The Social Construction of the “Non-professional Computer Users”: The “Center for the Popularization of Informatics” in Catalonia, Spain (1980s-1990s)

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Abstract: The histories of personal computing have been focusing lately on groups of users who saw computing as an exciting new field in activities apparently as different as hardware tinkering, coding or even playing video games. What do we know, however, about the users who did not share these interests and yet ended up using personal computers in their everyday contexts? Based on the study of the Center for the Popularization of Informatics—a Catalan institution that promoted computer technologies among diverse audiences, often unemployed and youth—this article shows how a new and heterogeneous user profile needed to be created: the “non-professional computer users.” With the increasing use of computers in the 1990s, most people employed computer technologies as a means to carry out regular duties and labor tasks performed, in most cases, even before computerization. In addition, the article suggests that computer technologies strengthened more than improved or reshaped the traditional labor processes and working conditions.

Keywords: histories of computing; computer literacy; computer training courses; work-oriented software; computerization of working spaces

Introduction

By the end of 1970s and early 1980s, some European countries began to carry out computer literacy programs with the aim of achieving an imagined information society in which people would be required to learn computer skills either to keep their jobs or to adapt themselves to new socio-economic changes.¹ Along these years, the Spanish public administration was also trying to take control over the computer industry, under the pretext that the only way to modernize the country was to computerize it.² Interestingly, this competitive race of nation states to define and control the regulation of computer literacy took place on both sides of the Iron Curtain,³ although in most cases these were technocratic visions focused mostly on the uses of computer technology in the industries rather than people’s everyday contexts.⁴

By focusing more on the computerization of large companies and bureaucratic organizations, the national administrations, policy makers and social planners did not foresee the emergence of a microcomputer scene that fostered the social diffusion and playful appropriation of home computers by users.⁵ Over time these machines not only became an entry to the world of informatics,⁶ but were also used as a medium in which users playfully and actively “assigned their own meanings to the machine in unexpected ways.”⁷

Even though we are just now beginning to comprehend how youth and children did help transform computers, “from machines for technocrats into personal toys and popular collective tools,”⁸ there are still many aspects about the access and usage of home computers that have remained unexplored. In particular, this article will focus on a typology of users that has not

¹ Ruth Oldenziel and Mikael Hård, *Consumers, Tinkerers, Rebels. The People Who Shaped Europe* (New York: Palgrave MacMillan, 2013), 299.

² Ignasi Meda-Calvet, “Development, Spreading and Socio-Cultural Impact of 8-Bit Video Games in Spain (1983-1992).” (PhD diss., Autonomous University of Barcelona-Center for the History of Science, 2018). Not surprisingly, Marie Hicks has identified a similar historical process in the expansion of computerization in Britain as a “tool of the State.” See, Marie Hicks, *Programmed inequality. How Britain Discarded Women Technologists and Lost Its Edge in Computing* (Cambridge, MA: The MIT Press, 2017), 55.

³ Jaroslav Švelch, *Gaming the Iron Curtain: How Teenagers and Amateurs in Communist Czechoslovakia Claimed the Medium of Computer Games* (Cambridge, MA: The MIT Press, 2018).

⁴ Švelch, *Gaming the Iron Curtain*, 2. See also Meda-Calvet, “8-Bit Video Games.”

⁵ Gerard Alberts and Ruth Oldenziel, ed., *Hacking Europe. From Computer Cultures to Demoscenes* (London: Springer-Verlag, 2014); Ignasi Meda-Calvet, “Playfulness and the Advent of Computerization in Spain: The National Club of ZX81 Users,” in *History and Philosophy of Computing. Third International Conference, HAPOC 2015, Pisa, Italy, October 8-11, 2015, Revised Selected Papers*, ed. Favio Gadducci and Mirko Tavosanis, 228-42 (Cham: Springer, 2016); Švelch, *Gaming the Iron Curtain*.

⁶ Theodoros Lekkas, “Legal Pirates Ltd: Home Computing Cultures in Early 1980s Greece,” in Alberts and Oldenziel, *Hacking Europe*, 73-103, 84.

⁷ Alberts and Oldenziel, *Hacking Europe*, 1.

⁸ Oldenziel and Hård, *Consumers, Tinkerers, Rebels*, 297.

attracted much attention from researchers and historians so far and will be identified herein as the “non-professional computer users.” With the spread of the first microcomputers (micros) and personal computers from the 1980s onwards, many of the users were neither enthusiastic or hobbyists, nor did they want to become programmers. Moreover, some of them even had a certain fear or “computer anxiety” as described by Ginevra Sanvitale,⁹ towards anything related to computer usage. Yet, most users persisted in their efforts to acquire standard computer skills.

In this regard, this article will show that computer literacy in Spain was not only a possibility to tinker, experiment and play with the first computers,¹⁰ but also a means to improve work performances and to ensure the chances of finding decent jobs in the future. The emergence and popularization of the different uses for personal computers cannot be understood only from the point of view of engineers, programmers, fans, hobbyists or even video game players. When computer literacy becomes a matter of keeping people’s jobs, there is nothing fun or creative about it. And for the non-professional computer users, learning how to use personal computers had the same utilitarian value as other personal skills such as learning a foreign language or increasing typing speed on typewriters, among others.

Considering this and also drawing on the urgent necessity of identifying more decentralized histories of what Gleb J. Albert defines as the “home computer usage in the peripheries,”¹¹ this article will particularly focus on one of the early public institutions in Spain that helped promote the use of personal computers and micros among non-professionals and novice users: the Centre Divulgador de la Informàtica (Center for the Popularization of Informatics, hereafter CPI). While Nelly Oudshoorn and Trevor Pinch stressed the necessity to study the active role of users,¹² the recognition of the user’s active agency cannot make us lose sight of the significant influence of many other agents such as local and international companies, institutions and organizations, both public and private.¹³

⁹ Ginevra Sanvitale, “Fear of Falling Behind and the Medicalization of Computer Attitudes in Cold War USA (1960s-1980s),” *Technikgeschichte* 86, no. 3 (2019): 227-44, on 240.

