
A shared interest in GIS as a pedagogical tool catalyzed a collaboration between the French section of the Department of Modern Languages and Literatures and the Department of Sociology and Anthropology at Fairfield University. To prepare for this collaboration, foreign language faculty attended summer seminars in GIS for four to five days. In addition, they read classical American sociological works, including essays from the Chicago School of Urban Studies.

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Foreign language and sociology: Exploring French society and culture

Joel Goldfield and Kurt Schlichting

Language, literature, sociology, anthropology, geography, and demography are natural allies for understanding a foreign country and its culture. Sociological information can illuminate the locations and characteristics of a culture's people and places. However, it is rare for language and literature courses to incorporate sociological elements at the undergraduate level. This chapter describes two projects that use GIS to study the population, culture, and landmarks of France. Both projects emerged from a collaboration between the Department of Modern Languages and Literatures and the Sociology Department at Fairfield University.

In the first project, GIS provided a convenient user interface for interactive maps. Students are not normally attuned to the locations of people they read about in textbooks, newspaper articles, or novels, or of the characters they see in films. In the virtual world of GIS, students can rove the country, accessing multimedia illustrations of French cities and French people, building geographical awareness. The multimedia provides authentic sounds and images with the potential of engaging students more deeply than text alone. The GIS navigation tools allow self-directed exploration, which is more involving than passively watching images or video.

The second GIS project teamed students of intermediate French with sociology students to investigate census data and population patterns around Paris. They used the Internet to search for maps and census data, located and utilized information published by the French government, and used GIS to create maps to analyze their hypotheses.

These collaborations exemplify the goal of a program called Foreign Language study Across the Curriculum (FLAC). Beginning in the 1980s, private and federal grant initiatives encouraged schools in the United States to embed foreign language experiences in a wide range of courses.

Grants promoted language acquisition through the study of literature and culture within many academic disciplines. Language and cultural studies have meshed particularly well with the social sciences, as both pursue a deeper understanding of humans and the world around them. Fairfield University’s International Studies/Language Technology Initiative¹ is the first FLAC initiative combining GIS, sociology, and the teaching of French language and culture.

The initiative’s efforts can be divided into four categories:

- Application of demographic and sociological theory to other fields
- Cross-disciplinary team building and problem solving
- Development of digitized maps for understanding culturally relevant, demographic data
- Development of new GIS-based applications for language acquisition, geographical knowledge, and the integration of relevant multimedia content

Faculty from the Modern Languages and Literatures, Sociology, Anthropology, and other departments created several projects in pursuit of these goals, two of which we describe here.

Accessing multimedia resources through a map

The first project, a multimedia map, was suggested when Fairfield’s French faculty attended GIS training. One faculty member observed a strong parallel between the powerful navigation capability of GIS and a tunneling technique pioneered stylistically by the romantic realist author Henri Beyle Stendhal in the first chapter of *Le Rouge et le Noir* (*The Red and the Black*) published in the 1830s (Stendhal 1964, pp. 33–34). Multiple times Stendhal takes us from vast to intimate spaces, from the mountain range to the town and into the factory. Using GIS, users begin with a distant view and click to approach more closely, zooming in to see ever more detail. They finally reach a point where they can encounter a particular location in significant detail.

In their first GIS exercise, students began with a map of Europe. The instructor introduced them to tools for zooming, panning, and getting information about different elements of the map. On the map they navigated around the countries of Europe, with stars marking capitals (figure 1). As they clicked on the stars, the names of cities and countries were revealed.

In their second exercise, students again began with a view of France and an introduction to the “hotlink” tool. Figure 2 shows the result when a student navigated to Paris and linked to an image. In figure 3 a student opened a picture of Montpellier, a regional capital in southern France with an esplanade and statue of the three Muses in the fountain in front of the city’s opera. Another student might begin with the map of Europe, and gradually zoom in to see France, then Paris, then a neighborhood in the thirteenth *arrondissement* (or district). From there the student could link to an image, or perhaps to a Web site that documents a phenomenon local to that neighborhood, such as a special kind of street basketball where nearly anything goes (figure 4).

