

# Philippe WANIEZ

## Research and teaching 1980-2017

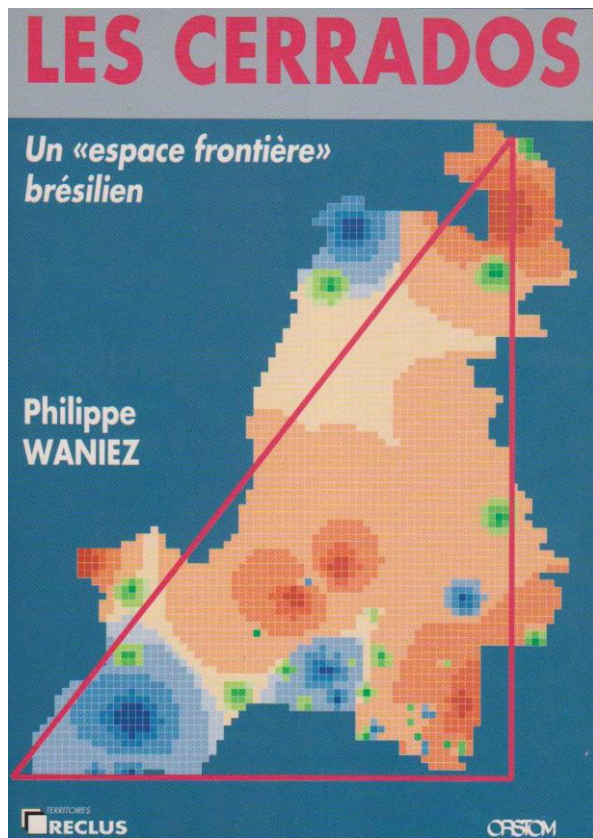
### A-Scientific Track

#### 1. Research on Brazil

##### 1.1. The Cerrados, a "frontier space"

Brasília, 1986-2002, Brazilian Agropastoral Research Company, EMBRAPA

The development of the "new land" of the Cerrados (2 million km<sup>2</sup>) was to substantially increase the export capacity of Brazilian agricultural products. The integration into the rest of the country of this vast area of wooded savannahs, which became in less than 20 years the soybean loft of Brazil, had prompted many local studies; but the regional approach, allowing to situate these monographs in a more general context was lacking.



To overcome such a lack, we sought to evaluate these new territories by analyzing the contrasts of settlement, the extent of migratory phenomena, the intensity and limits of urban influences, the dynamism of agriculture and the limiting role of the natural environment.

This research was carried out in the light of the ongoing transformations in the other regions of Brazil, which led to the analysis of the links of solidarity and competition that have been established between the Cerrados and the rest of the country.

The book "The Cerrados, a Brazilian frontier area" has become a reference work on this region.

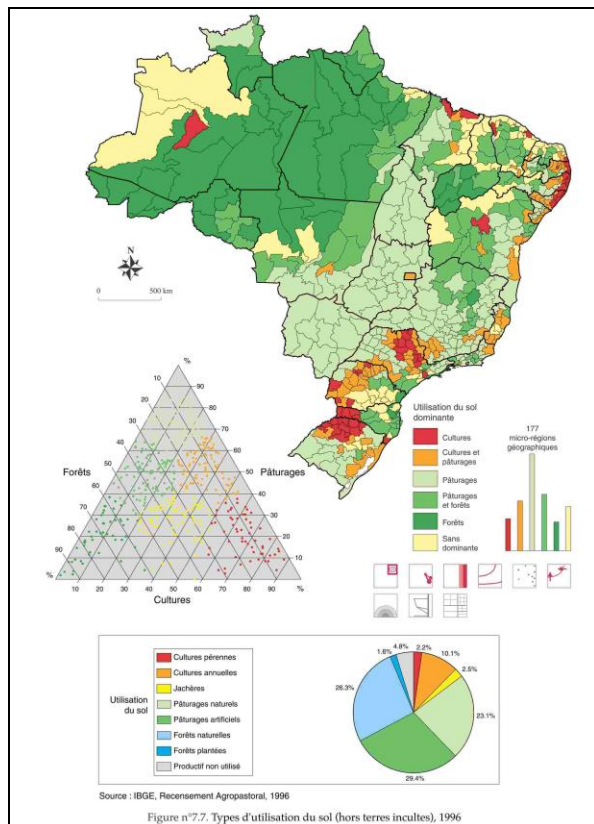
A return to this field was made in 2001-2002, as part of a research group set up by INRA at the request of the (French) Federation of Oleo-Protein Plants (FOP), whose objective was to analyze "the main factors in the competitiveness of the cereals and oilseeds sectors in Brazil and Argentina: State policies and actors' strategies".

Bibliographical references (click on a link to download the document) : [L004](#), [L010](#), [C002](#), [C003](#), [C005](#), [C007](#), [C016](#), [C017](#), A004, [A006](#), [A009](#), [A010](#), [A013](#), [A014](#), [A082](#), S015, Q003, Q004, Q005, Q006, Q007, Q008, Q009, Q025

## 1.2. Agriculture and Agrarian Reform

Santiago de Chile, 1999-2000, Economic Commission for Latin America, CEPAL, United Nations, United Nations

The research on the Cerrados being completed, it remained interesting to analyze the transformations of Brazilian agriculture as a whole. A meeting with economists from the Institute of Applied Economic Research, IPEA, in Rio de Janeiro allowed for collaboration on the themes of change in agriculture and agrarian reform. This collaboration continued in 1999-2000 within the framework of the Economic Commission for Latin America, CEPAL, of the United Nations, UN, in Santiago de Chile.



An important result was obtained by comparing the results of the 1996 Agricultural Census of Brazil with those of 1985. Recall that Brazilian agriculture was characterized since the 1950s by a rapid expansion of cultivated areas and pastures, which made it the main producer of Latin American agricultural commodities.

The evolution observed from 1975 to 1985 had extended, by strengthening it, the traditional model of the development of Brazilian agriculture based on the permanent conquest of new lands in the frontier regions, called here "frontier regions".

At the same time, the area of holdings, all forms of land use combined, but excluding uncultivated land, had increased by 46 million hectares (+15%).

Since the early 1990s, there has been a trend reversal, first suggested by the annual agricultural production surveys, and then attested by the Agropastoral Census conducted in 1996 by IBGE.

If the spectacular advance of the colonization fronts in the 1980s expressed the pioneering mentality of the Brazilian peasants, the depopulations observed since 1990 reflect real difficulties of survival. If "pushing the boundaries is the other national sport of Brazilians" since Tordesillas, a new form of collective expression has arisen on the borders of the State of Paraná: illegal land occupations led by the Landless Rural Workers Movement.

Around this movement have crystallized many demands for access to land and for the exercise of citizenship. Initially overtaken by such events, the President of the Republic, Fernando Henrique Cardoso personally engaged in a proactive policy of Agrarian Reform. To base this policy on concrete information, the Ministry of Agrarian Reform carried out in 1996 a Census of Agrarian Reform. Access to the individual data of this census, even before the release of the first tables, made it possible to establish a detailed mapping of the land situation of the different parcels of land as well as of the socio-technical characteristics of the beneficiaries of the reform.