¹⁰ Meda-Calvet, “8-Bit Video Games.”

¹¹ Gleb J. Albert, “New Scenes, New Markets: The Global Expansion of the Cracking Scene, Late 1980s to Early 1990s,” *WiderScreen* 23, February, 2020. <http://widerscreen.fi/numerot/2020-2-3/new-scenes-new-markets-the-global-expansion-of-the-cracking-scene-late-1980s-to-early-1990s/>, accessed January 4, 2021. See also Švelch, *Gaming the Iron Curtain*, 23; Alberts and Oldenzel, *Hacking Europe*; Meda-Calvet, “8-Bit Video Games”; Eden Medina, *Cybernetic Revolutionaries: Technology and Politics in Allende’s Chile* (Cambridge, MA: The MIT Press, 2011).

¹² Nelly Oudshoorn and Trevor Pinch, ed., *How Users Matter. The Co-Construction of Users and Technology* (Cambridge, MA: The MIT Press, 2005).

¹³ Per Lundin, “Documenting the Use of Computers in Swedish Society between 1950 and 1980,” Final Report on the Project *From Computing Machines to IT* (Stockholm: Working Papers from the Division of History of Science and Technology, 2009).

Accordingly, it should also be noted that some of the future users, willing to learn basic notions of computing during the 1980s and early 1990s in Spain, did not own personal computers in their households and workplaces, nor were they actively involved in a new amateur computer club scene that began to take place within those years.¹⁴ As already mentioned, not everyone approached computing as a hobby but a personal struggle to make ends meet in the near future. In these cases, many of the first encounters with computers emerged within organizations that were already offering training and a first access to computer usage.

What were these organizations and who was in charge? How were the training courses programmed and what computer equipment and teaching materials did they use? How were they evolving and adapting to the so-called computerized era? And, last but not least, how did they reach and target participants at a time when the concept “computer user” had not yet become widespread? By answering all these questions, the historical analysis of the CPI will also provide a better understanding of who the non-professional computer users were, and why they were willing to attend these computer training centers.

Finally, it should be noted that both the research and the subsequent preparation for this article have been possible thanks to the data gathered from both oral and written sources. Regarding the oral sources, three formal semi-structured interviews were conducted in 2015 with employees of the center as well as one of its founders. Afterwards, the information gathered through individual interviews was contrasted and validated by the contributions and comments recorded from a focus group organized in Barcelona in December 2015. The three previous interviewees and two new staff members, who were well acquainted with the history of the center, participated in this meeting. In addition to this, the stories, data and ideas reconstructed through oral sources were later extended with written sources such as a monthly bulletin distributed by the center in the mid-1980s, as well as several reports and computer guides collected both from interviewees’ contributions and the archives of the Library of Catalonia (Barcelona).

Imagining (and delimiting) the future computer users

The problem of chronic unemployment faced by young Spaniards in the 1980s led government administrations to present computer literacy as a basic skill for finding job opportunities in the computerized societies of the future. This, in turn, helped put the blame for high unemployment

¹⁴ Meda-Calvet, “Playfulness and the Advent.” Patryk Wasiak points out that the emergence of these particular computing scenes are known in computer culture jargon as “demoscenes.” See, Patryk Wasiak, “The Polish Amiga Scene as a Brand Community,” *WiderScreen* 23, February, 2020. <http://widerscreen.fi/numerot/2020-2-3/the-polish-amiga-scene-as-a-brand-community/>, accessed January 4, 2020.

rates on individuals and their families rather than States.¹⁵ As Sanvitale points out, during the 1980s “the responsibility of changing computer attitudes fell entirely upon the individual user.”¹⁶ Thus, the negative computer attitudes became a problem of individual responsibility rather than governmental or collective.

With this background in mind and prior to the formal inauguration of the CPI in 1984, this non-profit organization had previously worked as a foundation named FUSIC: Fundació Societat i Cultura (FUSIC: Society and Culture Foundation). Located in Barcelona, this foundation promoted studies and publications almost always related to aspects that had to do with the idea that social and economic progress were strongly related to a greater use and understanding of new technologies. The defense of this supposed social progress was, however, determined by a paternalistic concern about the possible rejection of technology by citizens: “New technologies, when they do not find a climate of acceptance, generate a reaction of rejection that compromises progress and raises questions about the social stability of the country that receives them.”¹⁷

FUSIC—which had the direct support of a board of about a dozen people with varied professional profiles—¹⁸stressed the importance of young people’s active participation in overcoming complex personal situations such as unemployment: “It should be made clear to unemployed young people that their situation is not the fault of a government or a lack of investment. . . . They [youngsters] cannot have a passive attitude and wait for someone to find a solution. It is about taking responsibility for one’s own situation, and taking an active, creative and proactive attitude.”¹⁹ At first, the high prices of computer technologies and the lack of accurate information and knowledge when purchasing hardware and software products, hindered individual and corporate decision-making. In a 1987 survey published by the CPI, in which 500 small and medium-sized enterprises located in Catalonia participated, most of the entrepreneurs answered that they had installed their first computer in the hope of speeding up their work and keeping the company’s accounts. However, when it came to choosing a computer they stated that the most decisive factors used to be the brand reputation and the advice of sales representatives. In contrast, the variety and usefulness of the software was mentioned in only 4% of cases.²⁰ Meanwhile, in households, the early home computers

¹⁵ Meda-Calvet, “8-Bit Video Games.”

