

Focus

Science, Communication and Society in Brazil, the narrative of deficit

Marta M. Kanashiro, Rafael Evangelista

If there is a peculiarity in the way of doing science and in the way of communicating science in Brazil, it is in the use of the idea of “deficit” in political and economic discourses, as well as in the discourses of socio-technical networks. Our proposal here is not to affirm or reject the existence of this deficit, but rather to understand its workings and its construction as a way of bringing about networks of interest that make use of this idea. For us, this is not an idea which is restricted to the discourse of researchers or of journalists and scientific broadcasters; there is also an echo in the general society, and in different spheres and situations. The idea of deficit with regard to scientific knowledge is functional in Brazil, in conjunction with the idea that the country itself has a deficiency in relation to developed countries. It is as if there were two levels of deficit which join together and empower each other.

There is, on the one hand, a historical national quest for progress and for cultural, economic, political and scientific development, ideally present in the countries of the first world, forming an alternating relationship which is continuously reconstructed in relation to the so-called advanced countries. On the other hand, there is a quest for scientific and technological knowledge which delineates the gap between Science and Technology’s decisive jurisdiction and scientific illiteracy.

In fact, historically, through successive governments and economic plans, Brazil has recognized its “deficit” and has sought to overcome this in order to reach the ideal model of developed countries. In the continuous, dynamic, relational and situational construction of a national identity, there is the idea of the other which is advanced, modern, and developed. It is as if past and present could live side by side, the former inhabits the south while the latter lives in the north of the planet. The idea of development, which comes as an answer to social problems and a key to social justice, can be translated through the overcoming of “being behind.” “Brazil is the country of the future” is a popular saying, a phrase that serves to announce Brazil’s hopes of becoming equal to the richest or most developed countries.

There are innumerable sociological discussions about the relationship between the modern and the archaic in Brazil. In these discussions, the persistence of the conflicting co-existence of tension between these two aspects, as a constitutional marker of the history of Brazil and of our imaginary about it, is worth highlighting. For some, such as the sociologist José de Souza Martins,¹ we live in a state based on outdated political relationships, such as clientelism, the traditional domination of the basis of wealth, and oligarchism. “In Brazil, being behind is an instrument of power”, he says, and in another moment affirms that “the contemporary history of Brazil has been a history of waiting for progress”. For this sociologist, it is necessary to recognize that the Brazilian society, like that of others of colonial origin, should understand occurrences through the necessity to distinguish, in the contemporary moment, the live and active presence of fundamental structures of our past. It is of interest to us to understand the idea of deficit as a social construction which is present in the country’s scientific, economic and political discourse being disseminated by multiple networks of interest.

Overcoming deficits

One moment in particular which can help understand the functioning of this mechanism of identification is the end of the genome sequencing of a bacteria which attacks the Brazilian citrus crop, the *Xylella fastidiosa*. In August of 2000, the magazine *Pesquisa Fapesp*, a publication of Brazil’s second largest

funding agency (Fapesp, Research Support Foundation of the State of São Paulo), commemorated within its pages the event which the entire Brazilian press recognized as a historical act: the publication of an article in *Nature*,² with a headline on the cover, which was authored by Brazilian researchers who had been financed by Fapesp and who were responsible for the completion of the sequencing.

An analysis of the *Fapesp* magazine text, entitled “The New Brazilian Product”, will help us to shed light on some of the elements which serve as a basis for the idea of deficit in our society. In spite of the analysis contained in this example, it is necessary to clarify that it is not a question of identifying groups which maintain a certain imaginary of deficit for personal advantage, but perhaps to go beyond this and question how power flows in this social construction.

The article in question, which deals with the national and international media repercussion of the *Nature* article and explains the research developed, reserves the first half of the report entirely to the international repercussion, followed by a part dedicated to the national press, and then a conclusion with the details of the research. As the genome sequencing itself seems to be a rather unremarkable fact, the most valuable result of the research ends up being summarized in terms of the effects on the international level and the recognition of the scientific community. Highlighting parts of other articles which she considered relevant, the author structures and constructs a repercussion and brings to the forefront the world’s opinions of Brazil, the world view of Brazilian research, and ideas about the relevance and meaning of scientific research, thus exposing the multiple imaginaries that surround and cut across the theme.

