

A walk through the history of Geolinguistics in Brazil: from the artisanal to the technological

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Abstract:

The article aims to reflect on some aspects of the history of Geolinguistics in Brazil regarding the techniques used in the elaboration of single-dimensional, two-dimensional and multidimensional atlases over half a century. In the first group, we are dealing with the Preliminary Atlas of Bahian Speeches (APFB) (Rossi, 1963), the Sketch of an Atlas of Minas Gerais (EALMG) (Ribeiro *et al.*, 1977), the Linguistic Atlas of Paraíba (Aragão; Menezes, 1984) and the Linguistic and Ethnographic Atlas of the Southern Region of Brazil-ALERS (Koch; Altenhofen; Klassmann, 2002 e Altenhofen; Klassmann, 2011). Among the two-dimensional atlases, the Linguistic Atlas of Sergipe-ALS (Ferreira *et al.*, 1987), the Linguistic Atlas of Sergipe-ALS II (Cardoso, 2005) and the Linguistic Atlas of Paraná - ALPR (Aguilera, 1994) and the Linguistic Atlas of Paraná II - ALPR II (Altino, 2007). In the third group, the multidimensional atlases, the technological advances reflected in the elaboration of the Linguistic Atlas of Brazil (Cardoso *et al.*, 2014) and in the other atlases that succeeded it under the inspiration of the national atlas are analyzed. In this way, it is hoped to demonstrate the multiple difficulties, but also the possibilities, of doing geolinguistics throughout the history of this branch of Dialectology in our country.

Keywords: Brazilian geolinguistics. History. Techniques.

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INTRODUCTION

The article begins with the presentation of the methodology idealized by the precursors of Geolinguistics in Brazil, in the period from 1953 to 1963, with regard to the objectives of the atlas to be elaborated, the choice of locations, the definition of the profile of the informant, the data collection instruments, the field research, the storage of data and the construction of linguistic charts. Next, the practices adopted in the construction of the first state atlases are described and analyzed, starting with the Preliminary Atlas of Bahian Speeches – APFB (Rossi, 1963), ending with the methodological and technological innovations advocated by the Linguistic Atlas of Brazil (National Committee..., 2001; Cardoso *et al.*, 2014) and the reverberations of these procedures in the elaboration of other small and medium-sized atlases.

1 GEOLINGUISTICS IN BRAZIL: INITIAL STAGES

The publication of the 1st issue of the *Atlas Linguistique de la France*, in 1902 — the most important event in the history of linguistic geography — *in the words of Pop (1950, p. XLIV)*, will initiate the systematic surveys provided by research carried out ¹ *in loco*, *in* several countries, with a view to the elaboration of linguistic atlases².

In Brazil, 50 years later, the publication of Decree 30.643, of March 20, 1952, specifies, in its Article 3. The main purpose of the Philology Commission of the House of Rui Barbosa, then created, was the "elaboration of the linguistic atlas of Brazil", a fact that would mark, according to Cardoso and Ferreira (1994, p. 44), the beginning of a third phase in the history of Brazilian dialectology, characterized "by the beginning of concerns with the development and implementation of linguistic geography studies in Brazil".

From then on, several researchers, directly or indirectly, will contribute to the development of Geolinguistics in the country, with teaching activity focused on the dialectological area, publications and participation in the Congresses held at the time.

On the 3rd. International Colloquium on Luso-Brazilian Studies, Serafim da Silva Neto and Celso Ferreira da Cunha propose the elaboration of seven linguistic-ethnographic atlases, distributed among the seven Brazilian cultural areas proposed by Diegues Jr. (1960) — Amazon, Northeast Coast, Northeast Mediterranean, Plateau, Midwest, Center-East, Extreme South — which would then be gathered in a Linguistic Atlas of Brazil.

¹ Cf. Sever Pop, *La Dialectologie: «En 1902 se produit l'événement le plus important dans l'histoire de la géographie linguistique : J. Gilliéron publie le premier fascicule de l'Atlas linguistique de la France. La méthode de cette oeuvre a été examinée en détail, puisqu'elle a servi de modèle à plusieurs atlas publiés ultérieurement.»* (p. 113-136).

² Teixeira (1938), describes Minas Gerais speech in its phonetic, lexical, morphological and syntactic aspects. In 1944, he published *Portuguese Dialectology: the language of Goiás, in which he inserted the outline of five letters on recurrent phonetic phenomena in the language of Goiás*. Such sketches of letters, although quite rustic, are an incontestable proof of the first effort to demonstrate the variation of the /l/ in coda in the Brazilian Portuguese in Goiás speech, with the resources of Geolinguistics.

In 1958, Antenor Nascentes, as a member of the Philology Commission of the Research Center of the Casa de Rui Barbosa, published the 1st volume *of Bases for the elaboration of the linguistic atlas of Brazil*³, a work in which he exposes the initiatives to be taken by the Philology Commission and deals with the methodological aspects that should be contemplated in the data collection (referring to the linguistic questionnaire, the selection of localities, phonetic transcription) and the necessary indications for the structuring of those in charge, in order to make a research of this nature viable.

At the beginning of the 1st. volume, as follows:

After Gilliéron, the founder of linguistic geography, no true student of philology denies the value of linguistic atlases or their indispensability. [...]. Brazil needs to have its own atlas, which will be no more than a complement to that of Portugal⁴ in the process of being completed (Nascentes, 1958, p. 7).

