Petrobras too, Proálcool would probably not have been developed. Now, with biodiesel and the expansion in alcohol exports, Petrobras positions itself before them as the important segments that they are. It is important to accommodate them in Petrobras, because it is a question of a national energy efficiency problem. Petrobras is today making a carbon credit evaluation of its emissions. And it channels 40% of its investments into refining, which are US\$ 23 billion in four or five years, to improve the quality of diesel and gasoline. Petrobras's total investment is US\$ 87 billion by 2011. And all that is perfectly integrated with Petrobras's history, and I see no "to be or not to be...oh!" ahead. No profound existential crisis. ■