¹⁶ Sanvitale, “Fear of falling behind,” 241.

¹⁷ Som a temps de pensar el futur? Enquesta sobre les actituds socials davant de la innovació, 1983 (Focus leaflet. Survey on social attitudes towards innovation).

¹⁸ The president of the foundation’s board was a Catalan bishop (Joan Carrera i Planas), but there were other profiles such as industrial engineers (Santiago Guillén) and even cartoonists and caricaturists (Pilarín Bayés), among others.

¹⁹ *Focus. Publicació de la Fundació Social i Cultura FUSIC*, no. 17 (1985), 5.

²⁰ Els Usuaris d’Informàtica a Catalunya. Enquesta a 500 empreses petites i mitjanes relativa a informàtica

ended up being used either as gaming machines or kept in closets hoping that someday they would be more useful.²¹

In response, this foundation sought to provide information technologies guidance for both individuals and companies, with the aim of helping them to become familiar with the early home computers. One of its first tasks consisted of preparing different training courses aimed firstly at entrepreneurs, managers and executives, and secondly at workers and computer users in general. For the former, FUSIC had prepared a variety of 3-day training courses for companies interested in computer topics such as introduction to microcomputers and their applications, database systems, financial models, office automation, BASIC programming language (elementary and advanced level), LOTUS 1-2-3, Word-star, Base II, etc.²² And for the latter, the courses were structured around two training modules: an introductory module to computing through which future users would become familiar with computers and their components (keyboard, floppy disk, cassettes, etc.); and a second training module wherein participants would learn how to use computer programs for word processing, database systems, and BASIC programming language.

FUSIC further noted that training of young people through software should “consist of games and simulations with clearly educational purposes and content. . . . With this the young people acquire some tools and real knowledge that can be of service to their professional future.”²³ An example of this trend may be found in a two-week training course organized in July 1984 in which participants not only could learn home computer usage, but to handle issues of administration and economic management through an agrarian management simulation game.²⁴ Thus, computing also became a type of training for future employees: “The computer offers simulations anticipating the situations that youngsters will find in the workplace.”²⁵ Additionally, it was stressed that personal computers allowed each individual the opportunity to work “playing in front of the keyboard and experiencing the successes and mistakes of their choices.”²⁶

Such scenarios show a greater presence of computing as a professional complement rather than as a profession in itself. As stated within the free of charge monthly bulletin named *Focus*, distributed by FUSIC, they were interested in “educating and professionalizing people, not

de gestió realitzada per E.I.C.E, 1987, 17, (68–4°C2/15), Archives of the Library of Catalonia.

²¹ Meda-Calvet, “8-Bit Video Games.”

²² *Focus. Publicació de la Fundació Social i Cultura FUSIC*, no. 15 (1984), 15.

²³ *Ibid.*, 26.

²⁴ *Ibid.*, 20.

²⁵ *Focus*, no. 17, 3.

²⁶ *Ibid.*

in computing itself.”²⁷ In line with this, one of the main FUSIC goals was to promote the social inclusion of young people through the use of the then-new computing and electronic technologies: “We are contemplating the invasion of personal computers in our country, favored by the appetite of buyers who sense that computers mean progress and future. However, the actual use of most of these devices is small in quantity and poor in quality.”²⁸

The excitement but also the spread of fears and “computerphobia”²⁹ that computers brought with them, did not go unnoticed by the Generalitat de Catalunya—the institution under which Catalonia is organized as an Autonomous Community within Spain—which decided to take over and integrate FUSIC into its governance structure. The reason why the Generalitat was interested in incorporating this center into its structure was motivated by the fact that public administrations in Spain were becoming aware of the importance of leading, controlling and managing the deployment of new technologies related to personal computing in their territories. Moreover, computing was no longer a domain reserved only for experts: the early personal computers to hit the market were targeted to wider audiences and, as a result, computer literacy became a key part of national policies:

Computer literacy is essential to offer a professional future to young people who are not yet working. This desire to offer a wide range of computer knowledge to all young people, and not only to experts, led to the creation of the Center for the Popularization of Informatics (CPI) of the Generalitat de Catalunya, in 1984.³⁰

Despite the relevance of such organizational change and although FUSIC went from being a foundation to a public institution, now called CPI, its *raison d'être* remained intact. This Catalan center was formally constituted at the end of 1984 with the aim of facilitating information and access to anyone interested in the field of informatics and computing. Santiago Guillén—executive director of the CPI—acknowledged that the managers carefully chose the word ‘popularization’ at that time to name the center: “When we launched it, such a word [popularization] had no social prestige. Some experts and entrepreneurs had told me that if we introduced ourselves as an institution for the popularization of computers, nobody would take us seriously.”³¹ Apparently, throughout the 1970s and early 1980s only people with technical degrees in computing or professional and academic careers were legitimized to perform an active role within this sector.³²

²⁷ *Focus*, no. 15, 3.

²⁸ *Ibid.*

²⁹ Sanvitale, “Fear of falling behind,” 228.

³⁰ Angel Mauri and Santiago Guillén, “El Centro Divulgador de la Informática,” *Catalònia Cultura* 28 (1992): 11-2.

³¹ Santiago Guillén, interview by the author, February 2, 2015.