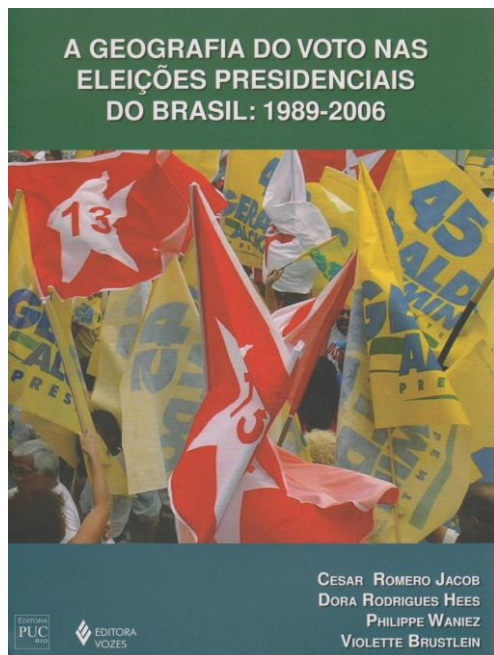
Bibliographical references (click on a link to download the document) : [L023](#), [C011](#), [C014](#), [C016](#), A004, [A014](#), A021, A023, [A028](#), [A033](#), [A038](#), [A040](#), [A041](#), [A043](#), [A051](#), [A059](#), Q015, Q019

### **1.3. Geography of the elections**

Rio de Janeiro, 1997-2012, Pontifical University of Rio de Janeiro, PUC-Rio

Since the pioneering work of André Siegfried at the beginning of the century, electoral geography has become a common activity for many political scientists, sociologists and geographers interested in electoral expression. In a democratic country, this expression can be considered as a snapshot of the relations of political and social forces; for the geographer, it gives an image, generally highly structured, of the combination of these relations of power with the territory. Beyond its most immediate aspect, that of communicating the results on election night, electoral geography constitutes an entry on territorial structures and dynamics as well as living conditions or economic activities. This approach makes it possible to observe the relationships between permanence (often fascinating) and ruptures (often brutal) It reveals profound transformations that are sometimes difficult to grasp in such a synthetic form as the analysis of the results of elections in space and time, and their linking with other more traditional economic and social indicators.

A first approach of the electoral geography of Brazil took as object the Brazilian presidential election of November 15, 1986, while taking into account the specificities of such an election: suppression of the elections of national scale imposed by the military regime, difficulty in identifying the many candidates according to a clearly expressed ideology and economic program, limitation of democratic openness to political forces acceptable to the regime in place. This research then continued by collecting the results of the successive elections, thanks to a direct relationship with the head of electoral statistics at the Supreme Electoral Court, TSE, in Brasília.



On the eve of the October 1998 presidential election, a team formed around political scientist Cesar Romero Jacob, Professor at the Catholic University of Rio de Janeiro, PUC-Rio. This collaboration has continued until today, and has given rise to numerous publications, both in Brazil and in France.

This joint research has focused on highlighting the game of political alliances and their territorial projection. We thus had to examine the role played by the municipal elections (delayed by two years compared to the presidential election) in a country where no candidate for the Presidency can win without local support.

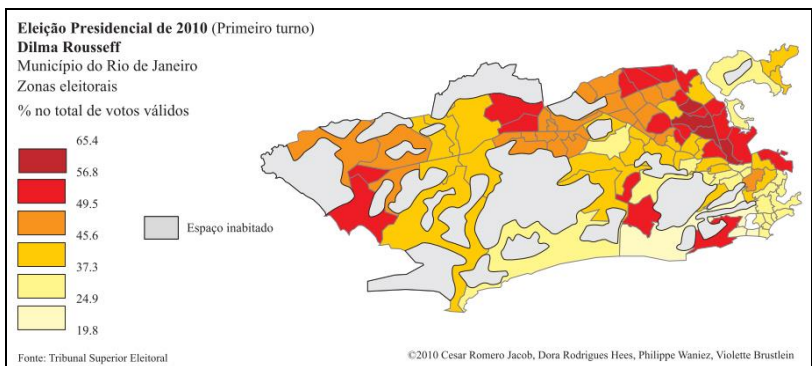
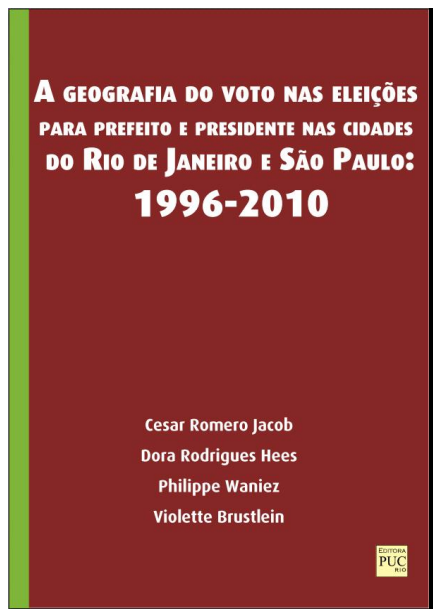
The logics highlighted worked particularly well during the alternation of 2002, when Luiz Inácio Lula da Silva was elected to the Presidency of the Federative Republic of Brazil, which is undoubtedly one of those major changes that electoral geography can help to understand.

By seeking to clarify the points of articulation between the results of the municipal and presidential elections in Brazil, it was possible to understand how the municipal level could influence the national level, on the basis of complex local alliances, without which no contender for the supreme office could hope to be elected.

On the basis of the results of the municipal elections of 2004, it appeared useful to put the book on the job to better analyze the democratic process in the two main cities of the country, São Paulo and Rio de Janeiro. The aim was to show how, through the alternation of local and national elections, political forces are recomposed at the local level and produce territories more or less well delimited according to socio-economic characteristics (and religious in Rio de Janeiro) voters.

To develop this problem, it seemed essential to build the electoral history of São Paulo and Rio de Janeiro for the period 1996-2004 during which three municipal elections took place (1996, 2000 and 2004), and two presidential elections (1998 and 2002).

These analyses are frequently repeated by several of the main daily newspapers (*O Globo*, *Jornal do Brasil*, *Correio Braziliense*, *Estado de São Paulo*) and weekly of the country (*Carta Capital*, *Istoé*, *Valor Econômico*). This work has helped to shed light on the territorial aspects of local and national elections, on the readership of these newspapers, which goes far beyond the world of social science research.



Rio de Janeiro  
 % of votes cast for Dilma Rousseff in the 2010 presidential election

Bibliographical references (click on a link to download the document) : [L019](#), [L020](#), [L025](#), [C017](#), [C020](#), A007, A012, [A020](#), [A034](#), [A035](#), [A055](#), [A057](#), A063, [A064](#), A065, [A066](#), [A067](#), [A068](#), [A070](#), A071, [A073](#), [A076](#), [A078](#), [A079](#), [A083](#), S011, S012, [S014](#), S016, Q017, Q018, Q023

### 1.4 Religious changes

Rio de Janeiro, 1997-2012, Pontifical University of Rio de Janeiro, PUC-Rio

Since the early 1980s, the results of the population census conducted in 2000 by the Brazilian Institute of Geography and Statistics (IBGE) show a strong trend of Brazilian society to the diversification of religious affiliations and, consecutively, the gradual decline of the proportion of Catholics in the total population.

The rise of Pentecostalism is the dominant fact of the religious diversification that has characterized Brazil since the 1980s. This evolution, of an increased visibility by the often extroverted nature of the liturgy, or the publicity made by certain churches or sects, troubles many Brazilians, either that they see it as a form of deviation from the "traditional" religion., Roman Catholic, either they are concerned about the framing of disadvantaged populations by what they consider a form of "spiritual populism" capable of luring the masses in favour of more than dubious solutions to problems - acute - which Brazilian society must always face: poverty, violence, lack of respect for human rights, etc.

