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## Universal machines vs. national languages: Computerization as production of new localities

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**Abstract.** The inadequate support of computer uses that required the employment of the Greek alphabet has plagued computerization in Greece from the beginning. The problem of the computer's "hellenization" (as it was frequently called) could not find a definite solution because it was dynamically reproduced with each expansion of the uses of the computer during the last 25 years. According to the canonical assumption, the computer is a universal (general-purpose, global) machine, automatically usable anywhere on earth, a par excellence agent of globalization because of its independence from localities. The history of the perpetual struggle with "hellenization" suggests that we treat this assumption critically. As our case study suggests, computerization may be best understood as a process of production of new localities rather than as the vanishing of all localities into globalization.

**Keywords:** computerization, hellenization, globalization, localization.

### 1. Introduction

Papel 2.0, a software for novelists and other writers who want to manage their notes, "is a new and pioneering tool, especially designed for novelists", started Aris Vasiliadis in a 2006 article that was published in the longest running Greek home computing magazine (1983-present), *Computer For All (Computer Για Όλους)*. [1] "For writers", he moved on to explain "handling different archives and folders can be an obstacle to creative thinking". Vasiliadis invited his readers to "imagine a writer who, after traveling in his imagination, has to abruptly pass from creation to logical thinking so as to 'save' or 'rename' a folder. "It is certain", added the *Computer For All* columnist, "that under these conditions a creative mind cannot work well, because it has to stop all the time in order to execute logical tasks".<sup>1</sup> After, however, two

<sup>1</sup> [Vasiliadis 2006, 176]

pages of details on this wonder software, which conclude by arguing that it is “very simple in use and allows its user to concentrate on creative writing”, Vasiliadis ends his article with the following, somewhat ironic, sentence: “The only negative is the non-support of Greek characters; yet those writing in another language, one that is based on Latin characters, will surely be impressed by Papel”.<sup>2</sup>

Novelists wishing to start (or wishing to continue) writing in Greek may be at a disadvantage by not being able to use a computer more productively. Those who have to rely on a computer while using Greek for less creative writing, to do ordinary online work that requires connecting to the web and sending an e-mail or simply offline computer-based work, are certainly facing a problem. For a solution, some of them have been writing to Greek home computing ‘help desk’ and related interactive columns. “Dear magazine”, went a December 1991 letter to the column ‘Correspondence’ of *RAM*, another long running Greek home computing magazine (1987-present), “[a]long with renewing my subscription for one more year ... I please ask you to inform me if I could use Greek characters on a mobile computer with a CGA card...? Do I definitely need operating system DOS 4.1? Is this system by itself enough to have Greek or do I need special software for Greek characters? Can I install it automatically without a proper chip? Can the problem be solved if the operating system that comes with the mobile is DOS 3.3? Will I need new software for Greek characters if upgrade to DOS 5? Will I have problems with some programs if I load software for Greek characters? How can the Greek characters be loaded on an EPSON-compatible printer?”

The letter to the Athens *RAM* office had come from the other end of the globe, Burnwood, Australia. Its author, Christos Pastelas, is one of the (maximum of) 15 million people who speak Greek on the planet (A mobile computer would be ideal for a considerable percentage of them, as they frequently have to cross the earth to travel to the home land). Assumed to be the par excellence ‘universal’ (‘general purpose’) machine of our times, the computer is supposed to be the prime agent of an alleged globalization. More so a mobile computer, like the one that Pastelas was considering. The response to his letter by the Greek *RAM* ‘Correspondence’ columnist challenges the assumption of a computer-based universalism and the assumption of globalization. “To start with”, clarified the *RAM* columnist, “we should know which mobile computer you specifically refer to, since solutions vary according to the caprices of the monitors”. Based on similar clarifications, in this paper we suggest that the computer, like every other machine that has been previously ideologized as global-general (most notably, the steam engine and the dynamo), may be best understood by studying how exactly it became local-special in use.[2] As our paper suggests, computerization and globalization may be more accurately understood as an integration of differentials, not as the disappearance of differences.[3]