And, when dealing with the first efforts undertaken by the Philology Commission of the Research Center of the Casa de Rui Barbosa, it seeks to report the socio-cultural situation of the country, in relation to dialectological studies, in the first half of the last century, in the excerpt:

In 1954, the Commission made an attempt to hire Professor Sever Pop to teach a course on the subject, but Professor Pop's course did not produce the expected results. There was great disinterest on the part of the male element, Only two students from the Faculty of Philosophy attended, and the rest of the auditorium consisted of ladies and gentlemen. However, women are less suitable than men for the tasks of harvesting material, because in a country like ours they would have difficulties in locomotion and accommodation that they often could not overcome (Nascentes, 1958, p. 7).

Next, he specifies the procedures to be followed by the Philological Research Commission of the House of Rui Barbosa, responsible for the project: "*The Commission will appoint a superintendent of the work. This, in turn, will choose those in charge of the regions and those in charge of the regions will form their teams*" (Nascentes, 1958, p. 8).

Considering the size of the country and the difficulties of communication, it agrees, although it does not consider it ideal, with the proposal to carry out a Linguistic-Ethnographic Atlas of Brazil by regions, formulated in 1957, in the 3rd. International Colloquium on Luso-Brazilian Studies, in Lisbon, by Celso Cunha and Serafim da Silva Neto, noting:

Although it is of great advantage to have an atlas made at the same time for the whole country, so that the end is not too far removed from the beginning, the United States, a vast and rich country with excellent roads, has given itself over to the elaboration of regional atlases, to later add them to the general atlas. We must also do the same in our country, which is also vast and, even more, poor and without easy means of communication (Nascentes, 1958, p. 7).

Serafim da Silva Neto held an important teaching position, not only at the Pontifical Catholic University of Rio de Janeiro and at the former National Faculty of Philosophy, as a professor of Romance Philology, but also teaching courses on Dialectology in several Brazilian universities,⁵ always insisting on the need to "create a dialectological mentality", as he explains in the introductory chapter of the *Guide to dialectological studies: In Brazil, the land where the*

³ The second volume was published in 1961.

⁴ It refers to the Linguistic Atlas of the Iberian Peninsula, whose surveys were carried out between 1931 and 1936, although its publication only took place in 1962.

⁵ Cf. St. Catherine, in 1955; Manaus and Bahia, in 1957; Rio Grande do Sul in 1954 and 1957.

studies of România Philology are in principle, it is necessary, first of all, to create a dialectological mentality, preparing a favorable environment for field research (Silva Neto, 1957, p. 9).

This work is the result, according to the author,⁶ of a course taught in 1955 at the Santa Catarina Faculty of Philosophy. The 2nd. This edition, improved and expanded, was published in 1957, with the addition of a Course in Brazilian Dialectology, taught in Manaus, at the invitation of the National Institute of Amazonian Research⁷.

In Rio Grande do Sul, in 1957, Silva Neto taught a *Dialectology Course*, preparatory to the 1st grade. The Brazilian Dialectology Congress was held in 1958, an event of great importance for the development of this area, with the participation of several researchers.

Taking advantage of his permanence in some areas, the researcher also carried out dialectological surveys, in Rio Grande do Sul, in 1957, and in the Recôncavo of Bahia, in the village of São Francisco do Conde, in 1956, when he came to Bahia, at the invitation of the Foundation for the development of Science in Bahia.

The concern with the importance of forming this "dialectological mentality", always present in his pronouncements, led him to create the *Center for Brazilian Dialectology*, at the National Museum of Rio de Janeiro, in 1953, on the occasion of the 1st Edition. Anthropology Meeting, thus also marking the relationship between linguistic and ethnographic research, a concern that was very present at the time in dialectological research, and creating, in 1955, the *Revista Brasileira de Filologia*, a journal that he directed until his death.

Conventions Held Between 1956 and 1959

The Congresses that took place in the second half of the twentieth century not only provided data for the knowledge of the Portuguese language in Brazil, presenting some results of the first researches systematically carried out here, but also provided important discussions about the realization of a Linguistic Atlas for Brazil, which led some researchers to highlight them as milestones in the history of Dialectology in Brazil. as we read in Brandão (1991):

Similarly to what Herculano de Carvalho did in relation to Portugal, the history of dialectology in Brazil is divided into two epochs, proposing as a dividing mark the period from 1957 to 1959 when the 3rd. and 4th. International Colloquia on Luso-Brazilian Studies (1957 and 1959), the 1st. Brazilian Congress of Ethnography and Dialectology (1958), the 1st. Symposium on Romance Philology (1958) and the first part of the *Bases for the elaboration of the Linguistic Atlas of Brazil* (1958), by Antenor Nascentes, was published by the Casa de Ruy Barbosa (Brandão, 1991, p. 42).

And in Castilho (1972-1973, p. 126) it appears: *Dialectological studies in Brazil had their watershed in the period between 1953 (foundation of the Center for Brazilian Dialectology Studies, in Rio de Janeiro) and 1958 (I Brazilian Congress of Dialectology and Ethnography, in Porto Alegre).*

The First Brazilian Congress of Dialectology and Ethnography brought together researchers from different parts of Brazil, with the presentation of works, carried out or in progress.

