State of the Art : Public Access Unix Systems as text based Virtual Communities

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Abstract

This writing aims at reviewing literature relevant to research on Public Access Unix systems. It gathers the state of knowledge on text-based virtual communities, that is IRC, BBSes and MUDs and discusses their common problematics. We further argument that shared Unix-like computers may be considered as another, separate category among virtual communities.

Key Words: virtual community, Unix, IRC, BBS, MUD.

Contents

1 Introduction

Writing a state of the art for the subject of Public Access Unix Systems (PAUS) is not a straight-forward task. Despite a long withstanding tradition of these networked social spaces and some non-academic interest, not only there is not much written on the matter, but even the name is not yet established in wider circuits.

Such systems find some coverage in the media, like in Ford (2014) article about creation of tilde.club or Bookman's article[1] about advantages of text-based environments. There is an under-discussion Wikipedia article about sdf.org[2]. Even, tilde.town made its way to a recent academic article on interfaces aesthetics (Bollini, 2017). And finally, there are numerous users' articles, trying to fulfill the gap in the historical and theoretical literature concerning PAUS, such as cmccabe (2018) or Manatee (2016). Those articles, though not academic, are complete and well documented resources, and so I cite them as one of important basis for conceptualising PAUS.

The objective of this review is to gather relevant background materials that might help further investigators of PAUS.

For that purpose, I will first draw general overview of current sociotechnological problematics. Secondly, I will present literary review of specific text-based Virtual Communities, i.e. BBSes, IRC and MUDs, and then on their common aspects as text-based virtual communities. I will introduce literature supporting the claim that Unix may be treated as a space suitable for a virtual community. Finally I will reflect on research perspectives and further possibilities.

1.1 Case Study

The research I propose aims to understand how tilde.town, articulates around co-creation of virtual community and its virtual settlement.

It is a case study, inscribed in the field of Public Access Unix systems (PAUS), which can be perceived as a sub-type of text-based Virtual Communities, and it concentrates on a particuar server, that is tilde.town. The specificity of PAUS is that they are not only text-based, for example as many forums, but they are based mainly on a command line interface with very little importance of graphical environment. Despite their longstanding history and importance, very little was written on PAUS, especially theorised as a separate entity. As

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[1] Todd Bookman, Apr 17, 2012; In Noisy Digital Era, 'Elegant' Internet Still Thrives; https://www.npr.org/2012/04/17/150817325/in-noisy-digital-era-elegant-internet-still-thrives

[2] https://en.wikipedia.org/wiki/SDF_Public_Access_Unix_System

exhaustive research and theorisation of PAUS in general falls beyond our schedule possibilities, we decide for investigating the case of one, specific server, that is, tilde.town.

Specific objectives are:

1. elucidate the process in which software is (co-)produced by and for a specific community, where one is member of

2. reflect on the relation of knowledge and practice that shape such a virtual community

3. illustrate how PAUS are yet another type of text based virtual community

4. exploring characteristics of text based, CLI-oriented, interactions in nowadays, visual era.

The research is proposed to be performed as an ethnographic case study, as for its particular field of research, that is virtual space, we use "netnography" toolset (Kozinets, 2010).

I will follow habitual activities of tilde.town members and participate in daily routines via participant observation. That will be documented both taking fieldnotes and screenshots. Data collection will also involve exploring archived material, such as IRC (chat) logs, BBJ (forum) and website. Finally chosen interfaces will be described (read) and analysed and available Unix commands will be explored.

1.2 Socio-Technological context

Over recent years increasing popularity of social networks sites and especially of Social Media platforms, such as Facebook, Twitter or Instagram, attracted researchers of multiple humanist fields, like psychology, sociology, economy or philosophy (for example Lovink 2011, Shen et al. 2010, Akoumianakis 2010 or Gehl 2014). Depending on point of focus, some talk about Digital Society, characterised by digital socialisation processes (de Rivera, 2010), Castells (2010) defends Network Society, (Krishnan, 1999) talks about Internet Society while Mauro-Flude (2007) prefers Information Society term. There seem to be a consensus that our mainstream and technology-centred society tends towards interconnection, networking and relations, much more than about actual content or knowledge.

If modernity was about industrialisation and thus raw resources, postmodern era it is time of services and accumulation based on digital capital (Hardt

and Negri 2000; Rushkoff 2010). Terranova (2012) sustains that what is being extracted now is human attention in what she calls "attention capitalism". Since Foucault (2013) and Deleuze (1992), there is a tendency to think that postmodern society is rather characterised by control mechanism, more than by disciplinary one. Technology gives a perfect setting for what Zuboff (2015) calls "Surveillance Capitalism".