For one form by which these differentials became manifested, we may read further in the *RAM* columnist reply to the Greek speaking computer user from Australia. To be able to use Greek characters, he was “heartily advised to pay the little extra” to purchase a monitor of a different standard (VGA). The extra to be paid could actually increase, since, for example, in reference to the DOS 3.30 operating system, the

<sup>2</sup> [Vasiliadis 2006, 177]

columnist “noted” that a special adaptor (EGA) would have to be part of the hardware. In this example, the use of Greek characters is associated with a measurable component, the difference in price for those who used Greek characters. Pastelas had to pay extra for hardware, in addition to having to labor by himself (more so than a user of English). In the history that we tell below, the clearest manifestation of a measurable difference was the extra price that had to be paid in order to buy a software package (or an addition to a software package) that could support Greek. The (measurable) extra economic cost for Greek was here coupled with additional labor by the user, which was un-measurable and unpaid. In many cases, there couldn’t even be an extra price -only extra labor- since there was no software at all available in the form of a commercial product.[4]

The difference in the price that users of Greek had to pay is captured more generally in the April 1994 article of *RAM* by Thodoros Spinoulas: “In 1981, IBM made available its first PC. Back then (and I think until very recently), IBM had placed the countries under three classes. The first, which included the United States, Germany, French, England, etc. The second, which included countries like the Netherlands, Belgium, etc. And a third one, where Greece was placed along with countries like Uganda, Zimbabwe, Namibia, etc. Countries in the first class would receive everything: local language support, books, people and all that was required to raise IBM’s sales. Second class countries received only parts of this. In countries like Greece, as you can guess, IBM gave nothing. It sold you the machine but then you had to kill yourself to see Greek in your screen and to print them on paper—not to mention that a manual in Greek was a dream... Greeks had to pay triple the amount paid by Americans to buy a package that some could use at fifty per cent, others at ten per cent, and many could not even start using it”.<sup>3</sup>

In the following section we introduce to a critical part of the history of the problematic support of Greek-based computer uses, one that had to do with the availability of a proper operating system. Based on what we observe in this section, in our conclusion we seek to elaborate on the issue of the relationship between technology and the globalization-localization tension.

## 2. Windows and the ‘Hellenization’ Problem

In a two-article 1990 *RAM* special on the issue of the problematic support of Greek, Kosmas Karalis started by stating that computer system manufacturers had not been concerned with addressing the peculiarities of the Greek language and its characters. “After all”, he noted, “in the beginning of personal computing they had not even been concerned with the languages of big countries, like Germany and France. Why should they then be concerned with us?” The first personal computers, even by major manufacturers, came with no software to accommodate Greek. For example, Apple I did not support Greek, while Apple II offered only limited support.

<sup>3</sup> [Spinoulas 1994, 128]

The standard was set by IBM, which dominated the personal computing market by the late 1980s.

The chief problem with the earliest wave of IBM (and IBM-compatible) home computers was that the change of character sets could not be done by the user. In a move that was the opposite of the IBM approach, which was relatively attached to the hardware, in the early 1980s the Greek software house Memotek started from software, which directed the use of the hardware so as to allow the user to switch between Greek character sets. This established a de facto market standard, known as the 437 one. In the second half of the 1980s, alongside the introduction of the PS/2 PCs, IBM sought to establish its own standard, known as the 851 one (it was introduced in 1987). From the perspective of global compatibility, this move made sense, because the Memotek 437 standard was designed for Greek only, in contrast to the IBM 851, which could support other languages (in addition to English). Under what IBM offered as Natural Language, a diskette supporting various languages was available. An instructions' manual to help with the installation of special national language characteristics was especially available for Greece, Turkey and Iceland. Improvements included the possibility to use capital letters and letters with accents, and, a special key to allow for the use of Greek when the keyboard was not set in Greek operation.