The basketball video clip is familiar to some students. The intermediate French students saw this clip of street athletes during their unit on sport and the inner city in France. This engaging portrait of young French athletes provides a uniquely human look at life on the street near the La Glacière subway stop in that thirteenth district. Accessing the movie through a map presented these athletes in their geographical context. As the students zoomed in to the thirteenth *arrondissement*, they were

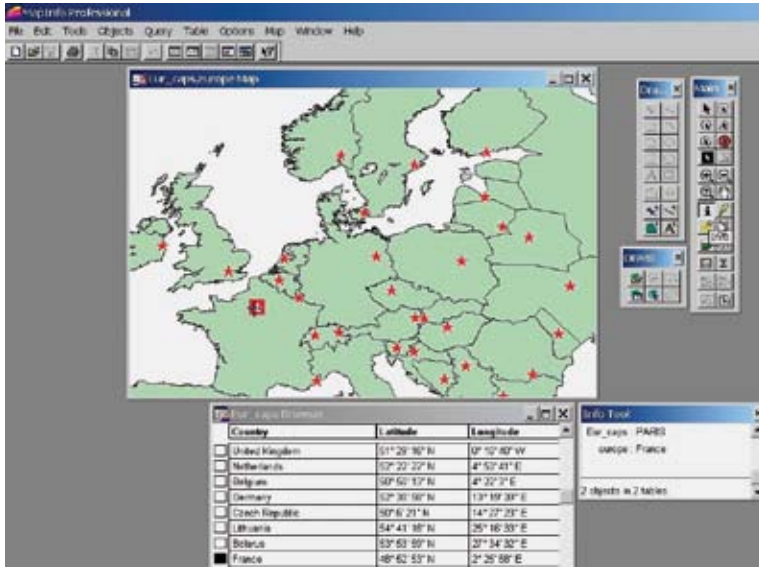


Figure 1. Map of capital cities of European nations.
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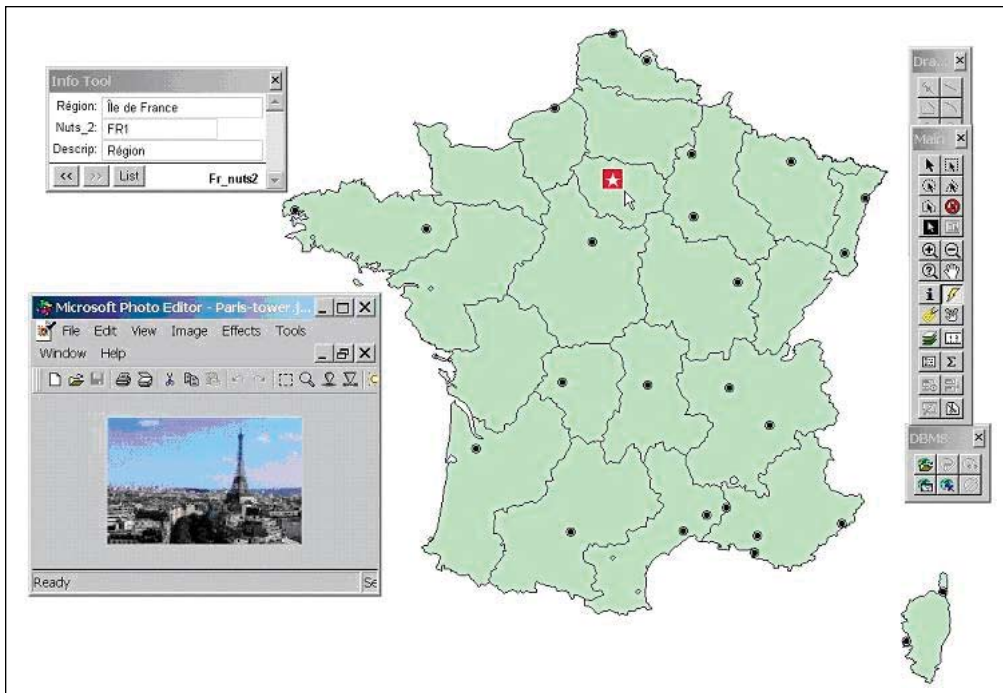


Figure 2. Map of cities in France showing Paris hotlinked to an image of its skyline featuring the Eiffel Tower.