³² See, for instance, how closely Spanish computer science university degrees were bound up with policymaking and professional agendas: Jordi Fornés and Nestor Herran, “Computing in Transition:

Learning how to program in the 1980s was perceived as a necessity,³³ and the CPI took it as an opportunity for legitimacy and growth. In this sense their initial efforts were directed, on the one hand, towards awareness-raising campaigns about the risks of not being familiar with the new computer programming languages such as BASIC and LOGO, among others. And on the other, the center also sought to identify and delimit the types of non-professional computer users to reach. For example, through a cartoon published by the CPI (Figure 1), it became clear that the center was interested in all kind of profiles: the eighteen-year-old novice who wanted a certificate that would identify him or her to companies as a computer user; the twenty-year-old student who was only after a first contact with computers; the twenty-five-year-old secretary who wanted to master file programs and design and calculation software; the forty-year-old businesswomen who wanted to know what would design programs be able to do before buying them; the business leader who needed to learn how to make computer plans for his or her company.

Figure 1. *Ens dirigim a tota mena d'usuaris, com per exemple els següents* (We target all types of users, such as the following). Source: Center for the Popularization of Informatics – Information 2, Barcelona, July 4, 1989. Historical archive of Sitges (Spain).

The Origins of Barcelona's School of Informatics, 1976-1984," *IEEE Annals of the History of Computing* 36, no. 1 (2014): 18-29.

³³ Lekkas, "Legal Pirates."

Within the aforementioned *Focus* bulletin—distributed from that moment by the CPI—it was stressed that the center was addressing the following groups: “Liberal professionals, students of all levels, professors, people working in industry, services or agriculture. We provide guidance to individuals or organizations such as schools, companies or associations.”³⁴ According to Elisabet Marill—deputy director of the CPI—the groups of people who came over for help were quite diverse: “There were 15-year-olds who came with their grandparents . . . , people who were unemployed and wanted to look for new professional opportunities, grown-ups, there were also many secretaries, etc. There was a great variety among these people.”³⁵ Once they had arrived at the center looking for help, the employees would ask them about their computer skills and, depending on the answers, they would be told to take weekly training courses. When the participants commented that they had no computing knowledge whatsoever, they would be assigned to an introductory course on informatics and computing. In the meantime, the participants who reported that they did have some knowledge in computing, would be initiated into BASIC programming language courses. This latter group had, in turn, two training alternatives: BASIC for beginners or advanced level.

Interestingly, Marill points out that in the end the center attempted to know whether the participants were interested in the field of computing as a working career, or they just pretended to be users. This distinction is important here because at the time such common decisions were actually helping to define the computer expertise and non-expertise embedded in a new field of knowledge:

If the participants answered that they wish to become mere computer users, then we would send them to the introductory courses. But if they showed willingness to become computer professionals, then we would send them to the programming courses. . . . Those who wanted to do serious work would be sent to the advanced computer course.³⁶

Through the offer and promotion of the courses, the members of CPI realized that a large majority of participants were not as interested in learning how to code as they were in using computers for more pragmatic and specific tasks. On this basis, the CPI decided to extend the learning content towards three main topics: databases, spreadsheets and word processors. After incorporating this content into new weekly courses, more and more participants came over to enroll in their training activities.

³⁴ *Focus*, no. 15: 2-3.

³⁵ Elisabet Marill, focus group discussion, December 23, 2015.

³⁶ Ibid.

Making or using computer programs? The split between experts and non-professional computer users

Most people who approached any of the centers the CPI had distributed across the Catalan territory—Lleida, Girona, Sabadell, Tarragona and Barcelona—were asking for support in figuring out how the computers worked. Marill, retrospectively, explains that information technologies raised much confusion in the early 1980s: “Many people came thinking that computers were just typewriters plugged into a television screen. . . . Some of them even asked to take courses to increase typing speed on typewriters thinking that this would provide them with computer skills.”³⁷ Likewise, Josep Macía—chief financial officer of the CPI—recalls that most of the CPI attendants used to see computer literacy as an additional skill that could be added for their résumé—a professional complement, as previously argued—just as important as typewriting or foreign language learning were by then.³⁸ Despite the initial ambitions to introduce individuals to computing and programming languages such as BASIC, the members of CPI soon realized the key point was actually laying in the definition of the term ‘computer user’: “Until then, everyone was just talking about computer programmers. I think we were among the first institutions to start using the word of users. . . . We explained to people that they would not become computer experts, but computer users. In fact, when they came to take our courses, we were already splitting them up.”³⁹

Over time, it was clear that many families had begun to demand a computer-based learning focused on improving their job skills as well as their adaptation to new working environments. The CPI took advantage of this and sought to fill up the word ‘computer user’ with content that would result appealing and ground-breaking to anyone, especially young people. In Guillén’s opinion, it was necessary to break with taylorism and any other system of work that was reminiscent of the old factory assembly lines: “We wanted to awaken the youngsters by explaining alternative ways of working and that the computers became the ideal means.”⁴⁰

Furthermore, the center contrasted an alleged end of traditional assembly lines and daily routine working with the autonomy and creativity that computers were supposed to bring: “It is not about training specialists to do isolated tasks in a process, but people capable of assuming and understanding the process as a whole, introduce improvements, analyze the overall work, integrate them into teams and be creative.”⁴¹ Such a new paradigm was depicted in one of the covers of the *Focus* bulletin (Figure 2). According to Guillén, the drawing depicts very well

³⁷ Ibid.

³⁸ Josep Macía, focus group discussion, December 23, 2015.

³⁹ Santiago Guillén, focus group discussion, December 23, 2015.

⁴⁰ Ibid.

⁴¹ *Focus*, no. 17, 5.

the essence that was to be conveyed by the center from then on: “It consisted of grabbing everything that looked like routine and old-fashioned work (see the grey color in the image) and, on top of that, we showed a woman with crazy hair jumping over it. Along with this, we also meant to show that the girl was somehow playing or having a good time, and this was very outrageous at the time.”⁴²

Figure 2. *Amunt la informàtica!* (Up with computing!). Source: *Focus* 17, March 1985, cover.