Meanwhile, de Rivera (2010) criticizes the process in which Internet corporate platforms have become institutions regulating social norms, elucidating the dark side previously noted by van Doorn et al. (2008):

> The most recent incitement of this academic interest has been the proliferation of the "Web 2.0," with its emphasis on user-generated content and social networking. Websites such as MySpace, Face-Book, and YouTube (to name the most popular ones) have turned the sharing of personal narratives and the construction of communities into a multi-billion dollar industry.

Giving us possibility to become creators and express what we most value, those platforms strive to keep us glued to the screens the longest possible in order to get the most information about us possible. As machines are not good at recognising the value behind the things, these are the people that are used to do what machines can't. The famous "like" button is though not only a value/relation counter, but is also an important factor of the "feedback loop" that is argued to create extrinsic reward dependency (Gehl, 2014). Apart from shaping social interactions, as showed recent revelations about Cambridge Analytica, those platforms might have an important influence on national and supra-national politics.

Yet the role of traditional produsers (producers-users) or prosumers (producers-consumers) is shifting again. With arrival of such platforms as instagram, pinterest or snapchat text is being replaced with images. So it is not any more of any importance what we post: it can be a photo of a new dress, potatoes or blue sky, this is the social-relational function that seems to take the advance. The task of reflection consists not any more in intellectual activity, but becomes a mirror-like echoing of our milieu.

As there are people aware of and dissatisfied with this tendencies, there is both "alternative" software developed and research effected on those "Alternative Social Media". Worth to be mentioned, Gehl (2015) points out that what is taken for granted by the users within Corporate environments, elements such as infrastructure or source code, for "alternative" mindset become important.

Alternative communities gather around knowledge and practice related to the freedom of software and decentralisation. Technological artefacts that uphold communities, or as Jones (1997) calls them, the "virtual settlements", are political in as much as they define our ways to use them, how we communicate with others and who can determine it. This process of defining technological artefacts remains hidden in the case of corporate platforms. "Alternative" groups want it to be transparent and communitarian. this can be ilustrated in the case of defining ActivityPub standard, protocol for distributed, federated social media platforms, that Guy (2017) witnessed from within, described and analysed.

1.3   Public Access Unix Systems

The term "Public Access Unix Systems" (PAUS) comes from an article provided by sdf.org user, cmccabe (2018). He defines them as *"computers running a Unix (or Unix-like) operating system that provide shell access for free or low cost to members of the general public by remote connection for recreational, educational or other use of Unix"*.

Such systems find some coverage in the media, like in Ford (2014) article about creation of tilde.club or Bookman's article[3] about advantages of text-based environments. There is an under-discussion Wikipedia article about sdf.org[4]. Even, tilde.town made its way to a recent academic article on interfaces aesthetics (Bollini, 2017). And finally, there are numerous users' articles, trying to fulfill the gap in the historical and theoretical literature concerning PAUS, such as cmccabe (2018) or Manatee (2016). Those articles, though not academic, are complete and well documented resources, and so I cite them as one of important basis for conceptualising PAUS.

In such systems, users access central computer mainly over ssh protocol from within their terminal or pseudo-terminal that gives user access to a **shell**, that is a command interpretor (Garfinkel et al., 1994). For those who are not familiar with what a "terminal" is, the easiest way to grasp it is remembering hacker or science-fiction movies with people typing words into a mysterious computer program that appeared as a black screen with fluorescent green letters. For PAUS, the main users' activity is held through such "Command-Line Interfaces" (CLI) and not over "Graphical User Interfaces" (GUI).

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[3]Todd Bookman, Apr 17, 2012; In Noisy Digital Era, 'Elegant' Internet Still Thrives; https://www.npr.org/2012/04/17/150817325/in-noisy-digital-era-elegant-internet-still-thrives

[4]https://en.wikipedia.org/wiki/SDF_Public_Access_Unix_System

In this sense, we differentiate "text-based" from "graphical" environments. Until mid-nineties text-based computing was rather a common practice, especially for over-the-network activities, and thus this specification seldom appears. To the contrary, Smith and Kollock (1999) specifies as something unusual "graphical worlds", while leaving text character of other communities in the cyberspace uncommented. For the need of this article, we will generally use text-based in the sense of CLI-oriented, for the ease of lecture, unless explicitly stated otherwise.

Similar, web forums are sometimes also considered "text-based", as the main communication is done with the use of the text. Yet for our definition, they are out of scope, as they are primarily GUI based, being accessed over graphical web browsers.

PAUS communities gather around socialisation of setting and maintaining a Unix-like system alive. Participants are not mere "users" but they are co-responsible for the system's resources (cmccabe, 2018), also, if they want, they may write their own code that further mediates their interactions. This kind of set-up challenges the notion of "prosumers" of Web2.0 and common practices of "attention capitalism".

The question is not how politically aware those actions are, but rather about how and why they persist and what we can learn from them. The existence of user maintained system at the very margins of the noisy and glossy Internet might teach us something very important for privacy and security, knowledge that could find its application for other collectives.