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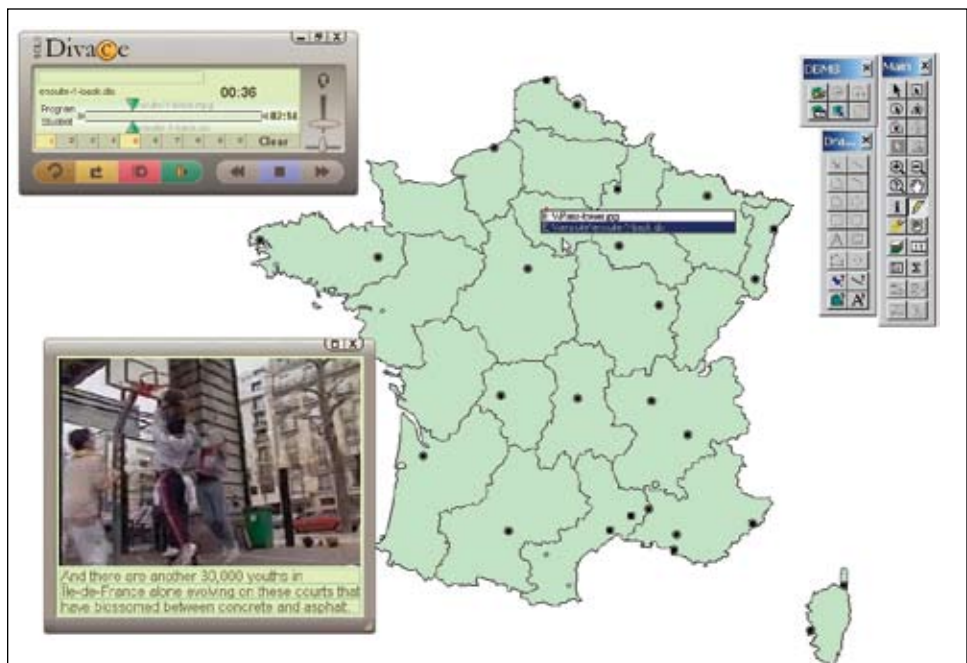
Figure 3. Map of cities in France showing Montpellier linked to its esplanade.

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Figure 4. Map of France with Paris hotlinked to a video of street basketball.

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developing an awareness of where the area was located in relation to Paris, and where Paris was located in relation to France as well as Europe.

Using the interactive map they created visual associations with places, and listened to pronunciations of geographical names. We recorded the names and linked them to locations on the map. Students could play and replay the audio as many times as they liked. Students using this map assimilated the pronunciations more accurately than in the past and were better able to recall the place-names and integrate them into conversation during classroom discussion. For example, when discussing writers and their native cities, we observed that students identified the cities on a map more easily and pronounced the French names more fluidly.

We developed this interactive multimedia map using GIS software and Divace,² a special French media player. Clips were digitized from a much longer series of episodes originally on videotape (Chantal and Hirsch 2003). The software allows an instructor to bookmark certain parts of a video and link those clips to assignments in the course syllabus. Most cities are linked to two or more multimedia resources, and students quickly learn how to select and view the options. We added English subtitles and French captions that helped students understand the native French speaker narrating the video. Captions are available for different levels of language mastery.

Interactive maps have been used successfully as early as the third-semester level (the first semester of intermediate French) as well as in electives such as French Conversation and French Translation Workshop. Language and literature faculty can design the map and the assignments to adapt to a range of proficiency levels, making them useful for multiple courses. We saw GIS maps improve students' ability to learn and to remember the locations of events and people discussed in their classes.

Learning French and sociology through collaboration

Sociological data such as census statistics contain a wealth of information about a country's population, level of education, ethnicity, national origin, median age, gender balance, professions, and other categories important to understanding a society. Maps help students visualize migration, location, and other sociological concepts much better than abstract statistics. We created a GIS project that focused on population density and created a cross-disciplinary assignment that teamed students from a French course with students from a sociology course. These teams investigated population patterns in Paris using a theory developed at the University of Chicago School of Urban Studies.