The problem arose from the fact that IBM, in Karalis' opinion, has been late to act. Between the early and the late 1980s, the Memotek standard had been well established. Incompatible as it was with this established local standard, the new IBM global standard produced something that Karalis described as "confusion" and "chaos". "A positive step by the informatics giant," he wrote, "coming 6 years late, brought about greater mess than standardization, because dealers now have to supply their clients with two Greek sets, IBM's and the 437 one, the de facto standard up to the present".<sup>4</sup> Karalis included a review of the various manifestations of the problem, including its reproduction at the screen and, more importantly, at the printer level. Given that the process of transformation from the one standard set of characters to the other was cumbersome, printing frequently required changes of character sets so as to avoid computer-printer (if not computer-printer-screen) incompatibilities that had turned printing of Greek into a disturbing problem.<sup>5</sup>

The situation became even more problematic by the existence of a third standard, the 928 one, which was introduced in 1986 as the state ISO-recognized standard of the Greek Standardization Organization. It prioritized the compatibility between telecommunications and data processing, at the cost of being incompatible with the other two standards, which were market standards either by tradition (the local 437 Memotek) or by the power of a dominant manufacturer (the global 851 IBM).<sup>6</sup> "The future", predicted Karalis, "doesn't look any simpler, with the standardization organization pressing the public enterprises to adopt its 928 standard, IBM insisting

<sup>4</sup> [Karalis 1990, 69]

<sup>5</sup> [Karalis 1990, 69-70]

<sup>6</sup> [Karalis 1990, 63]

on its own 851, and the Greek software houses ignoring both and continue writing on the 437".<sup>7</sup>

Support of different character sets by DOS came only 5 years after the first introduction of this operating system, with the DOS 3.3 version. In the meantime, support of Greek had become much easier on the operating system of the Apple Macintosh, on the assumption that the Macintosh philosophy of solution was strictly respected by application software manufacturers. According to Rainbow, the representative of Apple in Greece, a single deviation from the Macintosh rule during the development of the Word 4.0 word processing software had resulted in "a very big and very time-consuming effort to hellenize it".<sup>8</sup> In general, while Microsoft employed a philosophy of character support that was closer to that of Apple, it would also have to deviate from this philosophy, because it had to accommodate IBM PCs, which were dominating the market.

Karalis quoted Krasopoulos, who was with the company PC Systems, on the two contrasting approaches in regard to the process of "hellenization" of the foreign software packages. For Krasopoulos, there were two categories of foreign software, one without international edition and one with it. The client ought for him to always ask for the international edition, because it is the only one that can support Greek. "Before placing on the market the new version of a package", he informed, "we check it for 1-2 months to see how it works (VGA, EGA), if it classifies properly, etc." Most packages, he elaborated "allow us to adjust them so as to accommodate Greek characters for the 90% of their operations; yet we cannot be 100% certain". To indicate the difficulties, Krasopoulos gave the example of the switch of the word ΜΙΚΡΟΣ from capital to small letters. "The program," he said, "must be intelligent enough to place a word-ending ς rather than an σ at the end of the word".<sup>9</sup>

In an article that he wrote for the previous issue of RAM, Karalis had reviewed the Microsoft DOS 4.01. It was accompanied by a diskette by the Greek representative of Microsoft, which meant that it was not necessary to install a Greek chip for VGA, EGA and MCGA monitors. In evaluating it, however, from the perspective of its overall support to uses of Greek, he argued that the instructions that came with the diskette were not user-friendly. They were more for the advanced user, if not for the programmer. Assuming successful installation, Word 5 as well as DOS 4.01 itself "worked without a problem". Corel Draw, however, noted Karalis "still doesn't accept Greek".<sup>10</sup>

The introduction of the Greek Windows 3.0, developed by the Greek software house Computer Logic, was advertised in the 1991 issue as the solution to the three-standard mess. "Thank God, it seems Greek to me", read the head line of the advertisement. "Finally", we read in the text below, "an international standard that has Greek while also being a standard." "The Greek edition of Windows 3.0, as designed by Computer Logic R&D," we read immediately below, "supports Greek regardless of the character set available on the computer and the printer (437, 851,

<sup>7</sup> [Karalis 1990, 64]

<sup>8</sup> [Karalis 1990, 70]

<sup>9</sup> [Karalis 1990, 64]

<sup>10</sup> [Karalis 1990, 52]

even the 928 of the Greek Standardization Organization)". It was further claimed that Greek could, "of course, be used by any program that runs in a windows environment (Word, Excel, PageMaker, etc)." Greek was now the "mother language of Windows", which meant that capital and small letters could be properly distinguished, and that all foreign packages could run without adjustments." Moreover, installation was supposed to be "as easy as with the English package".