1.4 Justification

Text-based communities, although not very important in numbers of users, prove their relevance through their persistence in time and keeping non-commercial values. As cmccabe (2018) notes, they maintained quite stable amount of users, and recently they experienced subtle growth. Also, we consider significant their potential for informal education on computer-literacy.

While the general tendency of technological development in our society is often subjugated to corporate and military interests, promoting therefore their culture and values, research on substantially different technological cultures and their artefacts might contribute to first, better understanding current situation and second, propose healthier settings for digital society.

With this review we pretend to attract academic attention to non-mainstream social technologies and facilitate further inquiries on Unix-like systems and its public access shells as social dwellings.

1.5   Method

For purposes of this review, an extensive search was performed on different scientific databases, juggling on terms like "social"+"Unix", "virtual community"+"text-based", "community" + "CLI", etc.

Since the popularity of virtual communities at the end of last century, new perspectives appeared like affective and corporeal turns, that transformed, in hand with the feminist studies, our visions and insight. As textual "virtual" environments seem to be usually studied as discursive phenomena, some extra effort was put in finding materials including those perspectives. For that, I used also search terms such as "embodiment", "body", "affect", "corporeal" in conjugation with those previously mentioned.

Acquired results were then checked for their relevance, retaining those that keep on the set subject. Based on those readings, some further bibliographic references were extracted, responding to the criteria exposed above.

For this study we concentrate primarily on non-graphical and non-web media. Hence, I would generally discard papers regarding graphical virtualities, except some specific cases that I judged relevant for other reasons, such as insights in virtual communities dynamics or affinity with certain text-only phenomena (ex. as MOOs keep kin to MUDs).

2   Text Based Virtual Communities

In 1993 Howard Rheingold coined the term "Virtual Community" that soon regained popularity and became an angular stone for numerous virtual etographies. As he defines it, "[v]irtual communities are social aggregations that emerge from the Net when enough people carry on [those] public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace"(Rheingold, 1993).

The main element of a virtual community consists in having a communication medium that allows public debates. Not only particular individuals need to be able to communicate but a common communicative area is necessary. Yet as Bartle (2016) states, having available a discussion channel is not a sufficient condition. For community to emerge, there must be "human feeling" as per Rheingold. This sense of community according to Koh and Kim (2003) is constructed around three dimensions: perception of one's belonging, ability to influence others and possibility of immersion into the community related activities.

In his book, Rheingold (1993) discusses subject such as addiction, death,

governance and sex, topics that were already discussed by some scholars and became common for this field. Those communities are "virtual", as they focus on interactions available with CMC means and where direct presence is not crucial. According to Krishnan (1999), virtual communities arise in the moment when due to globalisation process traditional communities are weakened, opinion that also reflects in Rheingold (1993) words:

> The experience has to do with the way groups of people are using CMC to rediscover the power of cooperation, turning cooperation into a game, a way of life–a merger of knowledge capital, social capital, and communion. The fact that we need computer networks to recapture the sense of cooperative spirit that so many people seemed to lose when we gained all this technology is a painful irony.

He argues that virtual environments allow people to help each other solving problems, learn from each other and share events and emotions. Also he believes that "virtual communities could help citizens revitalize democracy", empowering grass-root organisations and defining new ways of cooperation. This is so because "the technology's inventors believed that the tools they created should belong to citizens to help us solve problems together".

This perspective was contested, as discrimination markers, such as race or gender do not disappear in textual environments (for example O'Brien and Burkhalter in Smith and Kollock 1999).

Literature uses different categorisations of virtual communities, for example based on objectives criteria (Bartle, 2016) (community of interest, of practice, of commitment or spiritual community) or the amount of online vs virtual communication (Koh and Kim, 2003).

2.1 Bulletin Board Systems - BBS

Rheingold (1993) defines BBSes as "the simplest, cheapest infrastructure for CMC". They require a "host" computer with BBS software, modem and telephone lines and remote users (DeLayne, 1990).

Researchers treating early BBSes concentrate on technical aspects of setting up such an environment and its innovative character comparing to traditional forms of communication (DeLayne, 1990; Frisbie et al., 1991) or on its educational advantages and scientific usage (Collins, 1995, 1996; Kim et al., 2018; Lewenstein, 1995; O'Hare and Kahn, 1994; Wiebe et al., 1993a,b)

BBSes are often perceived as an important tool for inter-personal support, as in (Alemi et al., 1996) examining a support group case for drug abusing women

or in (O'Hare and Kahn, 1994) bringing a case of BBS use for women's studies, where this particular CMC gives space for important personal disclosures that in a face-to-face setting might have not occurred.

2.2   Internet Relay Chat - IRC

"IRC is an Internet communications protocol that allows several people to talk simultaneously to one another via their computers, enabling "real time" interaction. The technological requirements are modest, necessitating only a modem and computer, and even very outdated equipment is quite satisfactory" (Kimbrough, 1999).