Of particular note here is the communication presented by Diego Catalán, entitled *Dialectology and diachronic structuralism*, which refers to the theme "crisis of Dialectology", observing: "The studies are nothing more than linguistic descriptivism, whose object of examination is the language of rural subjects; they do not seek renewal, but immobility from their cultivators." This theme will be widely discussed later and, at the XXII International Congress of Romance Linguistics and Philology, held in Brussels in 1998, it will give rise to what has come to be called multidimensional dialectology, which adds social variables to the diatopic (Thun, 1998).

⁶ Cf. Silva Neto, 1957, p. 5 (Preface to the 1st edition).

⁷ The National Institute for Amazonian Research (INPA) was created in 1952, linked to the Ministry of Science, Technology, Innovation and Communications.

In his closing speech, Silva Neto highlighted the "great step" represented by the First Brazilian Congress of Dialectology and Ethnography *in order to create an environment conducive to the much desired and necessary Linguistic-Ethnographic Atlas of Brazil*, exposing his conviction that this work would be carried out, in the excerpt with which he closes his speech:

This First Congress of Dialectology and Ethnography was a great step towards creating an environment conducive to the much desired and necessary *Linguistic-Ethnographic Atlas of Brazil*. [...] Nothing, however, will stop us. I am sure that no obstacle, however painful, however much sacrifice may cost, will prevent us from carrying out this great and indispensable task, which more than a requirement of philology, is now a patriotic imperative. We know well (and here I say it in the words of Fernando Pessoa) that "God wills, man dreams, the work is born!" (Amaral, 2019, p. 434).

The IV *International Colloquium on Luso-Brazilian Studies*, held in August 1959 in Salvador, is, according to Rossi, directly linked to the realization of the *Preliminary Atlas of Bahian Speeches* (APFB), considering that the communication *Aspectos do Lexico Regional da Bahia*, presented by a group of 25 students from the last year of the 1959 Literature courses, served as the basis for the Extract of the Questionnaire that was applied in 50 locations in Bahia for the constitution of the APFB.

The implementation of Phonetics Laboratories in Brazil

The implementation of Phonetics Laboratories in Brazil had been requested by several researchers, such as the participants of the First Congress of the Sung National Language, held in São Paulo in 1937, who expressed "an ardent vote for the Governments of the Republic and the State to create in the official institutes of culture, offices of experimental phonetics" (Rossi, 1958, p. 5). However, it was only in 1956 that the first Phonetics Laboratory in South America was established at the Faculty of Philosophy of the University of Bahia thanks to "the *benevolence of the magnificent Rector, Dr. Edgard Santos, and the efforts of the Portuguese phonetician, Dr. Armando de Lacerda and our countryman, Professor Nelson Rossi*", in the words of Nascentes, in the preface to the publication of *Laboratório de Phonetics na Bahia* (Rossi, 1961).⁸

At the end of the Preface, Nascentes says: *Without an in-depth study of phonetics, carried out on a scientific basis, the desired LINGUISTIC ATLAS OF BRAZIL will be impossible, which is entrusted by law to the house that bears the name of the beloved son of Bahia* (Nascentes, 1961, p. 8).

Aware of the need for a Phonetics Laboratory for the training of researchers, the performance of phonetic analyses and the archiving of data, Maria do Socorro Aragão, in the early 1970s, with resources obtained from CNPq and FINEP for the elaboration of *the Linguistic Atlas of Paraíba, will implement, also at the Federal University of Paraíba* (cf. Soares, 2020), a Phonetics Laboratory, with equipment imported from the United States.

2 THE FIRST STATE LINGUISTIC ATLASES

The elaboration of atlases by state was the path followed by Geolinguistics in Brazil, which took into account, only in part, the suggestion of Silva Neto and Celso Cunha, in 1957, in the 3rd. International Colloquium on Luso-Brazilian Studies that pointed to the realization of atlases by

⁸ Publication of two lectures given by Rossi, at the Philological Research Center of the House of Rui Barbosa. In this text, Nascentes also recounts his efforts, since 1929, when he had obtained funds for the acquisition, in Germany, of the equipment necessary for the installation of a Phonetics Laboratory at Colégio Pedro II and these devices could not come to Brazil, due to an act of the Revolution of 1930, which prohibited the importation.

regions to, at the end, complete information about the entire country and constitute a Linguistic Atlas of Brazil.

In Brazil, the first atlases were developed by state, and not by regions, and followed different methodological guidelines, without the supervision of the Philological Research Commission of the House of Rui Barbosa, as required by Nascentes, with each researcher being responsible for his or her Project. Thus, the suggestion of using the data published in these atlases for the elaboration of the Linguistic Atlas of Brazil did not materialize.

2.1 Preliminary Atlas of Bahian Speeches (APFB)

The first Brazilian linguistic atlas, the *Preliminary Atlas of Bahian Speeches* (APFB), was carried out at the Phonetics Laboratory of the then Faculty of Philosophy, Languages and Literature, and Sciences of the University of Bahia by Nelson Rossi, with the collaboration of a group of 25 students from the last year of the Letters course, among whom were Dinah Maria Isensee and Carlota da Silveira Ferreira⁹, who continued to participate in the research after completing the course, and are listed in the APFB as main collaborators. The first survey was carried out on 31 October 1960 and the last on 7 April 1961. Both the atlas and its Introduction volume were published by the National Book Institute, an organ of the Ministry of Education and Culture¹⁰: the volume of letters in 1963 and the volume of Introduction, in 1965.