Because of the extreme fragmentation of the Pentecostal "sociabilities", it is difficult to have an exhaustive view of all the churches. The 2000 census distinguishes 15 different Pentecostal Churches, which appears incomplete, knowing that in Rio de Janeiro alone,

their number is estimated at about thirty..." Churches close to the traditions of the Reformation (Lutheran, Presbyterian, Methodist, etc.). On the other pole, there are Pentecostal societies carrying endogenous religious traditions, such as the IURD (Igreja Universal do Reino de Deus, Universal Church of the Kingdom of God). Between these two poles an infinity of charismatic religious movements".

Questionnaire 2 of the demographic census includes a question on religious affiliations throughout Brazil. It is in fact a survey conducted at a variable rate (of the order of 10 to 15% of the population), and includes a large number of questions relating to population and housing that are not addressed in the main questionnaire (no.1) to which the entire population must respond. Thanks to the links forged by the PUC-Rio with the IBGE which carries out the censuses (the last one is that of 2000), we had access to the individual responses of the survey (made anonymous), that is to say about 20 million sheets (called microdados, micro-data).

The results of this research, presented in *l'Atlas da filiação religiosa e indicadores sociais no Brasil* (Atlas of Religions and Social Indicators in Brazil) published in 2003 in Brazil, show that the erosion of the Catholic Church results from movements of greater or lesser amplitude according to the regions.



It must then be noted that the "preferential option for the poor" resulting from the Theology of Liberation has not achieved the desired results, as have the "fraternity campaigns" intended to mobilize Catholic action around a unifying theme.

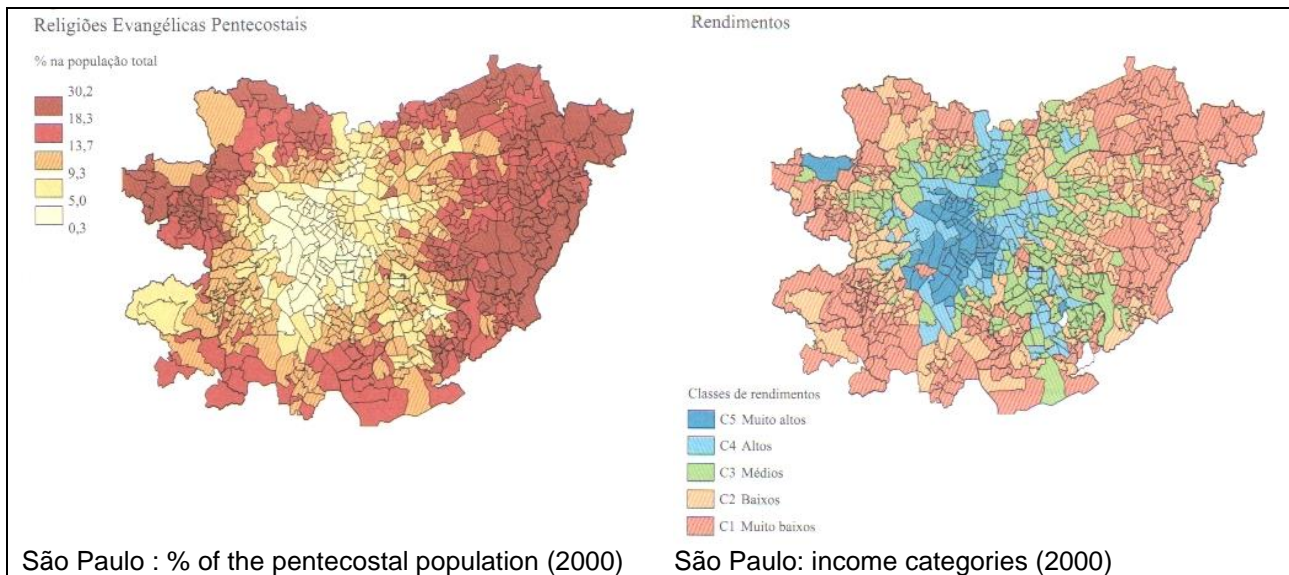
While the Catholic hierarchy exposed its divisions (we remember the controversies about the activities of the Pastoral Commission of the Earth, CPT, accused in 1989 of financing the purchase of weapons for landless peasants), the Pentecostal networks have given themselves the means of their development, including infiltrating the political and media spheres.

The identification of its areas of strength and weakness in the country makes it possible to advance the hypothesis according to which the Catholic Church adapts poorly to the recompositions in progress on the national territory, in particular in its two main forms: integration of pioneering fringes and urbanization.

On the evening of the first round of the presidential election of 2002, we received confirmation of what we foresaw: the interpenetration of our two research themes (elections, religions) in a national territory where divergent regional developments were asserted, thanks to a more or less tight control of the territory favoring here the strengthening of more or less reactionary communities, and there the emergence of a new spirit "citizen".

In view of the interest aroused by this first work, the geographical analysis of religious changes was continued by changing the scale. We know that the "territorial turbulence" in Brazil mainly characterizes the pioneering fronts and the major cities. Thus, it seemed relevant to focus attention on the metropolises, knowing that it is mainly there that the conquest of new faithful develops by the most active Churches (this also happens on the pioneer fronts and in the Amazon, but this is another story...). Extensive mapping has been done on the census areas (AREAP) of 19 of the 26 capital cities of Brazil: Sao Paulo, Rio de Janeiro, Belo Horizonte, Porto Alegre, Salvador, Recife, Fortaleza, Curitiba, Brasilia, Belém, Goiânia, Manaus, Vitoria, Sao Luis, Macéio, Teresina, Natal, Campo Grande et Florianópolis.

For each of these agglomerations, religious groups were mapped at a detailed level of the nomenclature of religions (about forty modalities), including people without religion.



Beyond the singular character of each metropolis, linked in particular to their history, this allowed to identify several recurring spatial organizations, among which: the peripheral location of the Pentecostals, the dual location in the centre and the extreme periphery of people without religion, the exclusive presence of Catholics in the central spaces, the grouping of traditional Protestants in only a few neighbourhoods...

This research was not limited to the location of religious groups in the city, which in itself was already somewhat new in Brazil. Thanks to an original computer system, religious affiliation was crossed with a series of socio-demographic characteristics such as:

income level, education level, occupation status, skin colour, seniority in the place of residence... Thus it has been possible to map certain modalities of the kind "Pentecostal with very low income", or even "traditional Protestant according to the level of education", etc. These results were published in 2006 in Brazil in the form of a book entitled *Religião e sociedade em capitais brasileiras* (Religion and society in Brazilian capitals).

Références bibliographiques (cliquer sur un lien pour télécharger le document) : [L015](#), [L016](#), [C019](#), [L021](#), [A042](#), [A052](#), [A058](#), [A060](#), [A062](#), A069, S013, Q020, Q021

## 1.5. Territory and health

IRD, 1998-2012

The research object "health", beyond or alongside its strictly medical dimension, presents an interesting heuristic character for the understanding of the social, cultural, economic and territorial mechanisms on which the organization of human groups is based. Public health research in Brazil too often ignores geography. However, the recompositions of the Brazilian territory are accompanied by intermingling of populations whose scale is likely to promote the emergence of new health problems that it is important to identify and monitor in time and space.