In the early twentieth century, a group of sociologists at the University of Chicago developed an important theoretical approach to the study of the city. Known as the Chicago School, Robert Park, Ernest Burgess, and others borrowed from the field of biological ecology to develop an ecological approach to studying the growth and structure of the burgeoning American city. Park and Burgess argued that cities grew organically. Burgess's concentric zone theory maintains that cities develop as a series of rings radiating outward from the downtown city center (Burgess 1925, pp. 47–62). Burgess argued that characteristic patterns of land use and population evolve within each successive concentric zone. For American cities, the outer zones are characterized by wealthier residents, less densely developed neighborhoods, and single-family, suburban-type housing. Implicit in Burgess's

concentric zone theory is the premise that population density diminishes at a uniform rate as one moves from inner to outer zones.

The goal of the collaborative GIS project was for students to test Burgess's concentric zone theory on non-American cities, using the Paris metropolitan region as a trial case. Students addressed two questions. Is the French population surrounding Paris organized into a series of concentric zones that resemble Burgess's map of the city of Chicago in the 1910s (figure 5)? Does population density decrease uniformly as the distance from the center of Paris increases?

The students' first step was to search for the information needed for the project. Teams of French language students and sociology students used the Internet to search for digitized GIS maps of the Paris metropolitan region and recent census data. They canvassed a wide range of sites to determine whether such data was available, developing general research skills and cross-cultural awareness of French Web sites and government data.

We channeled students' attention toward the Institut Géographique National (IGN, the French national mapping agency) Web site to find digitized maps of the communes (small political units) in the Paris metropolitan region (www.ign.fr). Next, students went to the Web site of INSEE (Institut National de la Statistique et des Etudes Economiques), the French census agency, to look for the 1999 census population data at the commune level (www.insee.fr). Both Web sites required

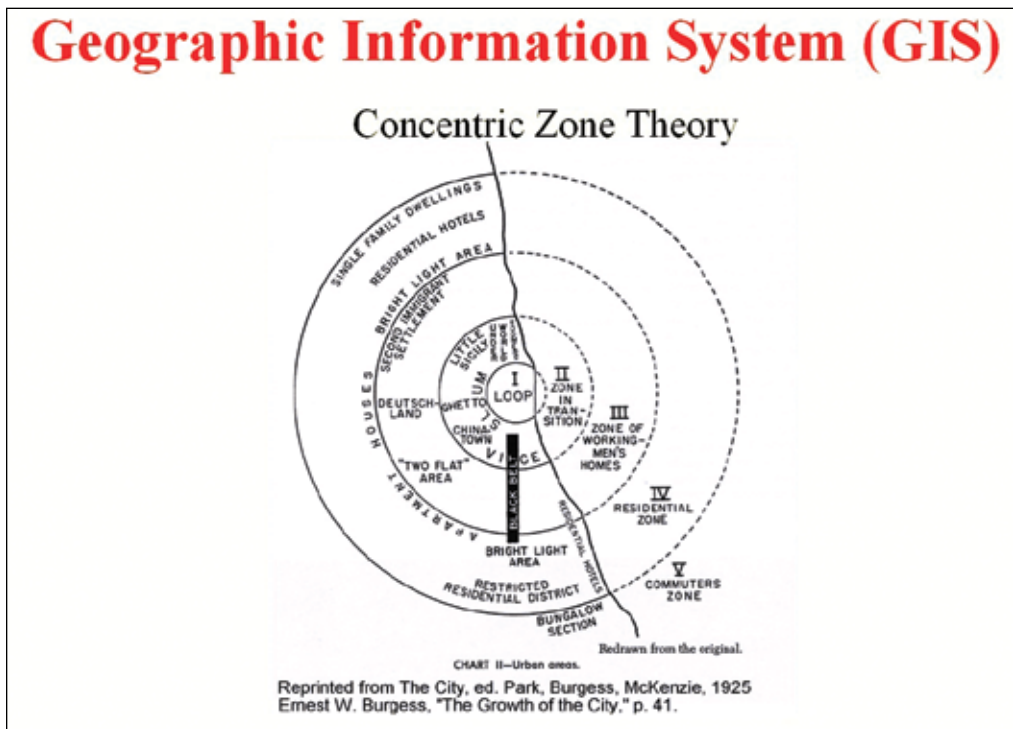


Figure 5. Diagram of the concentric zone theory by Ernest W. Burgess

Reprinted by permission from E. W. Burgess, "The Growth of the City: An Introduction to a Research Project" in *The City*, E. W. Burgess and R. D. McKenzie, eds., University of Chicago Press.

the French students to use higher-level language skills while the sociology students, trained in GIS, guided the search for the appropriate materials. The student teams determined which CD-ROM products they would order from IGN and INSEE, and determined how to place the orders, simulating international data acquisition that they may pursue in actuality in their future professional lives. Before placing the order, we delivered the happy news that the CDs had already been purchased.