The APFB, as the first linguistic atlas carried out in Brazil, in the early 1960s, will resent the absence of previous atlases with which to dialogue, as well as the inexistence, at the time, of the technical resources for the recording of data *in loco* (portable recorders, possible to be taken to the field),¹¹ and for the preparation of the originals. with the use of a phonetic alphabet, the symbols of which were not found on any typewriter¹². The precariousness of roads and communication systems is also highlighted, as well as the lack of infrastructure in the interior of Bahia¹³.

The inquiries were recorded *in loco* by the researchers who, in order to satisfactorily carry out the phonetic transcription after the broadcast by the informant, underwent "a rigorous program of work in particular, which extended from May 11 to October 30, 1960" (Rossi, 1965, p. 31).

This preparation program benefited from the facilities of the Phonetics Laboratory and the existing collection and consisted of four series of exercises, each of them subdivided into four sessions. In the first and second grades, future inquirers transcribed utterances in Russian; in the third, texts sung in Nagô and, in the last, texts issued by Portuguese announcers to finally reach the records of preliminary inquiries already carried out in Bahia, including songs.

The atlases that followed the APFB have already had the inquiries recorded, due to the possibility of acquiring and using recording devices.

The difficulties with the preparation of the originals of the APFB letters are described in detail in the volume of Introduction and give an idea of the task of preparing phonetic transcriptions for the printing of the work at that time, with the help of draftsmen and the use of normographers (Rossi, 1965, p. 38-40).

⁹ Dinah Maria Isensee Callou is currently a professor emeritus at UFRJ; Carlota da Silveira Ferreira is a retired professor at UFBA. Both also participate in the *Linguistic Atlas of Brazil*.

¹⁰ Created during the Vargas Government, in 1937 (by Decree-Law No. 93, of 21/09/1937).

¹¹ Alkaline batteries began to be produced in Brazil by Microlite in 1978, followed by Duracell in 1984 and Eveready in 1987. During the last two decades of the twentieth century, the battery industry grew dramatically. (Cf.: Portal São Francisco, 2016).

¹² The alphabet used was Lacerda-Hammarström, used by Armando de Lacerda at the Lisbon Phonetics Laboratory, adopted by Nelson Rossi.

¹³ Some examples of these difficulties are reported in: MOREIRA, J.; MOTA, J.; REIS, R., (Orgs.), 2023, p. 15-23, in the text prepared by Ferreira and Mota, in honor of Dinah Callou, in 2022, at the VI International Congress of Dialectology and Sociolinguistics, at UFMS (Mota; Ferreira, 2023).

2.2 Atlases Published between 1977 and 1987: EALMG, ALPB and ALS

The APFB was followed, in order of publication, by the state atlases of Minas Gerais (1977), Paraíba (1984), Sergipe I (published in 1987, despite having the originals ready since 1973)¹⁴ and Paraná (presented as a Doctoral Thesis in 1990, published in 1994), the first two, within the one-dimensional methodology, such as the APFB; the last two are already two-dimensional, as noted by Thun (1998):

Les premiers représentants d'un atlas linguistique systématiquement pluridimensionnel sont L'*Atlas Linguístico de Sergipe*, Bahia, 1987, by Carlota da Silveira FERREIRA et alii, le microatlas aranéen contenu dans la monographie de Otto WINKELMANN (1989) et l'*Atlas Linguístico do Paraná* (ALP), Curitiba, 1994, by Vanderci de Andrade AGUILERA, ouvrages qui ont le grand mérite d'être déjà publiés. Ces trois atlas sont bidimensionnels. Les deux atlas brésiliens ajoutent à la dimension diatopique la variable diasexuelle que s'étend, en principe, à tous les points du réseau. Le petit atlas d' O. WINKELMANN est diatopique et diagénationnel (39 localités, 3 groupes d'âge) (Thun, 1998, p. 375).

2.2.1 Sketch of a Linguistic Atlas of Minas Gerais (EALMG)

The *Sketch of a Linguistic Atlas of Minas Gerais* (EALMG), authored by Mário Roberto Zágari, José Ribeiro, José Passini and Antônio Pereira Gaio, initially planned in four volumes, had, due to various circumstances inherent to works of this type, only the 1st volume published in 1977.

Regarding the difficulties in carrying out the surveys in 116 municipalities of Minas Gerais, without funding, the authors report in the introductory chapter:

The beginning was tough. The number of classes could not be reduced and the expenses were great. Driving, hotel, meals, everything was on us: the car was ours, ours the tape, ours the tape recorder. Only little by little, because the University's resources were scarce, did we receive, albeit insufficiently, the material for field collection (Ribeiro *et al.*, 1977, p. 20).

The interviews took place "whenever possible, in a conversation, *at the same time*, with several informants, one being the main one, while the others confirmed or enriched the information" (Ribeiro *et al.*, 1977, p. 28).

Regarding indirect research, the authors state:

After the first fifty recordings, when the first virtual boundaries — isophonic and isolexic — were already being sketched, at the same time, a correspondence began to be sent to the entire state, which today has already reached 302 locations [...] with the purpose of proving, *in the domain of the lexicon*, the validity or not of the isolex "traced", in the precision of its limit (Ribeiro *et al.*, 1977, p. 30).

To record the EALMG data, the researchers had at their disposal "Japanese stereophonic recorders, brand AIWA TP I 104, *stereo*, cassette [...]. Powered by alternating current 110-120 or 220-240 volts." However, they draw the reader's attention to the "fair weight of 4 kg" that they had to carry to the place of the interviews (Ribeiro *et al.*, 1977, p. 3).