Guillén claims that this was a powerful message to everyone. For the grown-ups, it showed that computing was going to be unstoppable and seemingly different, in view of an imminent replacement of typewriters and abundant sheets of paper for computers and digital documents. And for the youngsters, it gave them back the leading role that they lacked due to the country's bad economic situation: “We were telling them that they were the ones in control.”⁴³ But not only that: by relating ordinary workspaces such as offices to leisure-time activities, information technologies would seem to break with the stereotypes of seriousness and rational productivity and authority embedded in all kinds of institutions and corporations.

Despite this, it should be noted that the previous image conveys not a rupture but a continuation. According to Hicks, women had become one of the government's most effective tools for

⁴² Guillén, focus group discussion.

⁴³ Ibid.

keeping the costs of the public sector under control.⁴⁴ In this case, the drawing anticipates that even though typewriters and the necessary sheets of paper might well be a thing of the past, sooner or later, women would still play a secondary role as they were going to be occupied in clerical and administrative jobs with future personal computers.

The rhetoric of novelty, Juan Pimentel and José Pardo-Tomás note, often camouflages the weight of tradition.⁴⁵ Despite promises of appealing organizational changes and compelling discourses on information technologies, the non-professional computer users were being defined according to their adaptation to shifts in the methods of work without this entailing a radical change in the traditional and quite often repetitive work tasks that they had already been performing in the past. For example, Marill recalls that the staff at CPI worked hard to identify potential similarities between already existing professions and software applications that could be useful in the near future: “If a participant was performing as a secretary, we would tell her/him that she/he needed computer training in databases and word processors. . . . Meanwhile, if a participant worked as an accountant, we would tell her/him that she/he might need program accounting and stock control-related courses.”⁴⁶

Obviously, there were new emerging areas such as those requiring mastery of Computer-Aided-Design and Computer-Aided-Manufacturing (CAD/CAM), and as a result of the ongoing use of computer technologies. Along with the Institut Català de Noves Professions, INCANOP (Catalan Institute of New Professions), the CPI collaborated to determine new jobs and the likely software applications that would be in demand in the near future. The purpose, although ambitious, was quite simple: to provide both users and companies with information to discern the most appropriate computer skills that would be needed for each job.

Along with this, Eusebi Graners—marketing and sales director of the CPI—explains that the center had some experts in emerging computing areas such as CAD/CAM and desktop publishing among others. With their help, the center elaborated and published different dossiers and user manuals with information on software and computer applications useful in workplaces, a crucial information for any future user at a time when there was still no Internet. As Marill describes, “the idea was for users to know which IT tools they had to master, rather than learning how to make them.”⁴⁷

On the first pages of a computer user manual co-edited by the CPI, the editors called attention to the computer users who already had a computer or were thinking of buying one:

⁴⁴ Hicks, *Programmed inequality*, 91.

⁴⁵ Juan Pimentel and José Pardo-Tomás, “And yet, we were modern. The paradoxes of Iberian science after the Grand Narratives,” *History of Science* 55, no. 2 (2017): 133-47, on 141.

⁴⁶ Marill, focus group discussion.

⁴⁷ Ibid.

We have gathered information about the programs that are commercialized in our country; obviously in the legal market. . . . And all this without any need to learn how to program; without the need to learn BASIC or any other computer programming language. . . . In this Manual there are no ‘PAC-MAN’ type games; we have picked up the very few computer programs with educational value that may be found today in our country.⁴⁸

According to the editors, there were two basic questions that buyers should ask themselves before buying a computer: what they wanted to do with the computer, and what price they were willing to spend. Needless to say, the recommendations coincided with the very same definition of the type of computer users that the CPI had been conveying: “There are two (very obvious) ways to use a computer. As a programmer: this means that the main use of our computer will be to make programs. . . . And as a user: Using the programs that are commercialized in the market.”⁴⁹

Although the editors acknowledged that in some cases there would be users who would fit both ends, they pointed out that it was most common to be recognized in one of the two options. Furthermore, the recommendations reflected that the programmers would need more powerful equipment, with efficient programming languages and more working memory. In contrast, non-professional computer users would need software already available on the market and a proportionate memory to run the programs.

From play to work: The promotion of playful activities and the PC hegemony

From 1986 to 1989 the CPI collaborated with non-profit organizations from all over Catalonia to set up a network of up to 40 classrooms equipped with popular micros such as Spectrum, Amstrad and Commodore models.⁵⁰ These classrooms were called *Els Clubs del Joc a la Feina* (Play at Work Clubs, ‘PWC’ hereafter), and they would become local computer learning spaces for people aged between 16 and 25 who were about to start in the labor world. In principle, any non-profit organization such as town halls, youth and cultural associations, recreational centers, etc., could set up a PWC. The unique requirements for these agents were to have an appropriate space, a few computers and a person in charge. Thereafter, the CPI would establish collaboration agreements with the clubs for services and support training.

⁴⁸ *MicroGuía 86: Guía del usuario del pequeño ordenador* (Barcelona: Ed. de Informàtica Vicens Vives and Generalitat de Catalunya, 1986).

⁴⁹ *Ibid.*, 193.

⁵⁰ These micros became gateways to computing in Spain in the 1980s. For further information about the popularization of computing and its entry into Spanish households, see Meda-Calvet, “Playfulness and the Advent.”

Within the PWC, learning with computers started with the use of an interactive game named *Guillem de Berguedà* (Figure 3) although the participants were taught shortly after other more work-oriented computer programs, with the additional help of self-learning manuals provided by the CPI. This way, it was expected that each user would become familiar with the different computer applications according to his or her own pace of work and learning. In the end, users would have an overview of the most popular types of software available for each computer model.

