

The Effects of Computer Assisted Research on Chilean Academics

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Abstract: The purpose of this article is to describe the use of computer software by Chilean social scientists engaged in both qualitative and quantitative research. Because of its increasing use it is important to trace its development to understand the effects of this technology on the academic and professional community in a South American country. Rather than receiving certified training most academics have taught themselves how to use such software. This has been due, in part, to increasing pressure placed upon universities from the professional labor market, the utilization of the software by increasing numbers of researchers, and the employment of this technology without considering its methodological appropriateness.

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1. The Effects of Technology

An ethnographic approach has been taken in this article to understand how certain technologies have been diffused among social scientists and professionals in a South American country, in this case, Chile. Whether the trends described here are common to other countries is something that comparative research may demonstrate. The scope of this text centers on a specific community and tries to understand its uses of software for quantitative and qualitative research. My use of ethnography can be understood in two ways: a) as a social anthropologist I describe a practice in a community, in this case social scientists, and b) as participant observer, I have been witness to this process as an active trainer. [1]

I use the term diffusion in an old anthropological sense¹, because the most common software for social science research originated mainly in America, Germany, and Australia. Therefore, the most simple and basic question is how the process of diffusion took place. Then, we may ask if that process can help us to understand the effects of that technology among local social scientists. [2]

1 The diffusion school in anthropology argues that objects and ideas usually originate in one culture and then move to another. Therefore, some cultures are places of origin and become cultural centers with other cultures being the recipients of those objects and ideas.

As in most countries in Latin America, most social scientists at Chilean universities often work for the government, nongovernmental organizations (NGOs), or do private consulting. I refer to them as professionals. Other social scientists enter the academy either to teach or conduct research. I refer to them as social scientists. It should be noted that these roles can change over the course of an individual's career. [3]

Given the growth and widespread use of software technology the question arises as to what effect this has had on the construction of knowledge in the social sciences and the professions. [4]

2. Background to Chilean Universities and Other Academic Settings

During the 1980s, Chilean social science research was conducted mainly by university researchers and professionals working in NGOs. Using software for social science research was rare, but it was during this period that the Internet became institutionalized within higher education. Because of the increasing need to communicate with colleagues around the world, especially in America, Internet facilities arose almost exclusively in major universities. Private telecommunications companies were exploring its commercial use for small industries and home, although the cost of personal computers was very high. Professionals in NGOs did not have easy access to this technology, although they were able to use it. [5]

During the 1990s the software Ethnograph appeared on the scene and courses were offered in its use. The first SPSS version for Windows appeared in 1992. At the end of the decade, university students had more access to personal computers and courses in software, such as SPSS. Nevertheless, Ethnograph was virtually unknown to undergraduate students and very few graduate students. Very few people knew how to use it (usually they learned while being graduate students abroad). Being one of the first software packages to be introduced in the country, Ethnograph was well known among Chilean academics; sometimes being used as a synonym for computerized qualitative research. Few researchers used it in the 1990s, but most had heard of it. [6]

The first Ethnograph workshop in the Social Science Faculty of the University of Chile was conducted in the late 1990s by Maria Teresa DAWSON, a Chilean anthropologist who received her PhD at La Trobe University (Australia). The Headmaster of the Masters Program in Anthropology and Development, Marcelo ARNOLD, asked DAWSON to conduct a workshop on using Ethnograph. DAWSON learned the software while studying in Australia. This was the only such workshop conducted, but later I continued teaching it within the anthropology masters program for many years. Only 10 people attended DAWSON's workshop. [7]

As interest was increasing in the academy, non-academic professionals began exploring such software for their own purposes. The UN based organization FLACSO (Social Science Latin American Faculty) in Chile conducted a workshop

on Ethnograph in the late 1990s. Anthropologists Maria Cristina BENAVENTE and Gabriel GUAJARDO have recounted that the professionals who were present took a keen interest from the beginning but always asked at the end of the workshop when they would have the chance to analyze data. Almost everyone expected something else of the software; perhaps the ability to propose answers to research questions, or something more than the possibility to manipulate efficiently great amounts of qualitative data. The workshop is no longer offered. [8]

Although Chilean anthropologists were involved in the use of the software from the beginning, sociologists, psychologists, and educators, among others, were all interested. For example, the sociologist Pedro OLAVARRIA received funding in 2001 from the Chilean Scientific and Technology Commission (OLAVARRIA 2001) to study urban adolescents; in the research proposal OLAVARRIA noted his use of Ethnograph. The sociologist Carmen SEPULVEDA and her team studied educational administration funding by the Ministry of Education (SEPULVEDA, 2005). They used Ethnograph in their analyses. The agronomic engineer Gabriel VIVILLO (2004) and his team published an article about the use of the software to assist in the evaluation of projects in rural communities. [9]

The use of qualitative software has steadily increased since 2000. For example, Diego Portales University offers a B.A. in Political Science. The program description includes the use of methodological tools such as ATLAS.ti. Atacama University in northern Chile offers a degree in social work. In the ninth semester "Informatics' Technology II: ATLAS.ti" is offered. Workshops are also held in private research centers and NGOs. [10]