One of the text’s initial passages allows us to see how, for those who live “behind the times” and in the “past” (in other words, in poor countries), science shows itself to be an accelerator and a means for Brazil to enter in synch with rich countries:

“In the editorial, it was highlighted that the current notion that only the most industrialized countries have the potential and the qualified personnel necessary to carry out advanced research was proven false by the Brazilian Project. In closing, it affirms that the success of the *X. fastidiosa* project coupled with the uncommon fact of an agency of the advanced and industrialized world – the United States Department of Agriculture – having contracted the genome study of a variant of *Xylella* from a developing country ‘endorse Brazil’s determination to enter into the post-genome age hand-in-hand with scientists from the richer countries’”.³

The paragraph reaffirms, from the opposite side, the imaginary of deficit when it admits that the “current notion that only the most industrialized countries have the potential” is proven false by the Brazilian accomplishment. It is as if the author recognizes a low national self-esteem, reflected in the idea of little potential, an idea of oneself which can be overcome by the construction of a new Brazilian identity which is legitimated by the other, the advanced. It is also worth pointing out the use of the metaphor “hand-in-hand”, meaning together or in synch, which illustrates the US Department of Agriculture’s recognition of Brazil’s national capability. In a later passage in which the author describes how the national press reported the publication in *Nature*, how the effect at the international level is relevant for the image which we have of ourselves is debated, reiterating the idea of a country developing itself in the direction of and in comparison with the other:

“These were days with such an exhibition of Brazilian genome research that it seemed that the way had been opened to show science not only as a privileged space for the resolution of innumerable problems which affect the individual and society, but also as a field capable of contributing to the raising of the undermined national self-esteem, of overcoming the scientific and technological deficit which characterizes us”.

It is very interesting to note how this second affirmation is complemented, in a very articulate manner, with the last sentence of the immediately preceding paragraph. In this paragraph, the author begins to deal with the fact’s repercussion in the Brazilian media, saying that there has been growing attention on the part of the national media from the moment that the first results began to be presented. The last sentence of the previous paragraph is: “It isn’t odd that the [national] news placed the fact on the level of a brilliant goal in terms of the research done in the country”.

Two affirmations in this passage give us more clues in order to understand the workings of the deficit imaginary in relation to science. The first, a subordinate clause, describes the opinion as a fact and solidifies an idea by dealing with it as consensual: science is a privileged place of resolution for societal and individual problems. The second, complementary, announces a new fact: now Brazil also has scientific accomplishments of which it can be proud. On the international level, Brazil could only be proud of its football before; now it can also be proud of its genome research.

The passage under analysis leads us to another important fact, which is also tied to the discourse of deficit and being behind: the emergence of scientific dissemination which was driven forward in Brazil along with the *Xylella fastidiosa* Genome Project. Together with the development of the Project, the specialists' public appearances in the press signaled the unpreparedness of the press in dealing with science. It is in this same period that courses preparing journalists who are specialized in science gained strength. This professional should be prepared to provide "scientific literacy" and to overcome this other sublevel of deficiency, which occurs between those Brazilians who know science and those who don't, those who can decide and those who cannot.

In order to overcome this deficit on the part of the press, the Foundation for Research Support of the State of São Paulo supports a program which grants academic scholarships designated for the scientific preparation of journalists. In the justification of the program, which was launched in the same period in which the first results of the *Xylella fastidiosa* Genome Project appeared, the idea of a deficit of knowledge among journalists is already present:

"The development experienced by Brazilian scientific research in the last thirty years, certified by all relevant quality and quantity indexes, has not been accompanied at the same rate by the intensification of result dissemination activities. In general, Brazilian society shows no significant interest in the degree program and in the products of science. The level of unawareness about the research activities developed in Brazil is particularly noteworthy. This is due, in large part, to the shortage of journalists with specific motivation and adequate training in the field of scientific journalism.