Sources of population health information are abundant: the Ministry of Health's information system consists of a set of subsystems related to a particular area of the Ministry's activity. The Mortality Information System (SIM), established in 1975, registers causes of death based on the International Classification of Diseases; the Live Birth Information System (SINASC) Since 1990 has provided information on children born alive, with data on pregnancy, childbirth and characteristics of the child at birth; the hospital information system of the Single Health System (HIS/SUS) was designed to ensure payment of hospitalizations by the Single Health System. The data recorded in these subsystems are individual and describe respectively the deceased person, the newborn, the hospitalized person. Other sources provide valuable additional information on, for example, healthcare facilities and equipment.

An important phase of the research work is to develop data at different scales (national territory, large regions, metropolitan areas, etc.) by tabulating from individual records (several million each year). In a second phase, health data is cross-referenced with socio-economic data that can help explain the observed geographical distributions. This stage of the research assumes that we make a minimum of assumptions about the causes of the emergence and diffusion of public health problems), causes of an epidemiological nature of course, but also of a geographical nature. In this analysis, no aspect can escape : mortality and morbidity of course, but also deployment of the care system in response to new challenges. Three issues related to public health in Brazil have been developed; they concern the areas of influence of hospitals, the causes of mortality, and the abusive practice of cesarean cut.



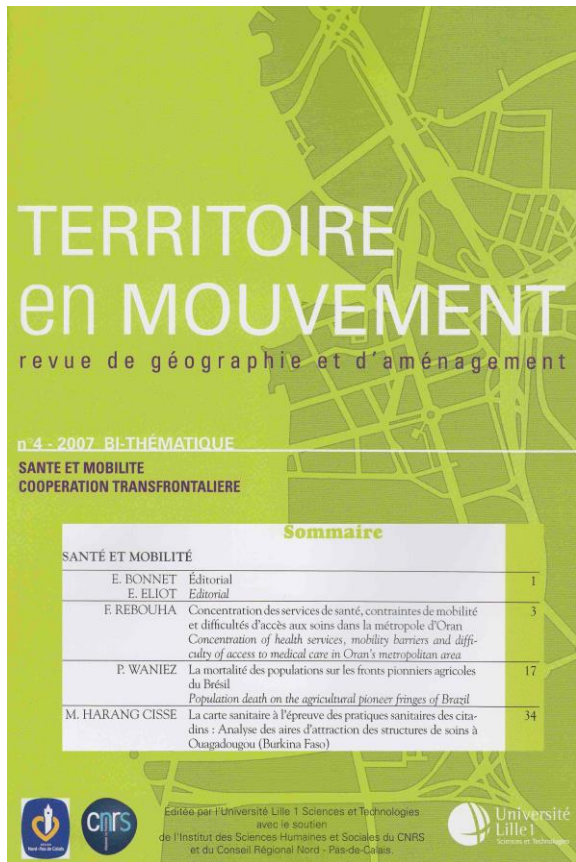
By studying the areas of influence of hospitals, we tried to answer two questions, one strictly geographical aimed to clarify the links between hospital function and urban system, the other, more methodological in nature, sought to evaluate Huff's gravitational model to model the areas of urban influences. The first question was whether the geographical origin of people hospitalized in a place is consistent with the principles of space sharing outlined by the central place theory; in other words, the hospital function contributes to structure the territories as is the case for businesses and services.

The mapping of the number of hospitalized people according to their place of residence showed a close correlation between the number and the cost of hospitalizations, and all eight levels of the urban hierarchy identified by the survey on the regions of influence of cities conducted every 10 years by IBGE.

To answer the second question, I tested Huff's gravitational model on two different scales: Brazil as a whole, and the state of Minas Gerais. For these two scales, there are relatively small differences between the influence areas observed using the hospitalization file and the model results. Moreover, by locally modifying the roughness factor of the terrain (exponent of the gravitational model), the estimation of the limits of influence of the main central locations is further improved.

All the results converge towards the same conclusion : hospital equipment plays a role in structuring the geographical space by contributing to the attractive potential of urban centres, without significant difference with the other centrality factors, and this regardless of the position of the centers on the scale of the centrality levels.

In some poor regions, there is an accumulation of pathologies, some related to the contemporary way of life, others to poor sanitation conditions that reflect what epidemiologists call the double burden ", in other words, the accumulation of the causes of mortality pre and post epidemiological transition, in populations segregated on the socio-economic level. This makes policy choices in public health policy more complex.



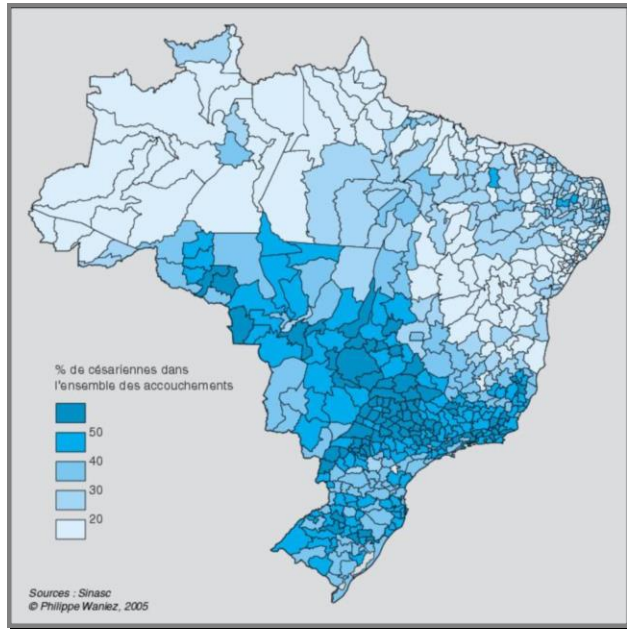
The analysis of causes of death leads to the definition of a "modern country mortality syndrome" consisting of conditions related to stress, unbalanced diet, pollution, car accidents and promiscuity.

The mapping of this syndrome revealed by factor analysis, reflects the existence of a national scale gradient, with a maximum mortality in the vicinity of major cities, and which opposes the rich but poorly developed Brazil of the Southeast, Brazil traditional and poor of the NorthEast and the Amazon.

Other causes of mortality have a different geography. This includes homicides, intestinal infectious diseases, vector diseases and perinatal mortality.

« Brazil is the world champion of caesarean cuts ». Un tel exploit souligne l'existence d'un grave problème de santé publique qui peut être considéré d'un point de vue géographique.

After a critical examination of the sources of information relating to births, the main factors likely to explain this drift were specified: level of development, emergence of family planning and link with female sterilization, tensions on the healthcare system, especially in cities, the role of private medicine. This research leads to underline the importance of regional differences for the definition of a policy that would seek to stop such excesses.



% of Cesarean cuts in all births in Brazil, in 2000

While the increase in the share of caesarean cuts in all deliveries is a global phenomenon, it concerns nearly 40% of births in Brazil, nearly three times the maximum proportion recommended by the WHO.

This abusive practice appears endemic in nature because, installed in all regions of the country for several years, although in a contrasting way, it weighs heavily on the finances of social security.

Bibliographical references (click on a link to download the document) : [C006](#), [A036](#), [A045](#), [A050](#), [A056](#), [A072](#), [A074](#)

### 1.6. The System for the Analysis of Brazilian Municipalities, Samba 2000

Rio de Janeiro, 1995-1998, Brazilian Institute of Geography and Statistics, IBGE

A first version of this system had been made, since 1993 on heavy computer resources. His main interest lay in the collection of numerous sources of economic and social data published by the Brazilian Institute of Geography and Statistics, IBGE, at the finest level accessible at the time, the *municípios*.