As one of the first general public real time chat, IRC was studied in a variety of uses. For example Kimbrough (1999) and Ann Hill (1996) talk about its educational application, other researchers focus on language variation and usage (Elsner and Charniak, 2010; Morton, 2001; Paolillo, 2001; van Doorn et al., 2008), this leading to consider IRC as a specific in its culture space for virtual community (Latzko-Toth, 2011, 2014; Morton, 2001; Rheingold, 1993).

As IRC communication lacks physical cues, some authors discuss how it may be compensated (Reid, 1994; Weger and Aakhus, 2003). Apart of "dialogue", users can perform "actions" that aim at giving context, cues and "do" things, apart of speaking. For instance, if a user called Roan writes "/me waves" the output for other users is "Roan waves". This feature compensates in a way a total lack of physical cues that accompany conversations (Moothoo-Padayachie, 2004).

Following the community aspect, an important amount of literature about IRC seems to concentrate on such subjects as gender (Kimbrough, 1999; van Doorn et al., 2008), identity (Morton, 2001; Paolillo, 2001) and textual sexuality (Moothoo-Padayachie, 2004; van Doorn et al., 2008).

2.3   Multi User Dungeons/Dimension - MUD

MUDs and later MOOs are a text-based game environments, available via telnet connection from client to server. MUDs gave space for one of the first multi user real time online gaming, creating around quite an important culture (Smith and Kollock, 1999). MOOs, Multi-user Object Oriented, is a kind of MUD that facilitates that "users" create the game environment and integrates a simple object-oriented programming language that allows users to build not only game space, but also objects that other users could interact with.

Reid (1994) describes MUD in a following way:

"Each MUD system begins as a blank space. It is nothing more than a set of commands and possibilities. A MUD program is, in essence, a set of tools that can be used to create a socio-cultural environment. It is this that sets MUDs apart from other textually based computer-mediated communication tools".

In a usual MUD routine, when users connect to a server, they can explore already created space, meet other users or work on creating some new rooms or objects. As per Reid (1994), in all of the social MUDs there is a common meeting place, a kind of agora. Users can talk (write) to all the other users in the room, they can "whisper" to only one person or "page" to someone on distance. Those actions are performed by writing full commands or their abbreviations.

Similarly to BBSes and IRC, resaerch on MUDs often treats subjects of identities, gender, relations, anonymity, addiction (Bartle, 2016; Curtis, 1992; Lenoir, 1998; Zdenek, 1999) and finally Virtual Community (Bartle, 2016; Curtis, 1992; Reid, 1994; Rheingold, 1993).

As per (Curtis, 1992)

"MUDs do become true communities after a time. The participants slowly come to consensus about a common (private) language, about appropriate standards of behaviour, and about the social roles of various public areas (e.g., where big discussions usually happen, where certain 'crowds' can be found, etc.)".

2.4 Common issues

2.4.1 Identity

A recurrent subject related to text base virtual environments is the identity.

CMC differs substantially form face-to-face communication. Reaserch perspectives range from seeing it as an incomplete form of communication, due to its lacking of cues and context (for example Harrington and Bielby 1995; Jacobson 1996), to perceiving it as fully autonomous, independent way of communication, for example Koh (2002) considers cyber-sex as better realisation of ones fantasies.

Harrington and Bielby (1995) discuss the issue of trust and negotiating of trustworthiness among BBS users, arriving at conclusion that in CMC uses are "partial people" or "nonpeople".

Other researchers inquire how the nickname one chooses constitutes a means of self-presentation (Jacobson, 1996; Koh and Kim, 2003; Morton, 2001). Those

may vary from mythical characters, objects, animals to ethnic names (Koh and Kim, 2003; Reid, 1994).

As Reid (1994) specifies, in MUDs becoming "self-made people" is a three step process. After choosing a name, one needs to generate an auto-description, that can very from just few lines to numerous paragraphs. And the last step is choosing a gender. Although there are different policies depending on MUD, and some oblige to choose between male and female, it seems to be a common practice to allow at least some more gender settings, such as "'s/he', 'him/her' and 'his/her ', or 'e', 'em' and 'eir '", them, etc Curtis (1992).

2.4.2 Gender

The issue of assigning gender to user's online persona was widely discussed. As "we cannot see one another in cyberspace, gender, age, national origin, and physical appearance are not apparent unless a person wants to make such characteristics public"(Rheingold, 1993), some users perform "gender-swapping". This practice seems to be quite a common, although still quite questionable (Curtis, 1992; Krolokke, 2003; Rheingold, 1993; van Doorn et al., 2008).

As Bartle (2016) argues, inscribing gender options while writing the software is not that much matter of politics, but of communication, especially designing a text only medium:

> We didn't want gender in MUD1 (well, we didn't want to force the choice). However, the way the English language works and the fact that MUD1 was a text world meant that we pretty well had to do it. Basically, it comes down to the pronouns.