In the 'more scientifically-developed' countries, the support of the general population for investments in scientific research and technology is credited to the quality of journalism practiced there. A study carried out by the National Science Foundation attributes the generally favorable view of the American public opinion, with regard to the social impact of scientific and technological activities, to the intense journalistic coverage in the different means of communication".

The proposal is based on the idea of deficit and on concepts which have been explicitly expressed by certain icons, *Nature* magazine and the National Science Foundation, and it presupposes that with "quality" scientific journalism there will be public support for research.⁴

The political use of the idea of deficit

The discussion about the regulation of the sale and research of genetically modified organisms is one of the best fields to verify the interconnectedness. One reason for this is that, because as we have seen, the boom of Brazilian scientific journalism is linked to the climax of biotechnological research. But it is also because those that advocate for a more tenuous regulation of commerce and research on GMOs, be they academicians, politicians, or the industry that is directly interested, use arguments related to the ideas of deficit and being behind.

During 2003 and 2004 there was an intense judicial and legislative battle with regard to the definitive regulation of the planting and sale of GMOs. A definition was sought for genetically modified soybeans which entered the country in recent years and contaminated crops. A legislative framework was also sought that could guide the country's future with regard to this area. Public debate in defining this law and lobbying on the part of interested sectors were intense. It is fitting to include here the transcription of part of a Congress member's speech in the House of Deputies:

“The evolution of biotechnology and the necessity to increase world production of food supplies is undeniable, and Brazil cannot remain at the mercy of this development. The world’s largest grain producers produce genetically modified foods, being that 63% of the soybeans, 19% of the corn and 13% of the cotton produced in the world are transgenic. (...) In the USA 68% of the soybeans, 70% of the cotton and 30% of the corn production are genetically modified.

We cannot be a country behind the times, waiting for experiences that can perhaps not take place. We need to be realistic, for soon transgenic substances will be liberated in Brazil, whether or not non-governmental organizations want it, because the advance of science will demand it. Those countries which remain on the sidelines of biotechnology will be the ones most behind the times.”⁵

In this passage, it is clear how the idea of the country “being behind the times” in relation to the north of the world, which is cited by way of the US example, seems to be linked to an idea of technological deficiency, the non-development of technologies identical to those of rich countries would mean the perpetuation of the social deficit (“behind countries”). Biotechnology would thus be related to the ideas of “new” and “progress” and with the image of a better, more evolved future (the “evolution of biotechnology” as the deputy says).

Some of the actors present in the debate on biotechnology have already realized that using the view that Brazil is a country behind the times can be interesting for them. In this case, it is not the fact of being behind (or the idea of deficit) in and of itself that is seen as a tool of power; rather, it is the notion of its existence. It is the imaginary about being behind the times, allied with the idea of “newness” and of technology that brings about ease and viability for daily life, which is used to mobilize certain actions.

Monsanto, one of the world’s main manufacturers of GMOs for agribusiness, produced and distributed variations of a pamphlet entitled *Transgenics*. To have information, you have to have an opinion”.⁶ This text served as a basis for campaigns aimed at diverse publics, from television commercials to events focused on surfers.⁷ The first lines of the pamphlet are: “Everything which is unknown creates a feeling of caution in people. It was the same way with the microwave, the cell phone, the computer. Today, all of this is part of your daily life and you can’t even imagine your life without these things. With genetically modified foods the same thing happens”.⁸

The legitimation of the safety of the technology also comes through the propagation of the image that it is approved by certain authorities who are said to be competent (scientists and public and private institutions), and by evidence of its safe use in different parts of the world. It is as if not using the products only reflects a knowledge deficit on the part of certain countries and people with regard to this approval and utilization.

Monsanto’s advertising pamphlets thus echo an attempt at scientific literacy, replicating a certain bias about the communication of science, which is already signaled by the new wave of scientific journalism⁹. Many times this new wave has given the press the role of making people scientifically literate, the mouthpiece of truth (science), originating from a prophet (the scientist). Those who do not agree with certain technological applications, such as transgenics, behave in this way because of a sheer lack of information and because of a “fear of science”.