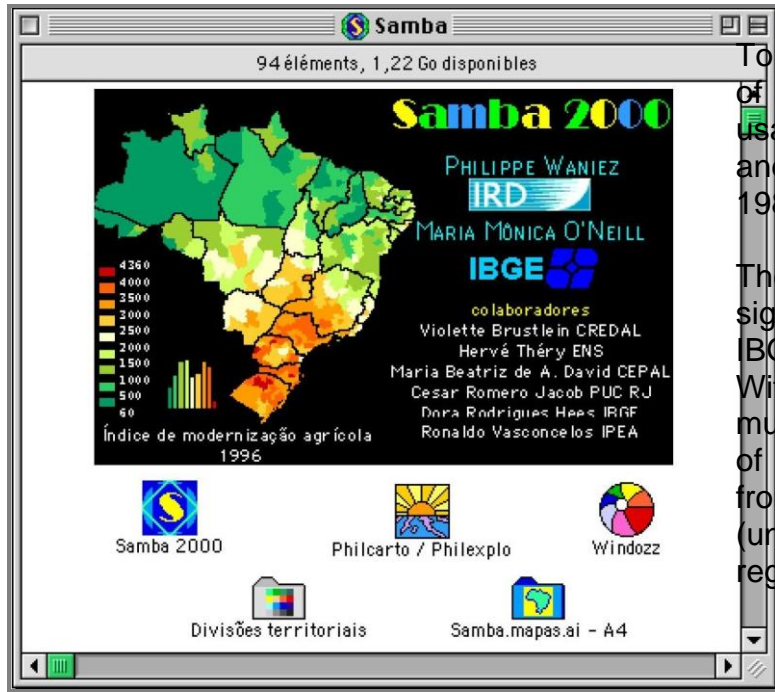
It is particularly in the perspective of a development of this system for research purposes in geography that IBGE has signed an agreement with ORSTOM. In 1995-1996, the software was completely rewritten to run on Apple Macintosh microcomputer.

Many recent data have been added: agropastoral surveys, demographic censuses, election results... Samba 2000 covers all of Brazil's 5,500 *municípios*, while allowing regional extractions.

It is organized into three levels:

- Level 1 (6,000 variables) is the standard database distributed outside IBGE;
- Level 2 (2,000 variables) contains data collected by the Institute for Applied Economic Research, IPEA and prepared by me; this level contains information on the municipal budgets from 1989 to 1993 as well as historical data;
- level 3 (1,500 variables) is the result of ongoing research; this includes electoral results since the early 1990s, and data on religions (tables made by me using individual data

from the 1991 and 2000 census).



To these data is added a collection of digitized base maps, directly usable with the Philcarto software and corresponding to five years: 1985, 1991, 1993, 1997, 2002.

The Samba 2000 system was a significant step forward from what IBGE was able to offer in the 1990s. Witness to this progress, the multiplication of requests for supply of the system (software and data) from many Brazilian organizations (universities, research centers, regional planning agencies).

In 2001, with the expiry of the IBGE agreement, the system ceased to exist officially. Due to the rights attached to statistical sources, distribution to interested organisations and researchers has ceased. On another level, IBGE has significantly improved the dissemination of the data it produces via the Internet, and it is normal for these bodies to address the official Brazilian data producer directly.

In 2005, a new version of the software governing Samba 2000 was produced to make it operational on databases other than Brazilian. Called Phidata, this software for Windows, performs the operations of management, extraction and joining of data from different files and aggregation according to different geographical levels. A full-scale test on the municipalities of the Aquitaine Region (France) was conducted in 2006, and corrected some detail imperfections.

Bibliographical references (click on a link to download the document) : [L014](#), [A008](#), [A030](#), [A037](#), [A039](#), [A053](#), Q022

## 2. Research on Bolivia

### 2.1. Population and living conditions in the Department of La Paz, Bolivia

La Paz, 1993, Universidad Mayor San Andrés, CordePaz

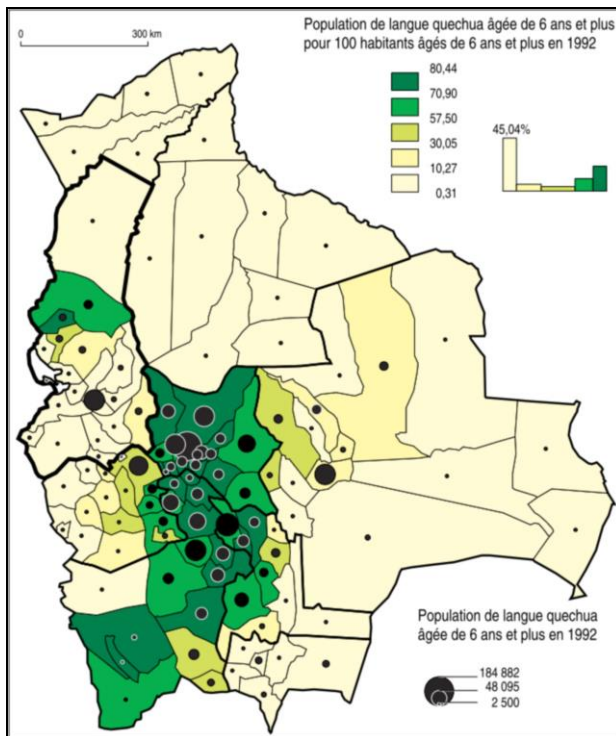
Due to the interest presented by the data from the census of the population of Bolivia (carried out by the National Institute of Statistics, INE), ORSTOM and the University Mayor San Andrés, UMSA (UMSA), of La Paz took the initiative to produce an economic and social atlas of the Department of La Paz. The data were provided by INE, through cross-agreements UMSA-INE and UMSA-CordePaz, the latter body ensuring the coordination of the whole, as departmental responsible for regional planning.

This operation was, from the outset, conceived as a test intended to answer the question : what could we expect from a fine mapping of Bolivian censal data ? The first problem encountered was that of the map base. Curiously, the INE distributed statistics corresponding to fairly fine geographical levels (several hundred cantons in the department of La Paz alone), but the map of the boundaries of the censal units was not available. A slow and patient archival work made it possible to reconstruct this cartographic base.

Bibliographical references (click on a link to download the document) : [L022](#)

### 2.2. Atlas National de Bolivie

La Paz, 1993, Universidad Mayor San Andrés, CordePaz



The results of the test carried out previously on the only Department of La Paz having satisfied the Bolivian authorities, the Military Geographical Institute, IGM, has signed an agreement with ORSTOM to translate into maps the spatial structuring of this "archipelago-country".