With the CD-ROM from INSEE in hand, the teams were asked to identify data on population density for the communes in the Paris metropolitan region. Communes are among the smallest geographical units for which INSEE provides detailed social and demographical information. Students worked together to find the appropriate data on the CD.

INSEE provides a series of helpful windows to guide the user and detailed descriptions of the data on the disk. The French students translated the “Territoires . . . Profils” that describes the “thèmes” or topics: population, age groups, household and family constituents, employment types, any necessary commuting, education, ethnicity, housing or living conditions, and more. Each team produced a spreadsheet with 1999 census data for all communes in Paris that included total population (*Population sans double comptes 1999*) and population density (*Densité de population [hab/km²]*) (figure 6).

GEOGRAPHE	INSCATEUR	Surface en km ²	Nombre de communes (1990-19)	Nombre de décès (1990-1999)	Population sans double comptes 19	Population sans double comptes 19	Densité de population (hab/km ²)	Solde naturel (par période intercensale)
01004 - Ambriéu-en-Bugey		24.60	1,299	836	10,455	11,436	464.9	464
01033 - Bellanger-sur-Valsainte		15.25	1,464	892	11,153	10,846	711.2	572
01053 - Bourg-en-Bresse		23.86	5,248	3,120	40,972	40,666	1,704.4	2,128
01283 - Cyonnax		36.99	3,526	1,448	23,869	24,162	671.4	2,080
02168 - Châteauneuf-Thury		16.55	2,074	1,628	15,312	14,967	904.4	446
02173 - Chauny		13.28	1,639	1,135	12,926	12,523	943.0	504
02981 - Hirson		33.77	1,416	1,065	10,173	10,337	306.1	351
02400 - Lagny		42.00	3,848	2,284	26,486	26,265	625.4	1,564
02691 - Saint-Quentin		22.56	6,397	5,589	60,644	59,066	2,618.2	2,808
02722 - Soissons		12.32	4,389	2,447	29,629	29,453	2,380.7	1,942
02738 - Terguier		17.95	1,896	1,400	14,910	15,089	839.5	496
03095 - Cussat		31.93	1,090	1,280	13,567	13,385	419.2	-190
03185 - Montluçon		20.67	4,276	5,002	44,248	41,362	2,001.1	-726
03190 - Moulins		8.61	2,677	2,473	22,799	21,892	2,542.6	204
03310 - Vichy		5.85	2,628	4,215	27,714	26,528	4,534.7	-1,587
03321 - Yzeure		43.24	1,098	1,105	13,461	12,696	293.6	-7
04070 - Diane-les-Bains		117.07	1,638	1,462	16,087	16,064	137.2	176
04112 - Manosque		56.73	2,076	1,663	19,107	19,603	345.5	413
05023 - Briançon		28.07	1,506	758	11,041	10,737	382.5	748
05081 - Gap		110.43	3,903	2,697	33,444	36,262	328.4	1,106
06004 - Antibes		26.48	7,158	7,000	70,005	72,412	2,734.6	158
06012 - Beauséjour		2.79	327	445	12,326	12,775	4,578.9	-118
06027 - Cagnes-sur-Mer		17.95	4,431	4,223	40,902	43,942	2,448.0	208
06029 - Cannes		19.62	6,701	10,271	68,676	67,304	3,430.4	-3,570
06030 - Le Cannet		7.71	4,246	4,195	41,842	42,158	5,488.0	51
06033 - Cannes		15.11	1,282	489	10,747	10,710	708.8	793
06069 - Grasse		44.44	5,513	4,398	41,388	43,874	987.3	1,115
06079 - Mandelieu-la-Napoule		31.37	1,895	1,712	16,493	17,870	569.7	183

Figure 6. Spreadsheet of French census data.
Institut National de la Statistique et des Etudes Economiques.