2.2.2 Linguistic Atlas of Paraíba (ALPB)

¹⁴ In 2005, Suzana Alice Cardoso published the Linguistic Atlas of Sergipe II, *presented as a Doctoral Thesis in 2002, which took up part of the linguistic data recorded in the surveys carried out in Sergipe in 1967-8, which were not used in the preparation of the first volume of the ALS* (Cardoso, 2005).

The *Linguistic Atlas of Paraíba* (ALPb), by Maria do Socorro Aragão and Cleusa Bezerra de Menezes, revised for three volumes, also had only the first two published in 1984 - the 1st. volume, with 149 letters (lexical, followed by the corresponding phonetics) and the second, with the analysis of the linguistic forms and structures found, from the phonetic-phonological and morphosyntactic point of view and a glossary of the mapped variants.

To carry out the ALPb, three to ten individuals were interviewed in each location, aged between 30 and 75 years, illiterate or with a low level of education, in a total of 100 municipalities, "25 chosen as the base and three more satellites for each base [...], covering the entire state" (Aragão; Menezes, 1984, p. 77).

2.2.3 *Linguistic Atlas of Sergipe (ALS) I and II*

Preliminary data collection in Sergipe began in 1965, shortly after the publication of the APFB, with the objective of delimiting another area of the so-called "Bahian speech", in the division presented by Nascentes (1953), but the definitive surveys only came to be carried out in 1966 and 1967.

The questionnaire applied in this area maintains all the questions that were included in the Extract of the Questionnaire used for the APFB, with the addition of others, suggested by the preliminary surveys carried out in Sergipe. As portable recorders were already available at that time, it was possible to record all surveys in 15 locations in the state, which provided a large volume of data that, in addition to being used for the preparation of two atlases, have been used in dissertations and articles.

ALS I had its originals ready in 1973, but, due to lack of funding for works of this nature, it was only published in 1987, jointly by the Federal University of Bahia and the State Foundation of the State of Sergipe. It consists mostly of phonetic (*analytical*) and summarized (*mixed*) letters in black and white. ALS II (Cardoso, 2022), Suzana Alice Cardoso's doctoral thesis, had a preliminary publication in 2005, funded by the author herself. The cards are of the *mixed type*, with colored symbols, arranged inside and in the legend, in addition to containing scale, graphs and other elements of cartography.

ALS I closely followed the APFB, with the presentation of letters with the same theme dealt with in it, adding some letters that gathered unpublished data from Bahia and Sergipe. ALS II dealt with 105 issues not explored in ALS I, referring to the area of Humans.

2.3 Atlas Designed in the 1980s and 1990s: ALPR, ALECE, ALERS and ALMS

Also in the 1980s, the Linguistic Atlas of Paraná - ALPR (Aguilera, 1990, 1994, 1996) and ALPR II (Altino, 2007) were designed; the Linguistic Atlas of Ceará - ALECE (Bessa *et al.*, 2010); the Linguistic and Ethnographic Atlas of the Southern Region of Brazil - ALERS (Koch; Altenhofen; Klassmann, 2002) and (Altenhofen; Klassmann, 2011). And, in the following decade, the Linguistic Atlas of Mato Grosso do Sul - ALMS (Oliveira, 2007).

The ALPR - (Aguilera, 1994, 1996) closes the twentieth century as the fifth atlas published and the last elaborated by hand. The result of the author's doctoral thesis, defended in 1990, it is the second two-dimensional atlas for systematically applying the questionnaire to a man and a woman in each of the 65 locations selected according to linguistic, geographical and historical criteria.

As for the profile of the informants, as it is an atlas idealized along the lines of Traditional Geolinguistics, we investigated speakers from the countryside or linked to rural activities; illiterate, or with a maximum of four years of schooling in the range of 30 to 55 years of age¹⁵.

¹⁵ It was not always possible to count on informants within this profile because they lived close to the city and had easy access to the school. In the end, regarding schooling, the universe of informants was composed of 59.3%

On-site data collection (from 1985 to 1989) was done with the aid of voice recorders and portable cassette players that operated on alternating current, but because this was a study in a rural area, the use of alkaline batteries was chosen. These devices brought some advantages and many challenges to the dialectologist unaccustomed to operating "high-tech" devices. If the APFB relied on the effort and skill of the inquirers to face the difficulty of simultaneously transcribing the answers, the ALPR faced others when manipulating these portable instruments, such as: (i) controlling the durability of the batteries: often the interview was in the middle, or was lost completely; (ii) "rewind" the tape to verify the quality of the recording, or to make the copy for transcription. Sometimes the device "chewed" the tape and all the work was lost there; (iii) control the six keyboards (*record*, *rew*, *play*, *ff*, *eject*, *stop*) whose arrangement varied from device to device and, in the heat of the interview, confuse the icon and delete everything; (iv) position and distance from the built-in earphone: a device that was too close inhibited the informant; If he moved away, he picked up external noises and his voice became practically inaudible.