A consistent pattern from the previous decade is that someone first teaches this technology, and then students take it on its own journey from there and, possibly, teach others. For example, if a sociologist uses the software NVivo, she or he is likely to have been trained at the University of Concepcion, because it is more prevalent there than in any other sociology department in the country. Currently, Dr. Claudio RAMOS from the Sociology Department at Alberto Hurtado University, teaches the software NVivo in the seminar "Advanced Methodology." This is an indication that a second university uses this software, increasing the likelihood of its use among sociologists; it also may indicate that software training has advanced into regular courses. [11]

We can see the same trend with the software ATLAS.ti. The anthropologist Ricardo CONTRERAS returned to Chile in 2004 after receiving his PhD at the University of South Florida (USA), bringing with him experience using ATLAS.ti. He was invited to teach it by the masters program in Anthropology and Development in which I teach at the University of Chile. He also conducted other workshops in FLACSO and Diego Portales University in 2005. Consequently, in about 2 years, he helped to train many researchers in the use of the program. Also in the same period, Juan MUÑOZ from Barcelona Autonomous University conducted a workshop for the Social Psychology Program at ARCIS University in Santiago and Alberto Hurtado University. Munoz gave his first workshop in 2001 at Frontera University. [12]

Examples of how ATLAS.ti has been used in Chile include Karim QUIERO (2005), asking for the social imagery² of the Health Reformation in the 1990s; Ana Maria ALARCON (2005) explored the cultural dimensions of the primary health care delivery process for children from mothers' perspectives. John DURSTON (2001) assessed social capital among rural communities; Jessica CABRERA (2003) studied the relations and implications of communication in the educational context, using an ethnographic approach to reveal the predominant form of communication used by classroom teachers. [13]

The same pattern can be seen with the software MAXqda. In 2005, the masters program in Anthropology and Development invited Dr. Cesar CISNEROS to give a conference on the use of the software for social research and to conduct a workshop. The 2 day conference was greatly appreciated by academics and graduate students. I learned a great deal from CISNEROS, I now teach others there. [14]

There are few examples of MAXqda being used in Chile. This could be due to its recent arrival on the scene and, possibly, the lack of regular workshops offered by other universities. [15]

Therefore, the process began from academics trained outside the country, conducting workshops for Chilean social scientists, creating an increasingly large group of users. Subsequently, these students taught others, creating a widespread community of users. This is not to say that everyone uses such technology. [16]

In 2005, UCINF University in Santiago failed to establish a master's degree in Methodology and Software for Social Research, because Chilean social scientists did not enroll in the program, perhaps due to the fact that this university is very small and has little experience in graduate programs (it is called an undergraduate university). No other graduate university program is trying to focus on software for social science exclusively, having only courses and seminars inside their master's or doctoral programs. The interesting point is that there are no university programs focusing exclusively on computer assisted social science research. [17]

3. The Use of Other Software

One program being increasingly used is Geographic Information Systems (GIS). At Chilean universities, archaeologists use GIS because they work with a plethora of geographic information in their fieldwork. They have taught themselves how to use this software in the absence of formal courses within the social science curriculum. Within the master's program in Sociology at Catholic University of Chile, there is a course called "Spatial Analysis in Social Science", dealing with GIS for sociologists, but it is not part of the main curriculum. Within the Social Science Faculty of the University of Chile, there is no such course, but students

2 The theory of social imaginary is currently being developed by Juan-Luis PINTOS (2005) and Manuel BAEZA (2003).

on their own have learned how to use well known GIS software like ArcGis (or its previous version ArcView) and perhaps they will one day teach others. Those universities with geography departments have expertise in using GIS, but typically there is no communication with other social science departments. The use of GIS has increased much more within governmental and related institutions. [18]

It is likely that if Chilean social scientists say that they use special software for research, they are thinking of SPSS. The ubiquity of SPSS may be explained by its widespread use by Chilean sociologists. Many are trained to use SPSS as undergraduates, and many others are exposed to it in graduate school. Social anthropologists even today are very reluctant to learn the software, although at the graduate level in anthropology mastery of the software is required. Students at the master's level in education frequently use SPSS for their theses research, as do students in communitarian psychology master's programs. Outside the academy, in the professional world, basic understanding of the software is necessary. [19]

4. Background to Government and Related Institutions

In January 2005, an office of the government related to public policies for physical disability (called FONADIS), sought a professional with the following skills and background: "Sociologist, with experience in systematization and information assessment related to public sector organizations, and skills in statistical and qualitative software (SPSS – QSR*NVIVO)". [20]

This is an example of the need for social scientists to know specific software if they are applying for positions in the government. The new labor market has put pressure on universities to conduct more workshops on the subject. [21]

Many social scientists with knowledge of specific software do work for the government; for example, there are many sociologists with expertise in SPSS, working in the Statistical National Institute (INE). However, many individuals with different professional backgrounds, not just sociologists, with such expertise are everywhere. For instance, in the Social Security Division of the Ministry of the Interior, these individuals are working with crime statistics. [22]