The March 1991 issue of *RAM*, a special on the Greek Windows 3.0, suggested a more balanced approach. "If you have struggled to print, if you see weird things on your screen, if Greek on your Windows doesn't always seem to work, don't worry", started Thodoros Spinoulas in his introduction to the special issue. "Most likely, there is nothing wrong", he continued, "and everything can be fixed". The problem was for him "extremely complex and multidimensional, which required that one should have a very good idea of the structure before starting to play with character sets". The first thing in making a choice of a solution was to "write down your needs and your specific applications". The "degree of compatibility with older work" was the primary consideration for Spinoulas.<sup>11</sup> In his own review of the compatibility between other available market software and the newly available Greek Windows 3.0, Spinoulas concluded with the same argument, cautioning especially "users who already have an extensive base of DOS archives".<sup>12</sup> Several of the special 1991 issue articles that were concerned with the support of Greek on the keyboard, the screen and the printer, and, also, with the support of the various applications, reported mostly small problems.

Following issues of *RAM* and *Computer For All* hosted dozens of articles and test reports on word processing and other applications in Greek, Applications were quickly expanded to even include spell checking and automatic character recognition (OCR). By 1993, Greek Windows 3.1 was available. "Now, Windows 3.1 Speak Greek", we read in their advertisement. In his November 1993 *RAM* introductory overview Spinoulas generally welcomed Greek Windows 3.1, despite reporting several imperfections, including a serious problem with keyboarding in Greek, which could be terrible for some applications. "We eagerly await new improved versions, now that Microsoft finally decided to deal with our country seriously".<sup>13</sup>

Writing in the same issue, G. Kopeliadis was dissatisfied enough to entitled his article 'Greek Problems in Windows 3.1'. "If you haven't had a problem with getting incomprehensible symbols instead of Greek while using Windows, then you are very lucky", he begun. Kopeliadis informed that "it was not rare for users to discover that it is impossible to write in Greek while using several Windows applications". "Quite frequently", he added, "the existing Greek characters disappear, being replaced by incomprehensible symbols". For Kopeliadis, the reason was always the absence or the destruction of the Greek character series from the environment. He gave a painstaking review of several unpleasant situations and solutions, focusing on cases when the installation of an application that "decided by itself that it should replace some character archives" could distort the prior (and proper) installation of Greek. Kopeliadis concluded by evaluating the most radical solution, to reinstall Windows

<sup>11</sup> [Spinoulas 1990, 83]

<sup>12</sup> [Karalis 1991, 85]

<sup>13</sup> [Spinoulas 1993, 39]

with Greek. He advised against it, both because it could mean a lot of work to reproduce the desired settings and because it did not guarantee that, for example, the "egoistic" program or driver that caused the problem in the first place would not repeat its action.<sup>14</sup>

Articles presenting new editions of older software, like MS Word 6 and Excel 5 that supported Greek, as well as Greek support in regards to new applications, e.g., the popular Lotus spreadsheet software, kept appearing by the dozen. They were interrupted by articles containing an explosive criticism, like the one of the January 1995 *RAM* column 'Macrokosmos' (page 152). It opened by stating that "all those who have spent even a few hours with a computer can realize that things are much better for Anglophone users that Greek ones". The columnist first noted that Americans and other English speaking users get programs months before the rest. He then moved on to add that, in order to enjoy a comparable level of functionality, Greeks need manuals and menus available in their own language. Add to these that they had to solve problems that emerge by the use of the Greek alphabet. "Unfortunately," he concluded, "we will keep facing problems with using Greek for as long as there won't be data bases that would allow the user to create himself the classifying table, and, for as long as there won't be word processors that perceive the language of each word by its meaning".