The sociology students were already familiar with GIS and took the lead in the next phase, joining the spreadsheet data with the GIS map. This was straightforward because the French census bureau, INSEE, and the national mapping agency, IGN, use the same code to identify each commune. Figure 7 shows a map of the Paris region and Elancourt, one of the communes to the east of the city. In this map of census data, darker colors indicate denser population.

Students created multiple maps in their investigation of the Chicago School concentric zone theory. Their maps grouped communes into five levels of density, from very sparse (about 740 people per kilometer², or 3 people per acre) to very dense (more than 247,000 people per kilometer², or 900 per acre). Examining the series, they found that the pattern of population density in the Paris metropolitan region almost perfectly illustrated the Burgess concentric zone theory. Paris *arrondissements* are comparatively densely developed. The communes immediately adjacent to the city of Paris are less so, and as one moves away from the core, population density declines uniformly. Beyond a 32-kilometer (20-mile) radius, few communes have high population density (figure 8).

To assess students' learning in this cross-disciplinary project, the sociology students had an additional assignment: to argue whether or not the GIS analysis supported Burgess's seminal work on the growth of the city. They compared their own maps with those from Burgess's first publication of the theory in 1925, and they found striking support for this aspect of the concentric zone theory in Paris. Students in the French class were asked to translate their new vocabulary in subsequent exams.



Figure 7. Map of Paris, emphasizing the commune of Elancourt.

Data courtesy of Atlas des Franciliens, tome 3, 2002, © laurif-Insee; and Institut National de la Statistique et des Etudes Economiques.

Connecting language and culture to sociology and geography

Students evaluated the cross-discipline collaboration as worthwhile because it provided successful opportunities to make unusual, yet useful, connections among sociology, GIS, and French language and culture.³ The French students welcomed the GIS project as an opportunity to strengthen their language proficiency and content knowledge. A few sociology students had studied French previously and were able to reinforce their earlier language study. Both are important goals of our FLAC initiative.

Using numerical data, geographical data, and various related images to study the French language supports pedagogical theories of simultaneous left-brain and right-brain activities and multiple connections for improving foreign language acquisition (Hadley 2001, pp. 90–99; Met 1999). We discovered that fruitful discussions of deeper topics can occur when students are able to visualize the statistics and geography as people and places.

For example, we used the concentric zone maps (figures 7 and 8) in several courses at various levels to lead students to discuss historical examples of centralization. The class brought up centralization by French royalty and the derivative institutions such as the nationalized school system, army, policy, and taxation. When studying the nineteenth-century migration into Paris, students speculated on the behaviors of starving peasants seeking work and lodging near jobs in the city. They imagined models that would have produced the settlement patterns seen in the concentric

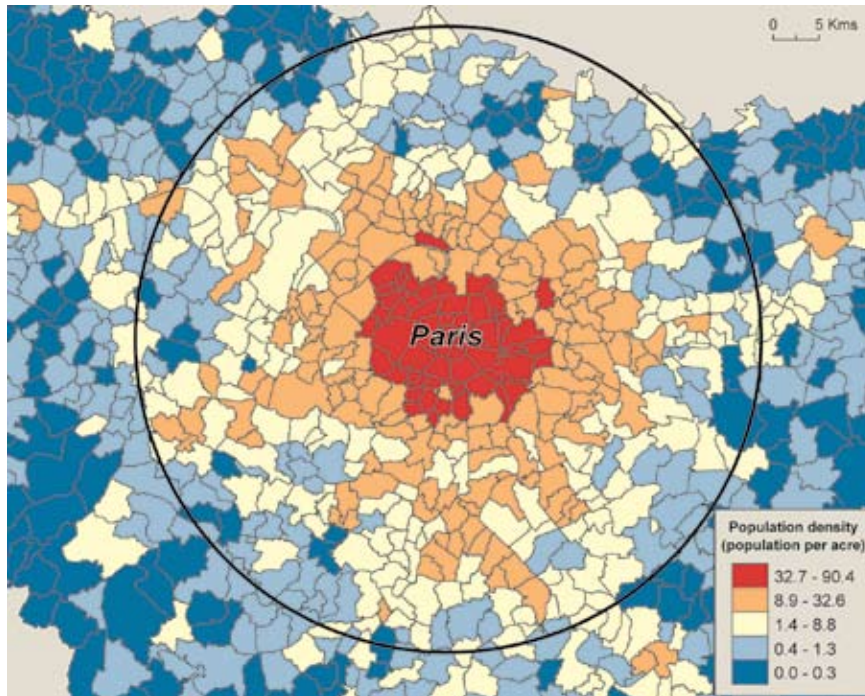


Figure 8. Map of the Paris metropolitan area showing rings of decreasing population density

