



On the Linguistic Nature of Cyberspace and Virtual Communities

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Abstract: This paper argues for a linguistic explanation of the nature of Virtual Communities. Virtual Communities develop and grow in electronic space, or 'cyberspace'. Authors such as Benedikt Meyrowitz and Mitchell have theorised about the nature of electronic space whilst Lefebvre, Popper, Hakim Bey (aka Lamborn Wilson) and Kuhn have theorised more generally about the nature of space. Extending this tradition and the works of these authors, this paper presents a language based perspective on the nature of electronic spaces. Behaviour in cyberspace is based on and regulated by hardware, software tools and interfaces. A definition of electronic space cannot be given beyond its linguistic characteristics, which underlie and sustain it. The author believes that the more users and developers understand the relationship between language and cyberspace, the more they will be able to use specific metaphors for dwelling and inhabiting it. In particular, MUDs/MOOs and the Web are interesting places for testing and observing social behaviours and dynamics.

Keywords: Virtual communities; Cyberspace; Speech acts; Linguistics

Introduction

A definition of electronic space, or 'cyberspace'¹ as coined by Gibson [1], has been a core topic among scholars of a wide range of disciplines [2-8]. A generally accepted definition of cyberspace has not yet been found, although most attempts make reference to a body of literature that is more descriptive and narrative than scientific [1,9]. Although exploring and expanding such definitions is important, the purpose of this paper is to more

broadly consider the perceived nature of electronic space for the purpose of specifying what actions and operations are naturally entailed in those perceptions. Researchers are giving different explanations of how language and communication can systematically evolve into specific tools and models.

This paper explores how cyberspace can be considered in terms of a linguistic construction, so that further hypotheses on the use and nature of Virtual Communities can be introduced. To begin the exploration of the linguistic approach to the nature of cyberspace, some of the differences and similarities that cyberspace has with other kinds of spaces (mental, physical, social) will be discussed [10].

¹ *Cyberspace* and *electronic space* are here used as synonyms.

I will first consider language as a symbolic system [11,12], and will introduce the hypothesis of 'cyberspace as language', giving examples of its symbolic and linguistic nature. This hypothesis can be corroborated by examining some of the objects found in cyberspace, such as World Wide Web browsers and pages (content).

Secondly, with reference to Kuhn's theory of metaphor in science, I will explore the metaphorical aspect of space, from which alternatives about the nature of electronic space can be extracted. In particular, text based Virtual Communities offer a communicative engagement which extends beyond mere exchange of information. The matter of cyberspace will be investigated through concepts such as Temporary Autonomous Zones, viruses, and linguistic presence and behaviours.

Finally, a short reflection on how to consider cyberspace and Virtual Communities from a linguistic perspective, has the advantage of focusing on some characteristics of their use and evolution. For instance, 'Speech Acts' [13], things that "can be done with words", or "performative linguistic actions", can be applied and can find their own domain in the design field.

Cyber + Space

The physical nature of cyberspace has been considered a subject not worth a scientific demonstration [6], neither can its dynamic nature be easily restricted into a static definition [14]. Some ideas and theories, which have not been formulated particularly in regard to electronic environments, will be used here to introduce the concept of cyberspace as language [2,3,15–17].

It is my intention to maintain a flexible use of the term 'space', for a clear use of the word has not yet been stated. Moreover, some scholars, even considering the influence of new technologies for communication onto our perception of space, have not found particular interest in its definition [18].

Lefebvre [16] opens his book with:

Not so many years ago, the word 'space' had a strictly geometrical meaning: the idea it evoked was simply that of an empty area. In scholarly use it was generally accompanied by some such epithet as 'Euclidean', 'isotropic', or 'infinite', and the general feeling was that the concept of space

was ultimately a mathematical one. To speak of 'social space', therefore, would have sounded strange. (p.1)

Lefebvre here for the first time tried to reshape the notion of space with the terminology of social sciences, to consider the idea and concept of space as being open to non-mathematical theories, and for the first time 'matter' characteristics are attributed to space. Lefebvre distinguishes three types of space:

- physical space; nature, the Cosmos;
- mental space; including logical and formal abstractions;
- social space; social interactions.

Each one of them is not separated from the others. In fact, they individually overcome the notion of a 'per se' space²: they are not 'self standing' (per se), but interlinked; together, they shape the complexity of the nature of space and its variables. Lefebvre is interested in demonstrating keys for decoding the matter of space, beyond the mathematical intuitions and demonstrations. The space of social interactions cannot be considered separated from nature or logical abstractions. The same can be said about cyberspace: we cannot consider it separated from the physical, mental and social space.

Lefebvre gives a framework of the kinds of activities which can take place in these three kinds of space. From his framework, I have compiled a subset of characteristics which will be functional to the understanding of the nature of cyberspace. The following characteristics, partly borrowed by Lefebvre, can be used and applied to the understanding of the matter of cyberspace, although they are not exhaustive.