When experimenting with identities on IRC, knowledge that might be carried to the "real world": " Data on identity experimentation illustrate that some users leave IRC with newfound knowledge about their self-identities, and about the social world and its workings"(Koh, 2002). Yet, some argue that it does not alter general gender discrimination(Smith and Kollock, 1999; van Doorn et al., 2008), as Curtis (1992) remarks, female-presenting MUD users are often subjected to harassment, challenging and "special treatment".

Including feminist perspective van Doorn et al. (2008) bring about the opinion that gender and identity are not biological but rather a matter of linguistic activity: "It puts the spotlight on how gender identities are textually performed". And in the context of an important masculine domination of technology, feminine values and voices are hardly ever heard, remind the authors.

In this context, Krolokke (2003) sustains, textual communications such as

IRC still contain[s] the aspiration to "leave the body behind," but at the same time it is continually haunted by the "specter of embodiment" that enforces its law and governs our discourse. In the context of gender, this specter continues to enforce a discourse that links gender to a dichotomously sexed body, whether visible or not.

2.4.3 Governance

According to some authors (Curtis, 1992; Rheingold, 1993; Rushkoff, 2010) early Internet and its tools grew with inscribed authors' values, that is creativity and freedom. Question of internal governance of communities remains linked to that of software management.

An interesting illustration is the case of IRC studied by Latzko-Toth (2011, 2014) in a process that the author calls co-production.

The protocol was originally designed in a way that would offer administrative powers to whole group of users, for example it would allow anyone to kick out other users from a given communication channel. Yet numerous communities experienced flaming, floodings and other anti-social behaviours, especially when school-peers got wide access to computers. Therefore, the IRC programmers together with other IRC users decided to implement more centralised power structures, including channel operator privileges and central name-servers

It seems that with the popularisation of a specific CMC medium, governance becomes increasingly centralised or controled. Apart of IRC, similar stratification took place on MUDs (Curtis, 1992). With time, form one side users were granted possibility of creating new rooms and objects in social MUDS (Reid, 1994), yet from the other, new levels of power were implemented, starting from mortals, through wizards to archwizards (Curtis, 1992; Reid, 1994). Wizards are players that gained access to more commands usually for system maintenance and are in charge of taking care for the community, arbitrating in case of conflict or "punishing" harmful players. As Reid (1994) explains, contrary to adventure MUDs, "[h]ierarchies on social MUDs tend to be socially rather than technically enforced".

2.5 Textuality and Embodiment

In the presented works dominant perspective is discursive and socio-constructionist. In textual worlds made of narratives, where description is equal to creation, "text still has its powers" (Rheingold, 1993).

As Bartle (2016) reminds, creation and customizations ease in MUDs *"is directly related to the fact that they are purely text-based; in a graphics-based*

system, the overhead of creating new moderate-quality graphics would put the task beyond the inclinations of the average user". So if in the text-based environment everything is language, creating is an act that operates on meanings, that generate a specific technoculture for each particular medium. Each description or interaction can be laden with strong cultural and communicative significance.

This discursive approach is clearly observable in what Koh (2002) says:

> Very often, there is no congruence between the signified (person) and the signifier/s (persona/s). The signified is absent and in its absence, one's fantasies are projected onto the signifier. Identities on IRC have a distinctively postmodern character — they are multiple, fluid and mutable.

Due to disembodied characteristics of text-based CMC, the term of "embodiment" appears in studied texts in three ways. First it points to virtual simulating of physical cues, like in IRC "actions" or similar MUD "emoting". Second, it refers to "real" or physical realm, in contrast to "virtual" one (like "embodied self" vs "virtual self"). Third, we can understand embodiment as a sum of virtual and physical realm, that is being body at the same time as doing virtual actions.

What is referred as inhabiting the cyber-space and the feeling of the presence in it (Towell and Towell, 1997), might be as well defined as what William Gibson's book, Neuromancer calls a "consensual hallucination". Virtual reality according to (Reid, 1994) is "primarily an imaginative rather than a sensory experience".

Text based CMC is thus a technology for sharing imaginative space among users. With the use of graphics-oriented interfaces, first and third use of "embodiment" tends to give space away towards representing with photos of the second one, more characteristic to Web2.0 paradigm(Koh, 2002). This also reflect in what Bartle (2016) says about designing MUDs: "So in the end, we had to have gender in MUD1. Graphics force the issue further, though. Text means that characters get a gender; graphics mean they get a sex."