Whereas the vast majority of computer programs were chosen for their possible fit in the workplace, Guillén attaches special importance to playful activities: “The positive attitude of these young people for the adoption of such tools at work relied on games. . . . Thus, we decided to move on and named this campaign Play at Work Clubs.”⁵¹ Aside from the learning and tinkering with computers, the main goal of these clubs was to show that one could easily move from play to work. Marill acknowledges that at the time she thought this was somewhat “shocking”—or “outrageous,” as described by Guillén earlier—because it meant placing play and work on equal footing. Until then, hardly any institution or corporation in Spain had been carrying out technology-related projects and playful activities combined. As Guillén sees it today, “this was like a lack of respect so to speak.”⁵²

Figure 3. Original cover for *Guillem de Berguedà* (1985). Source: *Esborrany d'un recull de l'obra de Joan Argemí d'Abadal (1943-2013) com a inventor de jocs* (Draft of a compilation of the works of Joan Argemí d'Abadal [1943-2013] as an inventor of games). Document facilitated by Roc Parés i Burguès.

⁵¹ Guillén, focus group discussion.

⁵² Ibid.

Interestingly, in the mid-1980s the CPI had played a pioneering role in launching the first computer game written in Catalan, *Guillem de Berguedà* (1985), and distributed it for free to the youngsters who came into contact with the center. The game was created by the lawyer and historian Joan Argemí d’Abadal, a collector and inventor of all kinds of games such as board games, computer games, and even games for television contests. The game released by the CPI was a text-based adventure game compatible with Spectrum, Amstrad, C64, and MSX computers, and was inspired by the figure of a famous Catalan bandit troubadour of the twelfth century. The CPI corporate communications officer at the time, Carles González, explains that “it was not a violent game. Such computer games allowed users to be illustrated through a historical character that could be found within the Catalan Encyclopedia. We wanted to reach children and young people to show them that video games . . . had very interesting educational components. It was a very interesting and potential tool for this market.”⁵³

In 1985, the Catalan and Spanish newspaper *La Vanguardia* published a column called *La vida de Guillem de Berguedà, reproducido en un juego informático* (Guillem de Berguedà’s life, portrayed in a computer game), highlighting that “without the need of learning computer languages, the owner of a computer can easily put himself in the adventurous poet shoes and reproduce his greatest achievements.”⁵⁴ Eventually, the center had to respond to thousands of letters from young people requesting a copy of the game. Overall 25,000 cassette copies were finally distributed, making it an excellent method of advertising the center.

According to Guillén, initiatives such as this intended to convey to users that BASIC type programming languages were not necessary when using computers and that users could learn and have fun with them. However, things began to change in the center by the early 1990s. Despite the center’s willingness to introduce learning through play within the computing field, a turning point came when micros such as Spectrum or Commodore began to be replaced in the 1990s by standardized computers, basically through the Personal Computer (PC). As James Sumner puts it, “the PC hegemony did not arise inevitably, through some technologically determined industry logic. Its development mutated across space and time, with economic, cultural and political factors clearly at work.”⁵⁵

For example, Marill has noted that some issues regarding computers and games began to take a negative role coinciding with the widespread use of the PC: “There was a moment when all of a sudden games began to be socially criminalized. Conversely, personal computers began to be

⁵³ Carles González, interview by the author, December 10, 2015.

⁵⁴ *La Vanguardia*, *La vida de Guillem de Berguedà, reproducido en un juego informático* (June 26, 1985), 37.

⁵⁵ James Sumner, “Standards and compatibility: The rise of the PC platform,” *History and Technology* 28 (2008): 101-27, on 103.

depicted as serious devices . . . for work. From 1989 and 1990 a separation began to take place, a rupture occurred . . . and the Play at Work Club became just work and no play so to speak.”⁵⁶

The members of the CPI had realized that the widespread use of the PC and their software packages would soon enable institutions and corporations to cater to their specific IT needs on a more regular and frequent basis. In Marill’s opinion, “there was more and more work-oriented software and in the end we always wound up teaching people how to use spreadsheets, word processing and databases. So we started using integrated software packages.”⁵⁷ Conversely, the use of playfulness to get people’s attention was no longer necessary and the CPI began to abandon it. In this regard, Guillén adds that with the rise of the PC platform it was far more difficult and expensive to find entertainment-oriented computer programs with which to set up introductory computer courses such as those promoted in the clubs.

At the same time, the emergence of private academies and centers of informatics and computing, along with other school training experiences and summer camps, were also springing up around the country, attracted in part by the high demand for computer courses. Indeed, many young people were looking outside the formal education system for opportunities to improve their professional status: “Families are spontaneously investing significant amounts of money in language courses, computing, business management, etc.”⁵⁸ This greater competition in engaging students particularly interested in learning IT, along with the CPI’s attempts to promote career pathways and utilitarian uses of computers, renewed the interests and actions of the center towards the companies and industries of the territory.

The last years of the center: A definitive abandonment of playful practices through computers

In Guillén’s opinion, the new turn of the center towards private and public corporations was not initially foreseen: “We had a very strong start with users and we were doing well, but there was a moment when we had the impression that we were performing the same work as other academies and centers.”⁵⁹ Over time, they also realized that non-professional computer users were already learning computer skills either on their own or with the help of their colleagues. This shift meant that the computer training carried out by the center at the beginning was no longer useful in the course of the coming years:

⁵⁶ Marill, focus group discussion.

⁵⁷ Ibid.

⁵⁸ *Focus*, no. 15, 26.

⁵⁹ Guillén, focus group discussion.