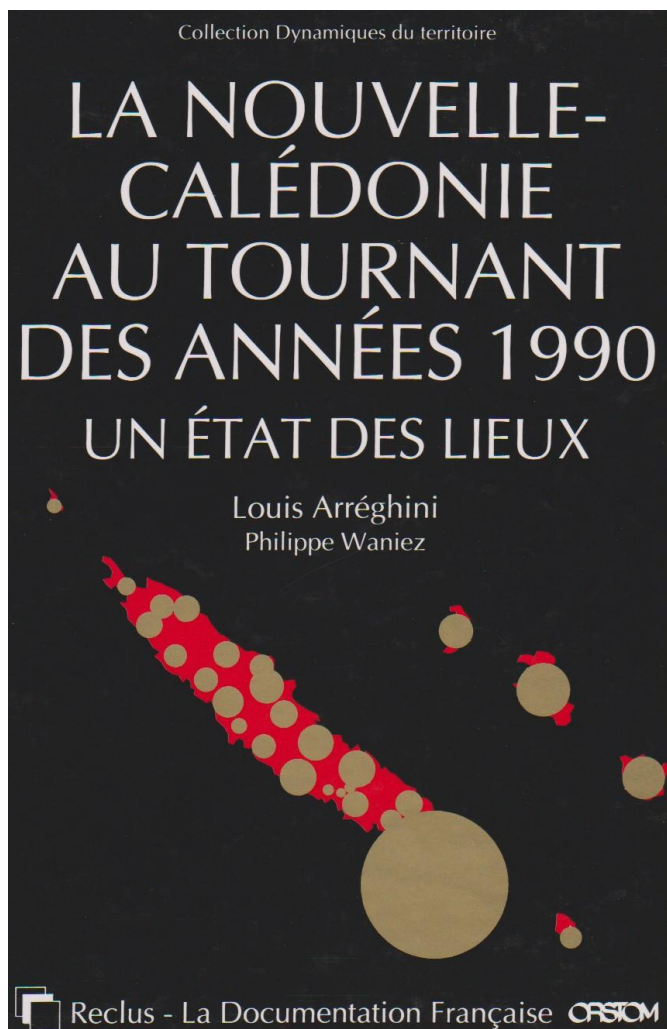
The main maps produced during this operation are part of the National Atlas of Bolivia that the IGM published in 1998.

Bibliographical references (click on a link to download the document) : C013, [A031](#)

### 3. Towards territorial rebalancing in New Caledonia

Nouméa, 1989-1992, Laboratory of Regional Analysis and Synthesis ASR-ORSTOM

Following the Matignon Agreements (1988) concluded between an independence delegation led by Jean-Marie Tjibaou and an anti-independence delegation led by Jacques Lafleur, under the aegis of the French government of Michel Rocard, ORSTOM participation was required. The aim was to conduct an analysis aimed at clarifying how the concept of "imbalance" was manifested, to which the kanaks often appealed in their political demands, and to show how these imbalances also had a territorial component. This project was part of the work of the Laboratory of Regional Analysis and Synthesis, ASR, whose main objective was to combine training and research, especially for local peoples.



The analysis of the most recent statistical data (agricultural and demographic censuses) and the use of administrative files or surveys allowed a detailed mapping to assess the spatial variation of indicators relating to demography, employment and economic activities, politics, living conditions and culture.

This resulted in an overall assessment of this territory placed in a complex and changing geopolitical situation.

The main result of this research is a book published by La Documentation Française, entitled *La Nouvelle-Calédonie au tournant des années 1990, un état des lieux*.

Bibliographical references (click on a link to download the document) : [L011](#), [C012](#), [A015](#), [A018](#)

## 4. Income tax and Territory in France

Bordeaux, 2011-2014

By a short text of great richness, the sociologist Marc Leroy, proposes to the readers of a collective work published in 2007 to discover what he calls "fiscal sociology", that is to say "the study of the relationship between taxation, the State (and other communities) and society". A geographer can reformulate part of this text in his own way to propose a "tax geography" that seeks to understand the relationships between taxation, local authorities and socio-spatial dynamics.

Public fiscal policy depends on other public policies ; this is one of its originality. The main functions attributed to the tax are to distribute resources to produce collective goods, to redistribute wealth in order to establish a certain equity between the strata of society, to regulate the economy through direct or indirect interventions. This approach, which can be described as functional, appears insufficient, mainly for two reasons : on the one hand, the complexity of the tax system blurs its basic functions: For example, the logic of resource allocation is now competing with other sources of financing such as borrowing. On the other hand, economic, social, cultural and territorial particularities instrumentalize the tax; the fairness and coherence of the tax structure are relegated to the background, in favor of adjustments of any kind, including territorial, often on the basis of political compromises.

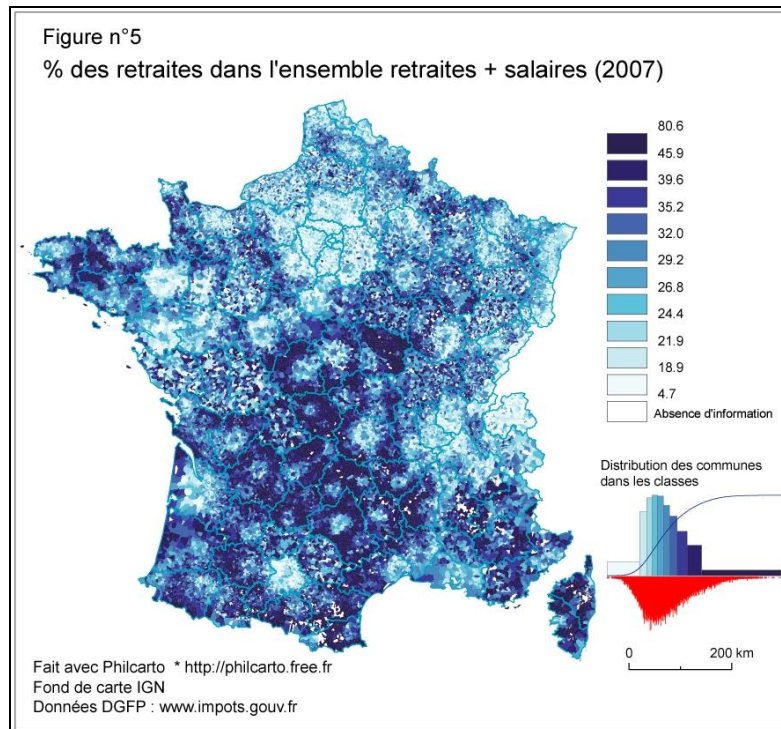
An angle of attack to question the fiscal/territorial relationship consists in showing the spatial inequalities of the levels of taxation, to put them in relation to the characteristics of the territories concerned and to evaluate the consequences on the economic and social level. In this perspective, local direct taxation has a stimulating research potential. These are mainly the four local taxes : housing tax, business tax, property taxes on built and undeveloped properties. Concerning these taxes, we know that those relating to housing are disconnected from the real estate market, the cadastral rental values being those of the 1970s. For its part, the business tax is repeatedly denounced for its anti-economic nature which leads to the taxation of business investments instead of encouraging them.

If such flaws are maintained, it is because decentralization ignores tax reform. Although the transfer of financial allocations goes hand in hand with the transfer of responsibilities and charges, local authorities remain dependent on the State to compensate for the facilities it grants, for example to establish "territorial equity" which translates into tax advantages granted to the so-called disadvantaged territories (marginalized rural areas, regions in crisis, inner cities, etc.). On another level, decentralization is often accompanied by an increase in local government spending, which is a risk of aggravating territorial inequalities. To maintain their effective financial autonomy, the local authorities (which do not have the right to create, modify or abolish a tax) defend tooth and nail their right to fix the ratios (tax rates) and use them widely.

Based on these general reflections, the idea for this project was born. Its primary objective is to understand, in terms of direct local taxation, the diversity of French

municipalities, and this with regard to the various local authorities to which they belong (municipalities, groups of municipalities, departments, regions, etc.).

Two main elements must be taken into account: tax rates and income from taxes (amounts collected). The period considered, 2003-2009, saw the regional (2004), presidential and legislative (2007), and municipal elections in 2008. To the extent that local taxation is influenced by financial relations between the State and local authorities, this period presents significant political changes (massive vote on the left in 2004, victory of the right in 2007, a hundred major cities that switch to the left in 2008).