If we can find quite an important inclusion of affective perspective, that includes affects and emotionality as inherent in research on text-based virtual communities (Reid, 1994; Weger and Aakhus, 2003), and needless to mention discursive perspective(Krolokke, 2003; Reid, 1994; van Doorn et al., 2008), the actual corporeal perspective, acknowledging physical and physiological reality of users is rarely to be found. In this context, we do not mean discursive body or body as a carrier for discriminative features or one whose representations

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are commonly shared on Social Media sites. We refer to a feeling, living and kinaesthetic body that one is(Sheets-Johnstone, 2011).

Taking into account corporeal turn, Stone (1991) is clear about the importance of it: "When asked how sitting alone at a terminal was a social act, they explained that they saw the terminal as a window into a social space" and then she recalls that this social aspect is directly linked to fingers moving as by typing.

Mauro-Flude (2007) points that the difference between graphical and command line interface is not only an aesthetic one and that "the regular use of a computational interface, command line or GUI, has deep physiological effects". She makes a difference of "pointing" mechanics of GUIs that reduce human creative and imaginative capacities to what is directly visible and by this undoing our capacity of language that allows us to refer to distant objects, and the praxis of actively knowing, which can be translated into a command. Rheingold (1993) holds a similar position:

> Point-and-click tools that hide the complexities of the Net and get you to the information or people you seek were just beginning to emerge from the research-and-development phase by the early 1990s. The human interface problem aside, once you learn your way around a full-fledged conferencing system, you gain a lot of power. There are some things that can't be simplified to point-and-click. Human communication is the most complex system we know about.

And the knowing of commands and system's complexities, Mauro-Flude (2007) argues, depends both on a kinaesthetic awareness of oneself as on the actual knowledge of computer's internal processes. She " propose[s] that after prolonged use of Linux, people will begin to develop more of sensitivity for their own need for inner maintenance".

3   The Unix way

In order to understand PAUS we need to have a look on the origins of the computing and information technology. As PAUS are rather of non-innovative character, they maintain numerous features from the initial era and they often maintain Unix philosophy among their users. Early studies of Unix varied in themes from prompt capacities and art (Truck, 1991) to Unix influence on cognitive capacities (Coventry, 1989).

In nowadays nerd folklore most of the "community" narrative related to software development usually starts with Richard Stallman in mid '80 creating

GNU/Linux project. Yet this story relates that Stallman created GNUproject, that is "Gnu-Not-Unix") in response to commodification and privatisation of previously non-commercial software development (Ceraso and Pruchnic, 2011). And this previous part of the story is about Unix.

Some decades before Stallman, as Reid (1994) reminds, in the situation of a deficiency of machines for students, multi-user operating systems were developed: "The multi-user paradigm quickly became popular, as its cost-effectiveness became apparent, and was followed by the idea of the computer network". Unix soon followed and fast gained popularity due to two crucial factors: first - it was multi-user, and second - it adapted easily to different hardware (Crecine, 1986).

This facilitated collaboration and faster growth of informatics:(Rheingold)

> An operating system is a master control program that handles interactions between human users and computer programs; Unix was designed for programmers of interactive computers who needed to be able to build tools for each other, share those tools, and propagate successful tools throughout the programmer community.

This multi-user (Bach, 1986), and thus potentially social character can be observed as reviewing some of the earliest commands implemented on this system, for instance "talk" that allows to have a real time conversation, "who" that informs about who is currently logged into the system, "finger" that gives more detailed information about a specific user, "wall" that immediately shows a message to all users, or "mail" that was first implemented for communication inside a specific server. Though, the use of commands requires a steep learning process (Coventry, 1989), in part related to cryptic command names or its options inconsistency (Garfinkel et al., 1994).

Public Access Unix systems are based on Unix's social principle. They share some features and dynamics with other text-based virtual communities. Command line character, no external cues, context limited to discursive realm are some common points of PAUS with IRC, BBSes or MUDs. Yet PAUS are substantially different, as they reduce amount of interfaces that separate users and machines, at the same time giving users full range of commands and thus, innumerable possibilities. In this aspect they are similar to MUDs Object Oriented, encouraging creativity and pro-activity, but they overgrow MUDs capacities, for Unix shared social space is directly embedded in the Unix-like operating system.

4 Conclusions

From the literary review, we have found that there is abundant work on different text-based virtual communities, yet their textual specificity is often not fully acknowledged. This may be due to the fact that in the times of popularity of such social worlds it was the default option and these were graphical communities that were the exception, hence, carrying distinctive name. And then, when the graphical virtual communities become popular, the interest in textual ones lessened. From our findings, IRC, MUDs and BBSes share similar social problematics, such as identity, gender or hierarchies.

We find three main areas for further research:

- Public Access Unix-like systems could be further investigated.

- We find space for critical psychosocial research on CLI (vs GUI) articulation.

- We consider that discussing CLI socialisation form corporeal perspective is still little developed.

References

Akoumianakis, D. (2010). Tracing Community Life Across Virtual Settlements:. *International Journal of Virtual Communities and Social Networking*, 2(4):51–63.