- Possibility of action. This includes all the possible physical transformations inside space, such as any kind of activity onto materials,

² Lefebvre's three kinds of space are not to be misunderstood as separate environments of action. The notion of a "per se" space comes firstly from Aristotle and the essentialism, a theory which states that "objects have essences and there is a distinction between essential and non-essential or accidental predication[...] in the early modern philosophy, the idea that the identity of an object is constituted by what it is plays an important role in Continental rationalist thinkers." ["Essentialism" in (Audi, 1995)]. The *kath hauto* or per se predications or what an object is are necessary to the object. Together with *kata sumbebekos* (how an object is) they define object predicates.

which imply change of state, and motion. I consider physical transformations also those ones which affect electronic spaces through language of various nature (including programming languages).

- Livability. Or: the possibility of dwelling in a space. This property is linked to the possibility of organising space into structures. Livability underlies and supports, one may say that it is indispensable for the formation (spontaneous or not) of communities.
- Construction of communities. This matches the concept of social space in Lefebvre's thought. Communities are independent from their spatial organisation, even though their development shows itself inside an 'action' space; communities can exist beyond their geographical location. This is particularly interesting when examining virtual communities.
- Time organisation. I will here consider time as a property of space, for it is within space alterations that we can perceive changes in time, and therefore give a structure to its organisation. Whatever organisation of time we would keep as actual (parallel or sequential), space gives possibility to time definition. However, time organisation and space organisation could also not be present at the same time. One does not imply the other. For instance, the time organisation of a meeting or a production does not necessarily imply their spatial/physical realisation.
- Spatial organisation. Space may be organised into structures and metastructures: structures, when it looks at the details for its realisation; metastructures, when it defines the logistical organisation. The definition of a system of coordinates for the structure might be possible. Disciplines which study how to organise space (such as urbanism and architecture) fall under the more specific concept of 'disposing things into space'. Spatial organisation is directly functional to livability.

There is an interesting parallel between Lefebvre's and Popper's thoughts. Popper's definitions of the 'three worlds' [17] match, in many ways, with the ones of the French thinker.

The domains of the three worlds are:

- World 1; the objective world of material, of physics and natural things. Energy, motion and state change can be included here. This can be associated with physical space.

- World 2; consciousness, thoughts, intentions, memory, dreams are part of this world. This can be associated with mental space.
- World 3; the results of interactions of human-kind, public structures and also non-intentional products of the above mentioned interactions. This can be eventually compared to social space.

Within these definitions of space, we can hypothesise that cyberspace respects the same tripartition. Or we could think of cyberspace as a fourth partition of space.

Cyberspace, a Metaphor of Space or a 'Space for' Metaphors?

Electronic communication, creating the so-called electronic space, did not destroy or deny the 'sense of place' [19], nor did it invent/create a new one. Virilio [18] suggests that the increasing speed of information determines a change in its livability and perception (such as the quality and the quantity of information delivered in a certain period of time). Meyrowitz [19] claims that the fragmentation of space³ does not 'tell lies' about its nature, but tells its 'several truths': the division of spatial components reveals more of the structure of space. Each component can be thought and understood as a section of interest. A pluralistic space arises from the multiple access to information. At the same time, in the same place, different protocols connect us with parallel places: Email, Virtual Communities, World Wide Web, videoconferencing. Fragmentation helps on the one hand to separate the quality and quantity of information, on the other to control its access and hierarchy. Electronic space can be used in many different ways (we will call them 'protocols'⁴) creating a multiple identity for a player⁵ within his/her/its boundaries.

³ We can name a space "fragmented" when several substantial activities are taking place, in that space, at the same time. That space becomes multidimensional, and "substantial" is here the keyword to describe space as a multitasking environment.

⁴ Examples of protocols in the electronic space are FTP, Telnet, http, and so on. RFCs documents define them in details. An extensive index of RFCs can be found at <http://ds.internic.net/ds/dspg1intdoc.html> at the time this paper is written.

⁵ With "player" we refer to a user able to react/interact with electronic space.

Even though a definition of cyberspace has not been finalised⁶, I will refer, for the time being, to cyberspace as 'an electronic fluxus of information', meaning that cyberspace does not only, and simply, rely on a computer generated environment but deals, mostly, with speed, access and manipulation of information. As long as we accept that information is made by (structured on) language, we can concentrate our attention onto how an unhierarchical set of information can characterise cyberspace. Kuhn's thoughts about metaphor in science [15] are helpful to introduce the idea of cyberspace 'as' language. He underlines:

Metaphor plays an essential role in establishing links between scientific language and the world. Those links are not, however, given once and for all. Theory change, in particular, is accompanied by a change in some of the relevant metaphors and in the corresponding parts of the network of similarities through which terms attach to nature. ([15], p.539)

He points out how metaphors can oscillate inside language changing the 'nature' of the things they are referring to:

The earth was like Mars (and was thus a planet) after Copernicus, but the two were in different natural families before. ([15], p.539)

Metaphors define new classes (families) of things, in virtue of their linguistic power, ie: of their representative function. For Kuhn, by metaphor the world is continuously re-defined and in change. Similarly, cyberspace belongs to the family of 'spatial constructions,' and therefore to the metaphor of world representations. If these representations change, also cyberspace will be re-defined. In particular, cyberspace seems to move towards a linguistic construction, seen the nature of its content and of its tools. When (if any time at all) will cyberspace move from being a spatial representation, and therefore a metaphor, of space, to being a space for metaphors?