A month later, Christos Tobras erupted. Writing in the *RAM* column 'Advices: Practical Solutions to Daily Problems', he found it "both very interesting and outrageous that almost four years after (the introduction of) Windows 3.0, two years after Windows 3.1, and one year after Windows for Workgroups 3.11, the most frequent problem of Windows supporting Greek (either fully or not) is Greek". In his opinion, screen adjustment drivers that recognized only English as the basic source of the problem. Tobras identified two versions of the problem. The most common one - "extremely angering because of its frequency"- had to do with seeing what users called "Scandinavian" characters (instead of Greek ones). He estimated that about twenty percent of *RAM* readers had encountered this problem, and had written or called the journal about it. And they were not all that "calm". The second one, relatively easier to solve and less frequent, had to do with Greek characters appearing out of order, what was known as "mixed Greek". "Will this keep going forever? Should we accept as natural that there is a problem with the most important aspect of the proper operation of a computer in Greece, namely the support of the language that we speak?" asked Tobras in his conclusion. Rather than blaming a foreign conspiracy against Greece, Tobras moved on to blame the passivity of Greeks themselves. "We now harvest the crop that we have planted in the past", he added. It seemed to him that everybody was now "hoping that Windows 95 will have Greek incorporated in it, just like it does with the language of so many other European languages (Iceland, Turkey, Finland, Hungarian, etc.)".<sup>15</sup>

The availability of Windows 95 Final Beta Pan European Edition, which included support of Greek, was announced only a month later. It was expected to be in the stores by the end of the summer. Spinoulas detected and reported a few problems, but

<sup>14</sup> [Kopeliadis 1993, 164]

<sup>15</sup> [Tobras 1995, 110-111]

was generally positive about this Windows version.<sup>16</sup> In the next two years, the two magazines hosted a few more dozens of rather warm reports on more Greek for older programs, and, on Greek for new programs. Then another eruption occurred, which was based on what users were reporting upon calling the magazines. In Tobras' estimate, seventy five percent of the phone calls to the magazine (regarding the programs that it offered) had to do with Greek. At least half of them were about Greek Windows in particular. "Unbelievable yet true!" wrote Tobras. "The most, however, unbelievable yet also true", he added, "is the surprise of our readers when we tell them that they have a problem with Greek". Tobras and his colleagues could hardly convince them. "How can it be", callers wondered, "since I write, print, see, etc?".<sup>17</sup> Tobras explained meticulously the technical details of the various manifestations of the problem, one of which was, still, the "familiar" Scandinavian. "Scandinavian" were called by Greeks some Latin characters with accents, which resembled the French and German characters, and, the characters the languages of the Scandinavian countries.<sup>18</sup>

Tobras saw no easy solutions to complex problems. Even problems carried over from Windows 3.x were haunting Windows 95. "It turns out that the Windows language problems will be with us for much longer", he argued. "The support of Greek may now be incorporated to the pan-European edition of Windows 95, but the issue is hardly resolved (and Mac fans should be quite because things are much-much worse for them!).<sup>19</sup> "In a not-so-distant future", he concluded in his article, on a wondering (again) mood, "our mistakes would be easily corrected, anytime and automatically, without having to reinstall Windows or having to manually show respect to some secret archives. Then, and only then, we should be recalling the past and wonder how it was possible for men to co-exist with unkind computers, which knew no Greek...".<sup>20</sup>

The pattern was repeated in 1998 with Windows 98. Cautionary warnings and enthusiastic welcomes occupied much of the space of RAM during that year. In the September 1998 issue of RAM, published after the availability of Greek Windows 98 and Greek Office 97, K. Karakatsanis rushed to claim that "the Greek user is finally offered the best that he could have desired," and, that, "despite some imperfections (in the grammar, the syntax, etc), the combination provides with the opportunity to forget forever the flavorless 'greeklish' [Greek written by Latin characters either in a phonetic or in a visual transcription]".<sup>21</sup> "Windows 98 have no inherent problem with Greek, yet bad use and bad programs frequently create small messes", had written Antonis Vamvakaris a few months earlier, in the introduction to the August 1998 special RAM issue on Windows 98. "The wish of all of us who use Greek characters in working with computers is that it should all 'look Greek to me', because this expression means the opposite when it is being used by us and not by foreigners", he wrote. "But", he immediately added, "while we wish to see correct Greek in our