Alemi, F., Mosavel, M., Stephens, R. C., Ghadiri, A., Krishnaswamy, J., and Thakkar, H. (1996). Electronic Self-Help and Support Groups:. *Medical Care*, 34(Supplement):32–44.

Ann Hill, R. A. (1996). Collaboration via e-mail and internet relay chat: Understanding time and technology. *Technical Communication*.

Bach, M. (1986). *THE DESIGN OF THE UNIX* OPERATING SYSTEM*. PRENTICE-HALL, INC.

Bartle, R. A. (2016). *MMOs from the Outside In*. Apress, Berkeley, CA.

Bollini, L. (2017). Beautiful interfaces. From user experience to user interface design. *The Design Journal*, 20(sup1):S89–S101.

Castells, M. (2010). *The rise of the network society*. Number v. 1 in The information age : economy, society, and culture. Wiley-Blackwell, Chichester, West Sussex ; Malden, MA, 2nd ed., with a new pref edition. OCLC: ocn317777882.

Ceraso, A. and Pruchnic, J. (2011). Introduction: Open Source Culture and Aesthetics. *Criticism*, 53(3):337–375.

cmccabe (2018). History, evolution and future of public access unix systems. https://cmccabe.sdf.org/files/PA_UNIX_Evol_History_d4.pdf.

Collins, M. A. J. (1995). Using electronic bulletin boards with college biology classes. *The American Biology Teacher*, 57(3):188–189.

Collins, M. A. J. (1996). A successful experiment with an electronic bulletin board in a large class: Computer conferencing promotes cooperation and interactivity among students both inside and outside the classroom. *Journal of College Science Teaching*, 26(3):189–191.

Coventry, L. (1989). Some effects of cognitive style on learning UNIX. *International Journal of Man-Machine Studies*, 31(3):349–365.

Crecine, J. P. (1986). The next generation of personal computers. *Science, New Series*.

Curtis, P. (1992). Mudding: Social Phenomena in Text-Based Virtual Realities.

de Rivera, J. (2010). *La Socialización tecnológica. La expresión de la identidad personal y nuevas formas de relacion en las redes sociales de internet.* PhD thesis, Diploma de Estudios Avanzados. Facultad de Ciencias Políticas y Sociología. Universidad Complutense de Madrid.

DeLayne, H. (1990). The Electronic Bulletin Board: Appropriate Technology. *Educational Technology*, 30(7):5.

Deleuze, G. (1992). Postscript on the Societies of Control. *October*, 59:3–7.

Elsner, M. and Charniak, E. (2010). Disentangling Chat. *Computational Linguistics*, 36(3):389–409.

Ford, P. (2014). I had a couple drinks and woke up with 1,000 nerds" — the story of tilde.club. `https://medium.com/message/tilde-club-i-had-a-couple-drinks-and-woke-up-with-1-000-nerds`.

Foucault, M. (2013). *Surveiller et punir*. Editions Gallimard.

Frisbie, A., Price, R., and Repman, J. (1991). Establishing an Electronic Bulletin Board System. *Educational Technology*, 31(4):4.

Garfinkel, S., Weise, D., and Strassmann, S., editors (1994). *The UNIX-HATERS Handbook*. IDG Books Worldwide, Inc.

Gehl, R. W. (2014). *Reverse engineering social media: software, culture, and political economy in new media capitalism*. Temple University Press, Philadelphia, Pennsylvania.

Gehl, R. W. (2015). The Case for Alternative Social Media. *Social Media + Society*, 1(2):205630511560433.

Guy, A. (2017). *The Presentation of Self on a Decentralised Web*. PhD thesis, University of Edinburgh, School of Informatics.

Hardt, M. and Negri, A. (2000). *Empire*. Harvard University Press, Cambridge, Mass.

Harrington, C. L. and Bielby, D. D. (1995). Where Did you Hear That?: Technology and the Social Organization of Gossip. *The Sociological Quarterly*, 36(3):607–628.

Jacobson, D. (1996). Contexts and Cues in Cyberspace: The Pragmatics of Naming in Text-Based Virtual Realities. *Journal of Anthropological Research*, 52(4):461–479.

Jones, Q. (1997). Virtual-Communities, Virtual Settlements & Cyber-Archaeology: a Theoretical Outline.

Kim, H., Lee, M., and Kim, M. (2018). Effects of Mobile Instant Messaging on Collaborative Learning Processes and Outcomes: The Case of South Korea. page 13.

Kimbrough, D. R. (1999). On-line "chat room" tutorials: An unusual gender bias in computer use. *Journal of Science Education and Technology*, 8(3).

Koh, J. and Kim, Y.-G. (2003). Sense of Virtual Community: A Conceptual Framework and Empirical Validation. *International Journal of Electronic Commerce*, 8(2):75–94.