Data courtesy of Atlas des Franciliens, tome 3, 2002, © laurif-Insee; and Institut National de la Statistique et des Etudes Economiques.

zone maps. They reflected that when Louis XIV declared, “L’état, c’est moi,” he foretold a migration that would put one quarter of the nation’s population inside a 71-km (44-mile) radius. These discussions teach students to look at quantitative information like map legends and converse about density and proportion.

These kinds of connectionist activities, especially those involving quantitative and linguistic elements, are too seldom practiced in foreign language/culture classes, yet they are vital to students’ ability to think and speak in real-life situations. Maps enable a multidimensional cognitive encoding, helping students develop a facility with the language essential to navigating the countryside, negotiating hotel rates, or debating restaurant prices.

The benefits of studying demographic maps accrue to all students, regardless of their proficiency with statistics or with GIS. Students in the humanities need not manipulate the statistical materials; they can access the material via maps produced by the instructor. Humanities instructors need not become GIS experts; they can prepare maps with the help of a colleague or of a student proficient with GIS.

The collaborative nature of the French census project carried its own benefits. When students contributed their emerging language skills to a team, they demonstrated the value of their second language to themselves and their peers. The personal investment of using their knowledge in the service of research increased their commitment to the language. We observed students fulfilling these objectives of the FLAC movement.

The interactive multimedia map similarly engaged the students, increasing their facility with the language while making connections with the country, culture, and people. Students simulated moving into, out of, and across France, interactively controlling what they saw, and when. With this heightened degree of control, using their eyes, ears, hands, and curiosity, they learned more, remembered more, and were better able to contribute in classroom conversation. Students constructed a deeper understanding of the French culture by encountering information on multiple levels, in concrete and abstract terms, synthesizing diverse bits of information from disparate disciplines.

Notes

1. FLAC has been successful in the liberal arts and professional schools alike, such as at the University of Rhode Island and the University of Connecticut. See, for example, press.ucsc.edu/archive/95-96/10-95/101695-National_conference.html. Also see the report on FLAC from the American Council on the Teaching of Foreign Languages at www.actfl.org/files/public/Fall1995LangAcrs.pdf. The best Web-based interdisciplinary resource making use of GIS for research and instruction and relating it to language and culture is the Tibetan and Himalayan Digital Library at the University of Virginia: iris.lib.virginia.edu/tibet/index.html.
2. Tandberg Educational, Inc., and Divace Oy (now known as Sanako, Inc.), *Divace Solo*, v. 4.0 (Turku, Finland: Divace Oy, 1997-2003). Product now known as *Media Assistant Solo*, CD-ROM, published by Sanako, Inc. (Turku, Finland).

3. See results reported on the Modern Languages, Literatures and Geographical Information Systems (GIS) Web page at www.faculty.fairfield.edu/jgoldfield/MLL-GISprojects.htm (Jan. 17, 2005).

References

- Burgess, Ernest. 1925. *The Growth of the City: An Introduction to a Research Project*. Eds. Robert Park, Ernest Burgess and R. D. McKenzie. Chicago: University of Chicago Press.
- Hadley, Alice O. 2001. *Teaching Language in Context*. Boston: Heinle & Heinle.
- Met, Myriam. 1999. Making Connections. In *Foreign Language Standards: Linking Research, Theories, and Practices*. Eds. June K. Phillips and Robert M. Terry. Lincolnwood, Illinois: National Textbook Co.
- Stendhal (Henri Beyle). 1964. *Le rouge et le noir [The Red and the Black]*. Chronology and preface by Michel Crouzet. Paris: Garnier-Flammarion.
- Thomson, Chantal P. and Bette G. Hirsch. 2003. Videotape to accompany *Ensuite: Cours intermédiaire de français*. 4th ed. Boston: McGraw-Hill.

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