<sup>16</sup> [Spinoulas 1995]

<sup>17</sup> [Tobras 1997, 228]

<sup>18</sup> [Tobras 1997, 229]

<sup>19</sup> [Tobras 1997, 228]

<sup>20</sup> [Tobras 1997, 230]

<sup>21</sup> [Karakatsanis 1998, 48]

screen and at our printer, we should not forget that we form a minority of users, which will always have to solve its problems by itself; most of the times by counting on inventiveness and experimental search of solutions to problems that users of other languages have never encountered, and even ignore that they could appear in connection to their relationship to their computer".<sup>22</sup>

Vamvakaris touched directly on the pattern that we sought to retrieve in this paper by suggesting that "the evolution of the operating systems and their increasing complexity has created new incompatibilities and new problems during transfers from one environment to another, instead of solving problems relevant to the various languages". In respect to solutions, he added that "while there are obvious differences between Windows 98 and previous Windows versions, it is also true that many of the problems can be solved by analogous methods".<sup>23</sup> He was, we suggest, right. In the following period of the history of computing, which is marked by the use of the computer as a device networked to a global network (as opposed to its previous use as, mostly, an isolated machine), the problem was reproduced. By way of concluding our case study, we may quote from a letter sent to the *Computer For All* by George Petousis, who sought to exchange e-mail messages with someone from abroad. We reproduce the following extract from an interactive column of a 1999 issue (issue 185): "While Petousis sent his messages in Greek, using Outlook Express 5 and the fonts Arial, the recipient of his messages was reading characters like the ones used in comics to indicate that the hero is cursing". The solution to this problem (which, against Karakatsanis' claim, involved the expanded use rather than the elimination of the "flavorless" Greeklish), is, however, a story that deserves its own case study.

### 3. Conclusion

In Greece, as in every other country, the computer was introduced as a globalizing force, a universal machine immediately usable for all purposes (a general purpose machine). Based on the persistent difficulties with reading, writing, and printing in Greek while using a computer, we suggest that we ought to problematize the conception of the computer as universal, in the sense of a machine that is immediately usable independently of social context. We base this suggestion on our study of the perpetuation of the problem of inadequate support of computer uses that necessitated the use of the Greek alphabet. The issue of inadequate "hellenization"—as it became known, has been an important one. It kept resurfacing during the expansion and/or deepening of the uses of the computer in Greece (from the earlier use of the computer as, predominantly, a word processor to its current use as, also, an outlet to the web). It has been manifested as a problem at the keyboard, the screen, the printer, and, the scanner. It has been repeatedly thought that it could be solved by simply pressing a button so as to activate an 'applications software' feature. It always turned out to be a problem that required even deep and extensive 'reprogramming' at the assembly-

<sup>22</sup> [Vamvakaris 1998]

<sup>23</sup> [Vamvakaris 1998]

language level, while it also required systematic concern with producing the proper software-hardware match.

Debates about globalization have been central to a multitude of scholarly and other forums. Many have suggested that the concept is meaningless without the use of adjectives or qualifications. They range from those who favor a chronological specification (e.g. late twentieth century globalization) to those who link globalization to certain social hegemonies (e.g. capitalist or/and neo-liberal globalization). Instead of participating in the debate directly, we have here placed the emphasis on an underlying assumption, one that attributes globalization to universal machines. We have specifically focused on the assumption that the computer has been a universal machine. The uncritical reproduction of this assumption defines much of the available historiography of computing, which privileges the history of conceptions about the computer over the history of its concrete uses. In doing so it spontaneously privileges the history of the invention of a computer over the history of its laborious (constant) reconfiguration in use. Our case study suggests that the computer could not in fact be used automatically everywhere. It had to be laboriously reconfigured in use.