The ALPR Questionnaire, inspired by Caruso (1983), involves two major fields: Man and Earth. It includes 325 questions of the *types naming*, completing *and talking questions*, the latter intended for narratives about legends and superstitions, in addition to the narrative of a personal nature. After the interview, a form was filled out with the informant's personal and social data (name, gender, age, profession, travel, etc.). Subsequently, the interviews were transcribed graphematically, in their entirety, and phonetically, the items that aroused dialectal interest (realization of the rhotic, postvocalic /l/, and proparoxytones...). Once the audios were transcribed, as microcomputers (PCs) were not available at the time, the answer to each of the questions was cut, following the order of the Questionnaire, grouping them in a proper binder (there were thousands of files). The next stage consisted of manually counting (Excel was not available) each lexical variant collected in the speech of each of the 130 informants and, at the end, the items were selected for analysis and mapping.

The ALPR II, the result of Altino's doctoral thesis (2007), continued the mapping of Paraná's speeches, taking advantage of the other answers not contemplated in the ALPR. Altino uses computer technology and Corel Draw resources to ¹⁶ prepare the cards, numbered from 192 to 366. It innovates, by attaching to the 175 Phonetic and Lexical Charts, two others in the dialectometric method, with the relative index of dialectometric distance (Chart 367) and the relative index of identity (Chart 368).

The ALPR and ALPR II together have 366 letters, of which 217 are lexical of the *mixed type*; ¹⁷120 are phonetic, of which 32 are *analytical* and 88 *mixed*; and 29 *synthetic*, isophone and isolexic.

For the ALPR, the mapping of the data followed a *production line*: (i) preparation of the base chart with the help of a geographer; (ii) selection of items to be mapped; (iii) preparation of pilot letters and forwarding them to the team of designers and final art; (iii) in the case of *mixed charts*, drawing and painting circle(s) with the aid of a normograph and colored pens, inside the chart, at each of the points; (iv) forwarding the letter to another professional (typist) to include the title, caption and notes on the back of each of them; (v) final review and (vi) forwarding of the material to the photocopying department.

illiterate, 37.7% incomplete primary and 3.00% with complete primary education. As for the age group, 3% are between 27 and 29 years old; 91.1% between 31 and 55 and 6.90% between 56 and 62 years of age.

¹⁶ Corel Draw is a two-dimensional vector drawing program for graphic design developed by Corel Corporation, Canada, in 1989.

¹⁷ According to Montes Giraldo (1987), the letters can be of the following type: *literal analytical* when, at each point, the answers are transcribed as they were collected; *synthetic*, when a previous analysis is carried out and the same or similar phenomena are brought together in a given geographical space, forming zones of isoglosses that are distinguished on the chart by hatching or different colors; and *mixed*, or *analytical-synthetic*, in which a literal answer is not given, but each variant is signaled with its own symbol indicated in the legend.

On the *mixed* cards, the symbols were colored red, blue, and black. When the list of variants exceeded the number of these three colors, the symbols were half-filled, or left empty because, for printing, the more colors, the higher the cost of each card. If the publication of color charts was a challenge for geolinguists in the late twentieth century, this difficulty was much greater for those in the late 1800s, when geolinguistics was in its infancy. By the way, it is interesting to recall the comment by Sever Pop (1950, p. 1172): "J. Gilliéron a indiqué par diferentes couleurs les principaux phénomènes reproduits sur les cartes du Petit Atlas Phonétique du Valais Roman, en *coloriant lui-même tous les exemplaires*, afin d'épargner à sa bourse des frais qu'elle n'aurait pu supporter". This was the technique used by the ALPR, following in the footsteps of the APFB and the EALMG: coloring the circle-symbols of the collected variants one by one.

The preparation of the analytical phonetic charts followed another protocol: (i) selection of items with the phenomenon to be mapped (rhotic in coda or attack, consonant clusters with /l/, proparoxytones...); (ii) phonetic transcription, variant by variant, at each point and according to the record of each informant. The International Phonetic Alphabet was adapted to the typographic capabilities of the IBM electric typewriter ("very advanced for the time"). To represent the [ʒ], for example, the [z] was typed and the semicircle was drawn below by hand. The same technique was used to record the nasal palatal [ɲ], the retroflex [ɻ]... since the device (daisy) did not contain these symbols; (iii) typing of the Notes on the back of the letter; (iv) review, correction of each letter and forwarding to the photocopy department.

As for the *synthetic charts*, there was the collaboration of the geographer who manually and intuitively delimited, by means of black hatches, the space of each isolexic or isophone.

For the publication of the volume of ALPR letters, the author did not get support from any publisher, or from a research foundation, or from any body linked to education or culture, although she had resorted to all of them. The Atlas was subsidized by the Secretariat of Security and Justice and printed at the Official Printing Office of the State of Paraná (1994).

ALECE (Bessa, 2010, p. 67-75) is composed of two volumes: vol. I - Introduction contains the methodology and survey of the dialectal bibliography of Ceará. As a result of a project that sought to associate the methods of traditional classical dialectology with the purposes of Sociolinguistics, it defined the social profile of the sample, according to the variables *of education, age, sex and geographic location* of the 261 informants, two of whom were illiterate and two literate with a high school education, between 30 and 60 years old (95.4%), two men (49.4%) and two women (50.6%) by the 67 points of inquiry. On-site data collection followed the questionnaire developed on 16 semantic fields and 306 questions comprising 583 items (Bessa *et al.*, 1982).

Vol. II-Cartograms¹⁸, "the first cartographic product of ALECE consists of 240 cartograms, of which 132 are *phonetic* and 108 *lexical*" (Bessa, 2010) covering 21 concepts. Each letter informs the Title, the Legend with the lexical variants and the phonetic variants for illiterate informants (Inf. Ø) and literate informants (Inf. 1).