Koh, S. (2002). The Real in the Virtual—Speech, Self and Sex in the Realm of Pure Text. *Asian Journal of Social Science*, 30(2):221–238.

Kozinets, R. V. (2010). *Netnography: ethnographic research in the age of the internet.* Sage Publications Ltd, Thousand Oaks, CA, 1st ed edition.

Krishnan, O. (1999). Beyond National Boundaries: Towards an Internet Society. *Sociological Bulletin*, 48(1/2):10.

Krolokke, C. (2003). "Impossible Speech"? Playful Chat and Feminist Linguistic Theory. *Women and Language*, 26(2):8.

Latzko-Toth, G. (2011). A co-construction story: Users as co-designers of a Communication Device: The case of IRC.

Latzko-Toth, G. (2014). Users as Co-Designers of Software-Based Media: The Co-Construction of Internet Relay Chat. *Canadian Journal of Communication*, 39(4).

Lenoir, W. D. (1998). Clueless Newbies in the MUDs: An Introduction to Multiple-User Environments. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 72(2):106–110.

Lewenstein, B. (1995). Do Public Electronic Bulletin Boards Help Create Scientific Knowledge? The Cold Fusion Case. *Science, Technology, & Human Values*, 20(2):28.

Lovink, G. (2011). *Networks without a cause: a critique of social media.* Polity, Cambridge, UK ; Malden, Mass. OCLC: ocn780329779.

Manatee, G. (2016). The swintons of tildeverse; drinks, nerds and public html. `http://ctrl-c.club/~gauntlet/tsot/`.

Mauro-Flude, N. (2007). Linux for theatre makers.

Moothoo-Padayachie, N. (2004). Cyber Sex: The Dawn of a New Society. *Agenda: Empowering Women for Gender Equity*, 2,1(62):8.

Morton, H. (2001). I IS FOR IDENTITY: What's in a Name? *Social Analysis: The International Journal of Social and Cultural Practice*, 45(1):15.

O'Hare, S. L. and Kahn, A. S. (1994). A computer bulletin board in women's studies courses. *Transformations: The Journal of Inclusive Scholarship and Pedagogy*, 5(2):64–73.

Paolillo, J. C. (2001). Language variation on Internet Relay Chat: A social network approach. *Journal of Sociolinguistics*, 5(2):180–213.

Reid, E. (1994). *Cultural Formations in Text-Based Virtual Realities.* PhD thesis, Cultural Studies Program Department of English University of Melbourne.

Rheingold, H. (1993). *The Virtual Community: Homesteading on the Electronic Frontier.* Perseus Books.

Rushkoff, D. (2010). *Program or be programmed: ten commands for a digital age.* OR Books, New York. OCLC: ocn671693571.

Sheets-Johnstone, M. (2011). The Corporeal Turn: Reflections on Awareness and Gnostic Tactility and Kinaesthesia.

Shen, Y.-C., Huang, C.-Y., Chu, C.-H., and Liao, H.-C. (2010). Virtual Community Loyalty: An Interpersonal-Interaction Perspective. *International Journal of Electronic Commerce*, 15(1):49–74.

Smith, M. A. and Kollock, P. (1999). *Communities in Cyberspace.* Routledge.

Stone, A. R. (1991). Will the Real Body Please Stand Up? page 18.

Terranova, T. (2012). ATTENTION, ECONOMY AND THE BRAIN. *CULTURE MACHINE*, page 19.

Towell, J. and Towell, E. (1997). Presence in Text-Based Networked Virtual Environments or "MUDS". *Presence: Teleoperators and Virtual Environments*, 6(5):590–595.

Truck, F. (1991). The Prompt and Virtual Reality. *Leonardo*, 24(2):171.

van Doorn, N., Wyatt, S., and van Zoonen, L. (2008). A Body of Text: Revisiting textual performances of gender and sexuality on the internet. *Feminist Media Studies*, 8(4):357–374.

Weger, H. and Aakhus, M. (2003). Arguing in Internet Chat Rooms: Argumentative Adaptations to Chat Room Design and Some Consequences for Public Deliberation at a Distance. *Argumentation and Advocacy*, 40(1):23–38.

Wiebe, J., Doyle-Nichols, A., Semrau, P., and Slovacek, S. (1993a). On-Line "Chat Room" Tutorials: An Unusual Gender Bias in Computer Use. *Educational Technology*, 33(8):9.

Wiebe, J. H., Slovacek, S., Semrau, P., and Doyle-Nichols, A. (1993b). Running a BBS in an Educational Technology Program: Experiences and Recommendations. *Educational Technology*, 3(8):5.

Zdenek, S. (1999). Rising Up from the MUD: Inscribing Gender in Software Design. *Discourse & Society*, 10(3):379–409.

Zuboff, S. (2015). Big other: Surveillance Capitalism and the Prospects of an Information Civilization. *Journal of Information Technology*, 30(1):75–89.