In summary, it is a question of conducting an analysis in time and space of the facts of local taxation to be translated, in fine, by a typology of French municipalities. This step will lead to the realization of an Atlas of local direct taxation, at different scales (including national and regional) presenting to elected officials the geography of the choices they have made. The data to be mobilized are those of the Census of Elements of Local Direct Taxation (REI) by municipality that the Directorate General of Public Finance (DGFIP) makes available to users.

The second objective is to place the typology previously constructed in different contexts which are assumed to have an explanatory power to verify and measure the differences between types. These contexts are multiple and must themselves be the subject of prior analysis.

First of all, does taking into account the balances and political orientations of the different local authorities to which the municipalities belong make it possible to identify politically oriented local taxation? If so, which taxes appear to be the most "sensitive" and decisive and for which type of community? The data available to the Ministry of the Interior, including the Mayor's label and the composition of the City Council are a means of supporting this kind of demonstration.

Secondly, the results of the population census that INSEE published in the autumn of 2009 are obviously of considerable interest and are timely to appreciate the importance of the demographic context.



Indeed, the nature, intensity and direction of population growth are elements of pressure on local authorities that condition their financial needs and perhaps explain the variation in quotities over time. The census also provides information on the social stratification of the population ; this should make it possible to specify to what extent "the rich pay little in the rich communes, and the poor pay much in the poor communes" as is often heard; is this a general fact, or the overgeneralization of a few occasional observations.

The census also deals with the characteristics of dwellings (comfort, years of construction, etc.) that must be linked to the housing tax and the property tax of built properties.

Finally, an essential context is that of the economic situation seen by the activities. A question that arises is that of the confirmation of the existence of a fiscal dumping practiced by certain municipalities to attract companies. The study of the differentials of the returns of the professional tax from one commune to another is a means of apprehending this kind of strategy; the measures of unemployment also. The question of municipalities without a company and unable to meet their expenses for lack of a professional tax cannot be avoided. One way to address this issue is to report the performance of all taxes to the population and jobs concerned.

The questions raised in this project find their legitimacy both in the blocking of the reform of local taxation in France, and in the necessary overhaul of the local, national and community organization (of the European Union) on the basis of a new distribution of tax power. The subject is of importance; it concerns 75 billion euros, or 58% of the resources of local authorities. In these conditions, we can question the almost non-existence of geographers on this front. A query concerning the central file of theses carried out on 09/01/2009, with the only keyword "tax" returns 75 thesis projects, none of which is registered in geography. With the term "taxation", the result is hardly more brilliant : a single occurrence in geography on 493 subjects of thesis in progress. Should we see in this the fact that tax specialists abandon the analysis of tax statistics from the perspective of the territory, or that geographers would not be qualified to deal with these things?

Bibliographical references (click on a link to download the document) : C022, [A075](#)

## **5. Analysis of geographic data and mapping**

### **5.1. Mapping and geographic information systems**

Long-term research since the 1980s

Cartography is not only the best tool of expressing spatialized phenomena, it has acquired the status of a research method in its own right, to the point that it can be said that there is "no geographical study without dialectical use of cartography". In 1993, after an evaluation of the market supply of "cartomatic" software (thematic mapping of statistical data), and after having stressed the need for a simple-to-use system, sufficiently complete, compatible with leading computer graphics software, Cabral 1500

for Macintosh was born. This software was released by GIP RECLUS.

In 1998 was engaged the design of the successor of Cabral 1500 called Philcarto. In a first step, the graphic procedures were completely rewritten to improve the velocity. In a second step, the migration of Philcarto from the Macintosh to the Windows PC was carried out, and all development for Macintosh was interrupted due to the release of Mac OS X which required the total overhaul of the software. The next steps were to develop exploratory and interactive data analysis, add a multivariate analysis module, and then a gravitational modeling module. Finally, the interface has been completely redesigned.



With Philcarto 5.6 for Windows, the software is very mature. It is used by geography students from many French universities, as well as in secondary education; it is used by dozens of researchers, in geography, but also in political science, planning and urbanism, sociology, political science... The other users are mainly located in French-speaking European countries (Belgium, Switzerland, Luxembourg), Romania, Africa (Senegal, Morocco, Algeria, Tunisia)... Brazil is the second user outside of France.

The documentation, of more than 200 pages, is available in French and English. The software works in French, English, Spanish Portuguese, German, Italian, Chinese and Vietnamese. Philcarto can be downloaded from the website: <http://philcarto.free.fr> The development of the software has continued well beyond the professional activity of the author (who retired in October 2017). The latest version is dated 2023.H and is dated August 17, 2023. The software for Windows has evolved a lot both in terms of performance and functionality. The schedulable graphical matrix (also called "Bertin matrix") is now available and can be used in conjunction with other multivariate analysis methods (factor analyses and automatic classification).

Bibliographical references (click on a link to download the document) : [L000a](#), [L002](#), [L005](#), [L007](#), [L009](#), [L012](#), [L013](#), [L018](#), [C010](#), [A005](#), [A019](#), [A024](#), [A025](#), [A026](#), [A027](#), [A032](#), [A054](#), [A077](#), [A084](#), [S001](#), [S002](#), [S003](#), [S004](#), [S005](#), [S006](#), [S007](#), [S008](#), [S009](#), [Q002](#), [Q007](#), [Q010](#), [Q014](#), [Q016](#), [Q024](#)

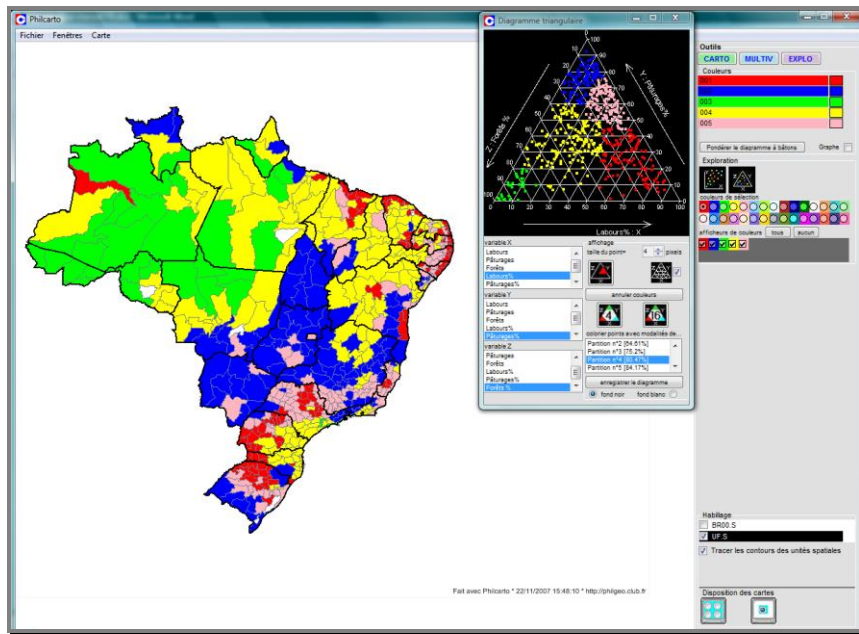
## 5.2. The processing of spatial data

Long-term research since the 1990s

« Once posed at the theoretical level and situated in its historical perspective, a geographical problem is first of all a spatial information problem ». In his research practice, the geographer uses many data sources, digital, of course, but also textual and iconographic. The field of digital data is itself extremely extensive: censuses, field surveys with or without sampling, activity directories, accounting documents, and even satellite images. The consideration of one or other data source naturally depends on the objectives of the study, but its "good" consideration is also linked to the use of appropriate analytical techniques. Indeed, the analysis of spatial data poses many specific problems compared to the processing of data that are not. For example, elementary spatial units are aggregates of observations on which there is generally no indication of internal variance; distributions are often inadequate to the assumptions underlying usual methods; spatial autocorrelation must be considered as most methods require independent observations to produce valid results.