Regarding the published product, Bessa (2010) clarifies:

[...] the initial intention of the members of the Scientific Team of the ALECE Project was to map the answers given by the informants to the 46 selected questions. [...]. It was noticed, more precisely and concretely, that, in many cases, the phonetic and, consequently, the lexical diversities are not so great and in such a way that it becomes impossible to maintain the cartographic representation of the series of maps related to certain concepts within the limits of the estimate stated above (Bessa, 2010, p. 7-8, v. II).

ALERS (Koch; Altenhofen; Klassmann, 2002; Altenhofen; Klassmann, 2011) is the first Brazilian atlas to cover a geographical region and to use the resources of technology in the construction of the charts.

¹⁸ It is assumed that the authors used the SPGDL - Geolinguistic Data Processing System for the preparation of the letters.

In summary, the genesis of the project comprised three moments: (i) the beginning of the ALERS project, in 1980, by a group of researchers from the Federal University of Rio Grande do Sul; (ii) definition of the procedures to implement the idea of the Atlas, in 1982, including researchers from the federal universities of Santa Catarina and Paraná; (iii) constitution of the inter-institutional team, in 1987, under the general coordination of Walter Koch from UFRGS, initiating data collection.

For on-site *data collection*, a questionnaire with about 700 questions was used, including semantic-lexical, phonetic-phonological and morphosyntactic questions, applied to 275 points in the rural area (100 points in Paraná, 95 in Rio Grande do Sul and 80 in Santa Catarina) and 19 in the urban area. The 275 informants (one per locality) were selected according to the criteria of traditional dialectology and the interviews were recorded on magnetophonic tapes, using a portable alternating current recorder and transcribed according to the International Phonetic Alphabet.

ALERS, in addition to being inter-institutional and covering an entire geographic region, innovated in several aspects: (i) regarding the data collection instrument, it inserted morphosyntactic questions (about gender, pluralization, verbal inflection...); (ii) included specific phonetic-phonological questions applied in regions of non-Portuguese colonization (German, Italian, Polish and Ukrainian); (iii) developed "a *specific software* for QSL typing, which allows both complex analysis of phonic segments of the *corpus*, as well as the automatic production of variant frames"; (iv) developed several programs, especially for mapping (V. Altenhofen; Klassmann, 2011, p. 28).

The 2nd edition (Koch; Altenhofen; Klassmann, 2002) brings in Vol. 1 introductory and methodological information, 54 phonetic and 93 morphosyntactic charts; the 2nd volume (Altenhofen; Klassmann, 2011) presents 374 lexical charts, as well as Variant Tables for supplementary linguistic analyses.

In 1994, the Linguistic Atlas of Mato Grosso do Sul project began at the suggestion of Pedro Caruso and, as Nogueira and Isquerdo (2005) observe, "it slowly materialized in the 1990s with the inclusion of professors from the Federal University of Mato Grosso do Sul, who, at the invitation of Professor Albana, became part of the team" [...] ¹⁹tag.

These four atlases, conceived in the 1980s and 1990s, close another chapter in the history of Geolinguistics in Brazil, showing convergences and divergences in the planning and methodology of works of this nature. Regarding convergences: (i) *on-site* collection; (ii) informants with the profile proposed by traditional dialectology; (iii) similar collection instrument, common semantic fields (nature, natural phenomena, human body...).

Points of divergence: (i) dimensionality: single-dimensional (ALERS), two-dimensional (ALPR) and multidimensional (ALECE and ALMS) atlases; (ii) informants per location: one (ALERS), two (ALPR), four (ALECE, ALMS); (iii) network of points²⁰: ALPR = 65 municipalities out of 290 (22.4%); ALERS 275 of the 719 municipalities (38.2%), ALECE = 67 of the 141 municipalities (47.5%) and ALMS of 32 of the 76 (42%); (iv) making of the cards: ALPR - by hand; ALECE²¹ and ALMS, generated by the Geolinguistic Data Processing System (SPGDL); ALERS – technology developed at the three universities; (v) presentation of the cards: ALPR = colors, for mixed cards; ALMS = color symbols on the inside of the chart and Legend in black; ALERS and ALECE, monochrome charts; (vi) use of the collected material: number of questions X number of letters: ALPR and ALPR II – mapping of 100% of the²² data; ALERS – 61% mapped and the others described in the Annexes; ALMS – 153 out of 510 lexical questions (30%); ALECE – 21 of the 306 questions presented in cartograms (6.9%) and 25 described (8.2%).

¹⁹ The professors mentioned are: Aparecida Negri Isquerdo, Maria José de Toledo, Ana Maria Pires de Oliveira and Dercir Pedro de Oliveira (Nogueira; Isquerdo, 2005, p. 236).

²⁰ The number of municipalities at the time of the launch of the atlas is considered for calculation.

²¹ Although ALECE does not provide this information, it can be inferred from the presentation of the letters.

²² Except those related to folklore and popular beliefs.

A few years before the lights went out in the twentieth century, resuming the dream of a linguistic Atlas of and for Brazil, idealized by Nascentes, Silva Neto, Cunha and Rossi and consecrated by Decree 30.643 of March 20, 1952, the ALiB Project was born.