To analyze the construction of the idea and of the discourse on deficit now means unveiling the possibility of the articulation of interests and their persistence in our imaginary. If there is a peculiarity in Brazil with regard to the production of science and to public scientific communication, it is related to our imaginary, which is made up of the ideas of deficit, being behind, being out of step, and in the way in which it gains strength and connects itself in its dissemination. Deficit shows us the evolutionary path of science and technology, a path which we should follow in order to go through the stages of development through which advanced countries have already been. The deficit and the financing to overcome this deficit give us the guidelines of this path and end up maintaining an unchangeable situation. Allied with the decisive moment, the idea of deficit reserves the right to divide society into those who can and those who can’t give their opinion about Science and Technology, as if the perception and comprehension of science only had to do with the level of literacy from the point of view of the vocabulary of science and not with the perception and awareness of its social structure and its impacts.

More and more, science declares itself to be the engine of a great competition: the scientific race and technological supremacy. The market’s definition of the goals of science, in the name of progress and

social and economic development of countries is the crucial element for this race. The imaginary of deficit and of being out of step is reinforced with affirmations that Brazil has a great deal to worry about if it wants to take at least a few steps in this race, a race similar to natural selection in that it eliminates the weakest in a period of globalization or of financial competition among globalized markets. It is in this global landscape that the necessities of competition are drawn, be they economic or scientific or technological, having as a backdrop the imaginary of being behind, of deficit or of being out of step. It is the evermore present necessity to overcome which structures desires of growth and provides the “only” possibilities of “advancement”. The Brazilian race, in the attempt to overcome any type of deficit, already comes with innumerable harnesses, among them the guidelines and criteria given by those that, in solidarity, finance our development, in other words, international and national financial organizations that are in favor of the economy and science.

Translated by Prof. Robert Garner, IPA, Porto Alegre, Brazil.

Notes and references

- ¹ J. De Souza Martins, *O poder do atraso, ensaios de sociologia da história lenta*, SP: Hucitec, São Paulo, 1994.
- ² A. Simpson, et al. “The genome sequence of the plant pathogen *Xylella fastidiosa*”, *Nature* 406, p. 151 – 157.
- ³ M. Moura, “O novo produto brasileiro”, *Revista Pesquisa Fapesp*, São Paulo, August 2000.
<http://revistapesquisa.fapesp.br:2222/transform.php?xml=4/0/20010904/20000755/pt/SEC3_2.xml&xsl=xsl/pt/article.xsl&transf=normal&id=SEC3_2&lang=pt&issue=20000755#>
- ⁴ Description of the support program for scientific journalism, published at:
<[http://www.fapesp.br/materia.php?data\[id_materia\]=1364](http://www.fapesp.br/materia.php?data[id_materia]=1364)>
- ⁵ Passage from the speech of Federal Deputy Dicleu Spreafico, on July 21, 2003.
- ⁶ The slogan of one of the Monsanto campaigns is: “To have an opinion, you have to have information”.
<<http://www.monsanto.com.br/biotecnologia/informacao/informacao.pdf>>
- ⁷ Monsanto was one of the main sponsors of the Exhibit of Surf Art and Culture, held at the Art Bienal Pavilion of São Paulo. Monsanto had a stand with surfboards and videos aimed at the public of the event.
- ⁸ The version for surfers has a small and interesting variation in the language, the result an alteration of the form in order to make the material more attractive (in the publicity logic) to surfers: “Everything that is known makes us take a step back. It was this way when the microwave, the cell phone and the computer came about. But, be honest, you can’t imagine your life without these things today. The same thing’s gonna happen with transgenics”.
- ⁹ “There is scientific illiteracy. The media transmits science in another way, as all powerful, a heroine. Journalism has to help in the process of scientific literacy. The greatest mission is to take basic information to society that allows the intelligibility of the world. People have to learn to see the world in a different way, in order to make decisions. Any person who has clear ideas will consequently make the right decision”. Capozoli, Ulisses available at:
<http://www.sciencenet.com.br/backup/site_portugues/noticias_da_ciencia/ed_38/38_abjc.htm>