The government also has an interest in qualitative research. For instance, in a 2004 study from the National Drug Control Council (CONACE), called "Ecstasy Culture and the Electronic Scene in Santiago", in-depth interviews were conducted with 27 young people by Diego Portales and other university researchers. [23]

Moreover, the labor market has undergone some interesting changes. In the 1990s democracy returned to the country. Among other things, the government created many new offices devoted to new issues: an office for women's issues, indigenous peoples, people with physical disabilities, older adults, and the indigent. These offices existed before, but they were not recognized as such by the dictatorship. With these offices, many social scientists came into the

government, especially young people. They brought new perspectives to public policy and research, including qualitative research. [24]

At the same time, some social scientists found a new professional world that no one thought possible before: the Armed Forces. In light of the rise of democracy, the Armed Forces opened itself to a professional level, having its own people taking graduate degrees in universities (either at the master's or doctoral level), and bringing professionals into the Armed Forces who had had no previous relationship with them. The mechanism to do this was to publish job offers in national newspapers (as a sign of opening themselves to civil society). The National Police Force, called Carabineros, in recent years has been hiring social scientists, not at local station levels, but for special units that work with administration and research, advising the higher command. For example, in 2003, a multidisciplinary team was created to assist the Missing Persons Unit, hiring a social anthropologist, two psychologists, and one criminologist. In 2004, the police, with funding from the Inter-American Development Bank, began the project "Improvements in police administration through the use of information systems" (GIS). In 2005, they created the "Strategic Analysis Unit", hiring one social anthropologist (she uses SPSS, Ethnograph, and ATLAS.ti), one psychologist, one geographer, and one criminologist. Their mission was to conduct criminology studies in the country, advising the national command. They also worked with social scientists from the Social Security Division of the Ministry of the Interior. In government and related institutions, social science research "assisted by computers through special software" entered the discourse. [25]

5. Background to Private Institutions and Companies

The problems of crime and delinquency are very evident in the Chilean media. Private institutions, like Paz Ciudadana Foundation, conduct research in this area and disseminate their results through the mass media. They have been working with GIS for almost a decade. For example, research in one area in Santiago has used GIS in conjunction with a concept called Crime Prevention through Environmental Design (CPTED) in order to decrease the crime rate in the south of the city (STEPHENS 2002). Consequently GIS became recognized by its use in crime research. [26]

Outside universities and government, private companies have made extensive use of software for research. In these cases, social scientists have been hired to conduct market research, as well as to consult with many industrial and commercial companies. Because market research is a private enterprise, we know very little about the knowledge they generate. [27]

For instance, social anthropologist Sergio POBLETE created the company Contextual Research (<http://www.contextual.cl/>), offering services for private and public enterprises using applied anthropological knowledge. Because of this work, he alone has the expertise in the following software: Fireworks, Freehand, Dreamweaver, Premiere, Crystal Xcelsius, PageMaker, Adobe Audition, Swift

Chart, PowerPlugs for Power Point, Simple Concordance Program, among others. [28]

This could explain the increasing job opportunities for Chilean social scientists in market research needing special software to gather data, analyze, and present them to companies. This world has other standards not well understood by regular academics (although some of them serve as consultants). [29]

6. Some Methodological Consequences

From the contexts described above, I will propose some methodologies that could help in the process of monitoring trends that may take place in the coming years. As noted earlier in this paper, the use of special software for social science research has been a diffusion process (most people have taught themselves then teach others). As such, the users are not certified to use such software. The questions that need to be asked: Are the programs used correctly? What are the consequences for social science research? The expression "correct" has a weak and strong sense. The weak sense implies that researchers usually use the program, enter data, make outputs for analysis and, therefore, training is more or less successful because the software functions according to the users. The strong sense implies that users may be not aware of the uses of many commands of the software, limiting themselves to what they know, usually the basics. In addition, users may misunderstand some of the commands, thinking they are for one thing when they are for another (especially since the commands are in English in many versions). Frequently manuals, tutorials, and software manuals are rarely read by users (either because they do not think it is important enough or are they are written in English, with the exception of MAXqda 2, which is available in Spanish). Diogenes CARVAJAL (2002) describes similar problems in Colombia in training courses and workshops. Cesar CISNEROS (2003) is well aware of this problem, as he describes in his influential essay analyzing computer-assisted qualitative research in Latin America and Spain. [30]

According to my proposal, changes in the labor market have put pressure on social scientists to use special software for their research (government, NGOs, market research, even the Armed Forces). The place to look for training is the academic world (undergraduate students feel that if they do not know those programs they will be at a disadvantage when looking for jobs). At universities, a small number of academics can give such courses. Moreover, the situation is not the same with all academics. Some say that qualitative software is synonymous with grounded theory, and because of that, they do not use it; while others, for the same reason, use it. Others say that no matter what your theoretical preferences may be, you can use any of these programs because they are "theory free": either because epistemologically there are reasons to associate a unique theory to these programs, or because it is only a tool, with no theory behind it. These examples from my experience display a great diversity, and therefore it could have methodological consequences for the future of Chilean social science research. [31]

In the following decades, we may see an increasing use of special software for social science research in Chile. Therefore, it could be possible that academics take seriously the effects of computer assisted research on their world. [32]

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