## Endnotes

[1] For the importance of studying computing magazines as intermediaries that have actively shaped the course of computing technology, see an historiographical essay by Robin Guerreiro-Wilson, Lars Heide, Matthias Kipping, Cecilia Pahlberg, Aristotle Tympas, and Adrienne van den Bogaard [Guerreiro-Wilson, Heide, Kipping, Pahlberg, Tympas, and van den Bogaard 2004].

[2] In our opinion, the assumption of universal machines goes back to the beginnings of historical capitalism. The hegemony of the successful presentation of the (electronic) computer as a universal machine follows in a long history of introducing machines as 'universal', a tradition exemplified by the ideology that surrounded, first, the (mechanical) steam engine, and, then, the (electrical) dynamo. The interaction between the claim to a machine being, finally, universal, and an individual's claim to be the ultimate inventor of this universal machine is implied by Ben Mardsen with respect to James Watt [Mardsen 2002] and Charles Bazerman with respect to Thomas Edison [Bazerman 1999]. For a sample of works that include the history of challenges to the ideology of universalism in the history of the use of the steam engine and the dynamo machine, we refer to the work of G. N. Von Tunzelmann [Tunzelmann 1978] and David Nye [Nye 1990] respectively. For a historiographical perspective that places the history of computing within a broader historical context, see an article by James Cortada [Cortada 2007], For attractive historiographical invitations to study technology in use, see articles by David Edgerton [Edgerton 1988] and Carroll Pursell [Pursell 1995]. For an overview of the emergence of a historiography that points to the importance of studying technology in use see, an essay by Aristotle Tympas [Tympas 2005].

[3] This understanding of globalization is inspired by the work of Etienne Balibar [Balibar 1991].

[4] For examples of histories that have challenged assumptions of automatic use of technology by relating it to labor, see works by David Noble [Noble 1984], Nathan Ensmenger and William Aspray [Ensmenger and Aspray 2002], and Aad Blok and Greg Downey [Blok and Downey 2004]. For a history that is sensitive to labor issues, while it is, also, very relevant to the kind of software that we discuss in this paper, see an article by Thomas Haigh [Haigh 2006].

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## Iberian Jesuits worldwide. The influence of communication on the spread of Jesuit missions in the 16<sup>th</sup> century

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**Abstract.** The activity of the Jesuit Order in the 16<sup>th</sup> century illustrates the emergence and rise of a world-embracing activity, which appropriated transport and communication technologies in order to expand globally. Approved in 1540 by the Pope, the Jesuit Order soon had missions all over the 'discovered' world, from Japan to America. My paper deals with the practises and discourses of the first Jesuit overseas missions in the 16<sup>th</sup> century. Based on concrete examples of the Iberian Jesuits' missionary activity, I will describe some strategies developed by the missionaries in implementing the universal aims of the Society of Jesus in the local contexts of overseas missions and discuss the role of communication in its worldwide spread of the Jesuit missions.

**Keywords:** Society of Jesus; Portugal; Spain; 16<sup>th</sup> century; communication technology

### 1. Introduction: Jesuits as 'global players'

The title of this paper is inspired in a section on the website of the Society of Jesus in the United States. The heading of this section, *Jesuits Worldwide*, overlaps the metaphors of the virtual spread through the circulation of bites with the actual presence of the Jesuits all over the world. The presentation text of the section stresses the fact that the Society of Jesus is an international body, whose worldwide work has ever been co-ordinated by the General Curia (Jesuit Conference 2008). In fact, the Jesuit Order looks back at an almost five hundred year old history; it has settlements in over 100 countries; and gives work to about 22,000 employees (Geiselhart 1997: 11). The international director of the Jesuit Refugee Service in Rome Peter Balleis SJ also appropriates semantics of globalisation when referring to the global dimension of the order: "We are the better global players, we bring people together – not money or consumption, but rather people."<sup>1</sup> He thus compares the Jesuits with global economic enterprises in their global dimensions, stressing at the same time the fundamental differences between both economic and religious enterprises. Whereas a global

<sup>1</sup> "Wir sind die besseren Globalisierer, wir bringen die Menschen zusammen – nicht das Geld und den Konsum, sondern die Menschen," (quoted in Grillmeyer 2007: 11).