So what could we do from then on? We started to think about alternatives to keep the activity of the center. We had switched from PC users to the network users, which was seen as the natural evolution within companies. And then, the Internet and the e-mail came out. We were always extending the user training agenda, until one day we realized that the ceiling was no longer on what the individuals would learn: instead, it was all about the means that companies could provide them with.⁶⁰

In this regard, Guillén regrets that by focusing mostly on people, many computer users ended up overtrained: “Suddenly users could get to know too much. For example, if young boys were trained to work with computer networks, and afterwards it turns out that their companies had no networks whatsoever, such experiences were becoming depressing for both sides.”⁶¹ At this point, the CPI decided to change their philosophy entirely and made the leap to the business sector and, in particular, to the private affairs of computerization in the workplaces.

Although the CPI had been managing public funds from the Catalan government and the European Social Fund (ESF) to carry out training actions aimed at unemployed people, shortly after the center broadened its offer to companies interested in computerizing their departments and production areas. Many of the new actions were organized around weekly training courses named “in company,” which consisted of preparing on-site training activities for organizations in line with their IT need. For this purpose, the CPI also had to take care of bringing their own software and hardware equipment and do the set-up inside the workplaces because many companies and institutions in the first half of the 1990s did not have computers in their facilities yet. In this vein, Marill explains that they went to the companies and started teaching there: “We gathered groups of workers and taught them how to use tools such as word processing, databases, spreadsheets, etc. Besides this, we also taught them how to use the first e-mails (in the beginning these were only sent internally). In order to do it, computers had to be connected to a network, thus sharing information from one computer to another.”⁶²

This greater interest in keeping a close collaboration with institutions and corporations was used by the CPI to determine which computer programs were best suited to the departmental needs of a company. They eventually concluded that the most crucial functional areas would be those related to the production, marketing and clerical support: “We ask ourselves, what practically all companies do? They do marketing, they do the clerical part, and some might even have production. Then we identified the software tools in these three areas.”⁶³ At this point, the center managed to organize daily workshops and roundtables for companies. Normally,

⁶⁰ Ibid.

⁶¹ Ibid.

⁶² Marill, focus group discussion.

⁶³ Ibid.

the talks were given by businessmen—often production managers—who had some knowledge about the usage of software in any of the commented areas.

The spread of the Internet in the second half of the 1990s marked the center’s last few years of activity. Although the CPI was in permanent contact with companies willing to computerize their workplaces, it also began to convey the importance of the Internet and the associated technological changes derived from its individual and collective uses. The chief financial officer of the center, Josep Macía, points out furthermore that their goal was always to promote public acceptance of its practical applications: “For example, how would the Internet be applied in foreign trade; or how would it be applied in the tourism sector? . . . We also talked about e-learning. . . . We were always looking for a sector or cross-sectional areas in which you could apply such disruptive technologies.”⁶⁴

Marill likewise notes that they began to tackle innovative—although also questioned—concepts such as “teleworking.” Working at home seemed very disruptive at that time to the extent that many employers would consider it an illegitimate black market practice. Traditionally, household labor had been associated with housewives and tasks of little professional recognition such as female home sewers.⁶⁵ Therefore, working at home in the mid-1990s was not yet seen as a dignified or legitimate alternative to earning a salary but rather more as an option for working-class families to make ends meet.

This being said, the social relevance of the Internet and the new ways of working was such that the CPI was forced to change its name again in 1995: from the Center for the Popularization of Informatics to the Institut Català de Telemàtica Aplicada (Catalan Institute of Applied Telematics, ‘CIAT’ hereafter).⁶⁶ As described in an article published in the *Computerworld* magazine, the new Institute was supposed to “encourage the emergence of companies that will seek to create services for the information highways.”⁶⁷ In addition to this, its objectives were aimed at bringing the advantages of the Internet related to both, work and user training, closer to institutions and corporations. In particular, the CIAT continued to draw special attention to young people and their integration into the labor market.

⁶⁴ Macía, focus group discussion.

⁶⁵ Ruth Oldenziel and Mikael Hård claim that the sewing machines served as “manufacturing tools, providing working-class and rural women the opportunity to generate income by working at home for the flourishing garment industry. The machine fitted into the household economy in an industrializing world.” See, Oldenziel and Hård, *Consumers, Tinkerers, Rebels*, 34.

⁶⁶ From the 1980s onwards, the media in Spain was using the word *telemática* (telematics) to refer to what today anyone would understand as the Internet. This suggests, therefore, that the word “Internet” was not widely used in Spain until at least the late 1990s.

⁶⁷ Joan C. Ambrojo, “La Generalitat Crea el Instituto Catalán de Telemática Aplicada,” *Computerworld*, March 24, 1995, 24.

Despite this, the autonomy that the institution always had, up to that point, began to be seriously questioned. The CIAT ended up depending on the Industry department of the Catalan government instead of the Presidency department as it had been until then. According to the members of the center, the civil servants and workers of such departments were totally unaware of the advantages and future applications of the new technologies. In Guillén's opinion, a kind of aversion to technological change existed both within public administrations and private corporations, slowing down the incorporation of the Internet and IT. As Graners describes it, the arrival of the Internet looked pretty much like the early stages of the advent of personal computing: “Again, who would listen to us? The people. For instance, when we set up the Play at Work Clubs concept, only ordinary people were responding. Conversely, those who either did not know what we were doing, or simply saw us as outsiders were mostly the institutions.”⁶⁸

With less autonomy, and with clearly declining resources, the centers, that had previously depended on the CPI, were closing one by one until, in 1998, the CIAT was also forced to put an end to its short but very intense history. Since its creation in 1984, the center witnessed how computerization had gone from being a “friendly activity”—in Guillén's words—to a rather serious and cross-cutting industrial activity where recreational aspects had no place. In this sense, he also explains that the arrival of the Internet heated up the atmosphere, as politicians felt very uncomfortable because they were unprepared for the challenges posed by new technologies: “That was a tsunami. Our center went from being a curious and, to some extent, useful public organ, to become a threat.”⁶⁹ Eventually, this “tsunami” wiped out the center and, with it, the ideas and projects that were carried out for more than a decade. During this time, the center had been formed by more than 30 professionals and reached around 100,000 people, most of them young people,⁷⁰ who were being introduced into a new technological culture in which work, computers and play were beginning to go hand in hand.