3 INAUGURATION OF A NEW ERA OF GEOLINGUISTICS IN BRAZIL: the Linguistic Atlas of Brazil-ALiB²³

Believing that the genesis and methodology of ALiB have already been the subject of several texts, therefore known to most readers, this section deals with more specific aspects of cartography that characterize this atlas. As stated on the website:

From the point of view of the presentation of linguistic data, the ALiB intends to be among the most modern atlases, providing, as the so-called 2nd generation atlases, in addition to the linguistic maps themselves, interpretative studies on some of the mapped aspects. And, following the contemporary trend, add to the mapped data information of an acoustic nature that allows direct access to the informant's own voice, [...] as in the so-called third generation atlases (ALiB, 2023).

Once the stage of interviews of the 1,100 informants distributed by the 250 points is concluded, and after the 277,851 km route, the work of grapheme and phonetic transcriptions follows. The first for the elaboration of lexical letters and the last for phonetic letters. At this stage, after the decision to map part of the data from the capitals, the concepts that would serve as the theme for the first volumes of ALiB were selected.

Thus, volume 2 of ALiB is composed of 44 phonetic charts that address the six most recurrent phenomena of variation in the Brazilian Portuguese (realization of the pretonic /E/ and /O/, the non-final posttonic E/ and /O/, the lateral /l/ followed by [i], the /r/ in a syllabic coda, the /s/ in a syllabic coda and the /t/ and /d/ followed by [i]). As for the lexical charts, the answers to 27 questions were mapped, adding up to 56 charts: variants for *hail*, *dew*, *tangerine*, *fruit bug*, *dragonfly*, *marble*, *prostitute*, *traffic light*, etc. This volume also contains seven morphosyntactic charts: *the plural of step*, the use of *tu* and *você*, the indefinite pronoun *and* the verb *haver* impersonal, *as* well as two prosodic letters. Volume 3 of ALiB (Mota; Ribeiro; Oliveira, 2022) contains the interpretative studies complementary to the letters in vol. 2.

The elaboration of the maps of volume 2 was under the responsibility of a specialized team, coordinated by the cartographer Dr. Ana Regina Teles and the dialectologist Dr. Silvana Ribeiro, who, on the innovations of cartographic making applied to ALiB, observe:

The first is that almost all linguistic atlases published in the country are sets of cartograms, because they lack essential information so that they can be classified as a set of charts: orientation, projection system, reference system for coordinates and scale. [...]. The second major difference is that the ALiB is being presented primarily in the analog version, but, because it was conceived in the light of current Cartography, it allows, in some cases, the presentation in a digital version (Teles; Ribeiro, 2014, p. 114).

Regarding the digital map, the authors emphasize the relevance of this model, arguing:

The digital map arose, therefore, from the need to speed up access to graphic, georeferenced data, allowing its cross-referencing with alphanumeric data stored in computers, which can result in a series of products in addition to maps: reports, video outputs, films, etc. Thus, it must encompass, in its archives, the representation of the form

²³ For more detailed information about the genesis and methodology of ALiB, the reader is suggested to consult vol. 1 – Introduction - Linguistic Atlas of Brazil (Cardoso *et al.*, 2014) and ALiB (2023).

and precise position of everything that can be captured, up to the limit of what is representable, considering the elaboration process adopted (Teles; Ribeiro, 2014, p. 119).

However, in addition to the difficulties arising from a multidimensional atlas, other obstacles challenged those responsible for mapping the data, in the work of georeferencing the localities, such as the "fact that the political division of Brazil is continuously changing, with the creation, extinction, dismemberment and merger of municipalities, or even states and political-administrative regions" (Teles; Ribeiro, 2014, p. 119).

Thus, for the ALiB, a base letter was prepared for Brazil, one for each Geographic Region (five) and one for each State of the Federation (26). Each lexical, phonetic or morphosyntactic chart, elaborated on the cartographic base, is rich in information, such as: title of the atlas, title of the chart, space for the question, area reserved for the legend, state and international boundaries, localities, main rivers, among others. All cards are colored.

As can be seen, ALiB innovated in several aspects, marking a new era of Geolinguistics in Brazil. It shows both the methodological advances appropriate to the current reality (urban informants, different age groups and levels of education, male and female informants, questionnaire adapted to capture the various styles of speech, inclusion of diarreferential questions) and those provided by Cartography (Geographic Information Systems) and Computer Science (reports, analog and digital maps, videos, films), in this case with the advice of Dr. Daniela Claro, who is a member of the Informatics and Cartography Commission of ALiB and has been developing the project Talking Map of the Linguistic Atlas of Brazil (ALiB).

FINAL THOUGHTS

The purpose of this text was to reflect on part of the history of Geolinguistics in Brazil regarding the methodology and techniques used in the elaboration of the first state atlases (APFB, EALMG, ALPB, ALS, ALECE and ALPR) and the first regional atlas (ALERS), culminating with the national atlas (ALiB). The study sought to demonstrate the advancement of geolinguistic studies that, starting from single-dimensional and two-dimensional atlases, reached multidimensional ones, inaugurated by ALiB and serving as a reference for subsequent projects. He sought to describe the path taken from the construction of incipient handmade charts or cartograms to sophisticated analog and digital maps and, perhaps soon, talking atlases.

The saga traversed by Brazilian geolinguists, from the mid-twentieth century to the present, deserves to be told in more depth. It is hoped, however, with this study, to sensitize young researchers to the appreciation of the work developed in the past, but also to take advantage of all that the complementary sciences (Cartography, Computing, Sociology...) current and future can offer to the Science of Language and, in particular, to geolinguistic studies.

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