The geographer, frequently confronted with these particular cases, expressions of physical or historical contingencies, must of course not ignore them on the pretext that they "enter badly into the technique of analysis". The Exploratory Analysis of Data (AED) is a methodological solution because it establishes a real interactivity of the analyst with his data and allows to avoid conclusions taken hastily, too mechanical, sometimes leading to deny the evidence, or worse, to impose absurd conclusions on the basis of a test ill-suited to the questions to which it is supposed to provide an answer.

The EDA method imagined by J.-W. Tukey in the years 1960-70 has only developed recently, since computers have enough power to display dynamic graphical representations, that is to say responding in real time to the actions of the analyst. The EDA consists in examining the data from various angles, numerical of course, but especially with the help of specific graphs (such as the box diagram and whiskers, or the spinning top...) on which the researcher acts using special selection tools (knife, lasso, etc.) to identify trends or groups.



These actions are reflected on the other graphs, which makes it possible to judge their interest.

**Philippe Waniez's** contribution to the AED field consisted in adding graphic windows (bivariate, triangular diagram, etc.) to the Philcarto "map" window, which interact with the map according to the user's actions.

Bibliographical references (click on a link to download the document) : [L001](#), [L003](#), [L006](#), [L008](#), [L017](#), [C001](#), [C004](#), [C008](#), [A011](#), [A016](#), [A017](#), [A022](#), [A025](#), [A026](#), [A029](#), [A081](#), Q001, Q011, Q012, Q013

## 6. Other research

**6.1.** Within the framework of the association Lusotopie whose journal of the same name published several of my works on Brazil, a social and cultural atlas of Mozambique was realized (click on the link to download the document) [A061](#)

**6.2.** For the 70th anniversary of the Land Rhineland-Westphalia in Germany, a multi-scale atlas was produced (click on the link to download the document) [L024](#)

**6.3.** Although the chance of my research career led me to South America, I also did some work on metropolitan and overseas France (click on a link to download the document) [A000](#), A001, A002, [A003](#), [A080](#)

**6.4.** For the record, the results of a student research in sociology of local life carried out in the Federal Republic of Germany (click on the link to download the document) [L000b](#)

## 7. Evaluation of research and research leadership

I was elected to the Scientific Commission for Social Sciences of ORSTOM in 1993 and re-elected for a second term in 1997. In this context, I had to evaluate the work of many geographers, either during their "current evaluation" or for their "evaluation for career advancement". I also participated in the recruitment jury of several CR2, especially in regional geography of Andean America and natural hazards in urban areas. I was also a member of two recruitment boards for engineers in cartography and geographic data analysis.

In terms of research leadership, I collaborated in the establishment of the meeting of geographers of the ORSTOM of 1995 which was held in Montpellier on 11 and 12 September 1995 on the theme : atlas for development within cooperation. Elected the same year to the Scientific Council of the ORSTOM, I participated in the evaluation of all aspects of the reforms underway in this Institute, in particular by evaluating the Major Programs "Private, public: operators and interactions", and "The economic and social policies of developing countries in an interdependent world".

## B- Teaching

Since my arrival at the University of Bordeaux Segalen (Bordeaux 2, then University of Bordeaux by grouping Universities Bordeaux 1, 2, 4, the IEP of Bordeaux and three engineering schools), I have provided a complete teaching service in Bachelor MIASHS (Mathematics and Computer Science Applied to Human and Social Sciences, 1° and 2° year), in Master of Sociology, and, before the reform of medical studies, in PCEM1 and PCEM2. Probably because of the university silos in Bordeaux, I could not intervene in the geography lessons that took place in Bordeaux 3. As a result, I had to open my field of intervention widely: sociology, demography, public health, survey processing, statistics and informatics. This wide disciplinary range has brought a renewed interest in my Bordeaux location which, without it, would probably have been difficult to bear as I had to deal with management stuck in their disciplinary certainties

As an example, here is the content of 4 teaching units of the MASS license (1° and 2° year) for which the geographer that I am had to extend his "usual" field of expertise... without anyone even knowing how grateful he is.

### **1° year of MIASHS degree / semester 1 : Introduction to general sociology**

The lecture first presents the place of sociology in the human and social sciences. Then the main concepts of sociology are declined in order of complexity. Some great authors are presented (for example Marx, Weber and Bourdieu on the subject of social classes).

The directed teachings consist of the study of different sociology themes that illuminate and complement the concepts studied in class. Each session is based on an inexpensive book available in bookstores or libraries ("Repères" series of the "La Découverte Editions", or " 128 " of the "Armand Colin Editions"). The students, divided

into groups of 2 to 3 people, present a theme about a chapter of these books. Each presentation must present the essential aspects of the chapter of the work studied, define the sociological terms used, briefly present the sociologists cited. It is mandatory to use elements external to the work, for example information, images, graphics, collected on the Internet (after having checked and validated them...).

### **1° year of Sociology degree / semester 2 : Populations, societies, development**

With globalization at work, humanity is facing multiple challenges that affect, more or less, all the inhabitants of the planet :

- because they are, or risk becoming, victims ;
- because a piece of the solution is in their hands ;
- because as citizens of the world and their country, they must become aware of the future of Humanity.

During the semester several issues are addressed that it seems essential to know, at least in outline. To address these issues, one will not hesitate to borrow from other disciplines such as economics, geography, public health, etc. Each of these disciplines will bring elements of knowledge and understanding of the demographic reality of the planet. Each of the selected themes will be considered from an international perspective.

These themes include :

- ✓ Population and international migration
- ✓ Population and food ;
- ✓ Population and health ;
- ✓ Population and development ;
- ✓ Population and urbanization ;
- ✓ Population and environment.

### **2° year of MIASHS degree / semester 1: Surveys and surveys in the social sciences**

The lecture course presents the methodology of data collection in the social sciences. The various investigation techniques are then specified. The importance of population censuses as a sampling frame is discussed, followed by the main survey methods. Finally, the various aspects of standardised questionnaire surveys are the subject of a detailed study.

- ✓ Methodological benchmarks
- ✓ SAS Software Overview
- ✓ The different types of surveys
- ✓ Population and housing censuses
- ✓ Polls
- ✓ Questionnaire surveys

The guided courses have two objectives: 1. Familiarize students with the processing of socio-economic surveys: data available on the Internet, access to databases, development of tables, basic statistical methods, graphical and cartographic representations. 2. Practice programming one of the main software used to process large surveys: the Statistical Analysis System (SAS). Knowledge of this software is useful both for further studies (master...) and in professional life.

## **2° year of MIASHS licence / semester 2: Companies, territories and health**

This Teaching Unit aims to raise awareness of the importance of the territorial dimension in a large number of social facts (urbanization, environment) while emphasizing the health/ territory issue. Some central themes are addressed :

- ✓ Delimitation of the scientific field society/health/territory : population and health, environment and health, health infrastructure.
- ✓ Data collection : health and demographic data, administrative and geographical networks.
- ✓ Methods and techniques for the analysis of territorial structures.
- ✓ Study of mortality in France : registration of deaths, general mortality, causes of death, socio-spatial combination of risk factors.
- ✓ Living conditions and risky behaviour.
- ✓ Urban network and health basins.