Conclusions

The split between professional and non-professional computer users began to grow with the arrival on the market of the first micros and PCs during the 1980s. Since then, States, corporations, mass media and families had to start negotiating both the meaning of computing itself and the utilities of such devices. In this sense, the Center for the Popularization of Informatics played an active role in shaping and broadening the usage of home computers in Catalonia. Furthermore, through this case it has also been shown that the very term of ‘computer user’

⁶⁸ Eusebi Graners, focus group discussion, December 23, 2015.

⁶⁹ Guillén, interview by the author.

⁷⁰ Santiago Guillén, “Del Juego de Ayer al Móvil de Hoy”, *Gent Creativa. El valor personal y social de la creación artística*, November 6, 2015. <https://gentcreativa.wordpress.com/2015/11/06/del-juego-de-ayer-al-movil-de-hoy/>, accessed January 8, 2021.

did not arise either by chance or spontaneously. At a time when almost everyone was focusing on hardware and learning through BASIC-type programming languages, the Center for the Popularization of Informatics realized how important it was to start using new categories in which everyone, and not just computer experts and amateurs, would be identified.

Based on this idea the center, which had always been undertaking outreach efforts and training activities related to IT for very diverse groups of people—especially for young and unemployed—began to draw a clear separation in the late 1980s between experts and the rest of computer users. While the former group was made up of individuals who wanted to devote themselves professionally to IT, the latter group integrated people who would rather learn some basics for the purpose of putting them into practice in their workplaces. From then on, the center sought to show that anyone could become a computer user, including therefore a large variety of job profiles and particular situations such as unemployed young people, office workers, secretaries, teleoperators, managers, businessmen, salesmen, and others.

Nevertheless, it would be a mistake to conclude that this center, along with other private academies and centers of informatics and computing, were the only actors that contributed to the awareness and consolidation of such a new group. As Hicks explains, “in order for the technological future to materialize, people first needed to be able to envision it.”⁷¹ The daily experiences of many people proved that learning of computer programming was, on the one hand, an extremely time-consuming task. And, on the other hand, it was totally useless to their jobs. For example, why would a factory worker or a secretary need to learn BASIC in the late 1980s? Thus, after dedicating some time and effort to carry out the first instructions of computer programming languages, soon many users realized that programming had practically no work output for them and would abandon such practices.

The non-professional computer users showed interest in computing when it gave them advantages to support their job performance. In this sense, the purpose or motivations to learn about computers was not at all different from other work tasks as common as learning foreign languages, typing speed, telephone assistance, etc. In other words: computing for non-professional users was not an end in itself but a tool to ensure their future careers and jobs. This fundamental shift actively performed by future non-professional computer users was reinforced and, to some extent, appropriated by the Center for the Popularization of Informatics:

⁷¹ Hicks, *Programmed inequality*, 147.

The important thing now is not how to program or learn BASIC. It is enough to become a user, that is to say, to know how to use software that is already programmed and ready to use. . . . Though it should also be said that the experience of becoming a computer user will not automatically open the doors for finding a job. But at least it will be a valuable daily asset just like learning languages or driving license.⁷²

Accordingly, the center stopped promoting their programming training courses and turned their educational activities towards work-oriented software such as databases, spreadsheets and word processors. These software packages involved a large number of cross-cutting labor tasks that thousands of workers performed every day in their jobs. Therefore, it is not that companies and organizations in general were “adapting” to an autonomous and supposedly neutral technological change. Instead, they were just (re)adapting themselves and searching for the appropriate computing programs that would help them to ensure the rational management and surveillance of traditional labor tasks.

It is often said that computers revolutionized the way people work by breaking with strict and alienating Taylorist models of industrial production while providing, instead, a better sense of creativity and autonomy at work. Indeed, nothing could be further from the truth. The use of computers did not put an end to internal organizational hierarchies, nor to the need to have employees on the staff who continued typing and analyzing information—formerly with typewriters and calculators, now with computers and software programs. Therefore, the popularization of computer technologies and the awareness and training of non-professional computer users did not really mean any significant change or a radical break with the old working structures of the past. In fact, with the spread and standardization of both PCs and work-oriented software packages from the 1990s onwards, the Center for the Popularization of Informatics decided, on the one hand, to abandon any kind of activity that could show computers as playful tools. And, on the other hand, it began to stop targeting computer users in order to focus more on companies and corporations, with the aim of supporting them in computer training adapted to their labor needs—basically on subjects related to the production, marketing and clerical work.

Over the years, other issues related to the Internet, communication networks, e-mails and teleworking were also introduced and forced the center to change its name to “Catalan Institute of Applied Telematics” in 1995. The objective, once again, was to promote the acceptance of new technologies such as Internet usage among companies and the general public, especially youth and unemployed people. However, times were different from those of the 1980s, and the autonomy that the center always had as an almost independent institution within the Catalan public administration, began to be questioned. The future implications and uncertainty carried

⁷² *Focus*, no. 17, 2.

with the diffusion of the Internet from the second half of the 1990s onwards started to bother part of the Catalan political elite, who finally decided to put an end to the Center’s activities and shut its doors definitively in 1998.

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