One may say that already cyberspace is a space for metaphors if one considers, for example, icons

⁶ Benedikt [2] tries to define cyberspace as: "... a globally networked, computer-sustained, computer-accessed, and computer-generated, multidimensional, artificial or 'virtual' reality" (p.122); Gibson tries with "Cyberspace is a consensual allucination that people have created." [20], or "Cyberspace is where you are when you are talking on the telephone", John Perry Barlow.

and GUI interfaces; but still the *livability* characteristic (in virtue of which organisms can dwell) is not completely fulfilled. Livability goes along with systems able to be born, grow, reproduce, and die.

From Kuhn's concept of metaphor in science, following his examples, I argue that cyberspace still has to become a 'per se' space, in the sense that its 'what it is', or its *kath hauto*, are not clear, whereas 'how it is', or its *kata sumbebekos*, can be described. Cyberspace has not developed a consistent system of metaphors and representations which could be considered 'self standing' in respect of the triad physical-mental-social space. It still uses structures and pictures (linguistic images) taken from world's 'how-it-is'.

Cyberspace is a linguistic construction, since any 'object' found in cyberspace is a result of some sort of languages (HTML, compiled sources, MUD/MOO languages, clients, servers, and content). Not only programming languages establish links between cyberspace and the world (as in Kuhn's thesis on metaphor), but they *produce* cyberspace themselves. The programmer has the capacity to change cause and effect of cyberspace. S/He is at the same time builder and citizen, the designer and the user.⁷

The System of Cyberspace

Is cyberspace part of the world (also in one of the Popper's three kinds)? Or is it 'another world,' in the sense of a fourth partition of space as in Lefebvre?

One of the main problems encountered when trying to define cyberspace is whether to consider it a *system*, a *subsystem* or a *self-referential system*, compared to space. As a *system*, it would be autonomous from space, which means that, also, it might become a *system of places*, ergo: a group of places linked by mutual relationships, having all the characteristics that this implies (relations of cause-effect, time structure, other generations of spatial subsystems). As a *subsystem*, a system which is part of another, it would become one of the places inside space, but it would remain linked to it, and it could not be considered as a 'per se' space. As a *self-referential system* or 'hybrid space', a system which is part of another but only refers to itself and its

⁷ Cyberspace itself can be considered a group of events made possible by scripts. "Scripts" are groups of instructions in computer languages and lingos. They can be compiled, to become executable, or left to a software browser (eg. HTML and Web browsers).

own variables, it would belong to the main system of space, and claim independence from it at the same time. In this case, the hybrid space would belong to, would be located in, a 'metastanding' space (a space which namely belongs to the original space, but has independence in respect to its parent). Cyberspace would claim its own structure construction, which would not have to reflect the one of the original space, but could 'reinvent' itself with a new system of metaphors (such as a Temporary Autonomous Zone).

The nature of cyberspace seems to lie more on the third definition, of 'hybrid' space. Nobody is ready to admit a separate life for cyberspace, it is not 'detached' and independent from physical space. It still relies on the physics of silicon.

On the other hand, as for some commonly accepted descriptions given by VR (Virtual Reality), IRC (Inter Relay Chat) and MUD (Multi User Dungeons) users [9,21], cyberspace is a 'legitimate' space, in which relationships and communities can develop.

The Matter of Cyberspace

As seen above, in the term *cyber+space*, *space* assumes the meaning of *physical matter*, whereas *cyber* gives it the *immaterial* characteristic. The term 'cyber' comes from 'cybernetics', which means 'leading, piloting'. In the last few years, it assumed a meaning of 'that which belongs to the digital world'. Moreover, it reaches a point in which it could be assimilated to 'virtual'. Scholars are ready to agree that cyberspace is not a place for molecular manifestations, in the sense described above. Any phenomenon which takes place is, in fact, a result of electronic transformations of linguistic events.

Which is the 'matter' of cyberspace, then? As seen above, none of the scholars considered finds any *materiality* in cyberspace. The 'touchability' is still the main characteristic for defining 'physics' (being molecular). Cyberspace is *not* a physical space, and its livability is arguable. If we think about livability as 'molecular presence', then we can sustain that cyberspace *is not* livable.⁸

Comparing the observations from Lefebvre, on the different kinds of space, I observe that:

⁸ I will not question, as Woolley does, "could this be a new reality?", in the chapter about cyberspace (p.135). The concept of real and virtual has been analysed in detail in Maldonado [6] and Cicognani [4].

- *physical space* has possibility of action, livability, can host communities and can be organised in spatial sub structures. Its time is irreversible: we do not have control over it;
- *mental space* does not have any livability characteristic, neither possibility of action or spatial organisation. Mental space is where intentions are formulated and organised;
- *cyberspace* has control over its time, whereas physical space is affected by its irreversibility;
- *cyberspace* is an 'actual' zone, activities can take place there, such as exchange of information, modifications of computer generated environments, communities can find ways of aggregation (e.g. newsgroups, mailing lists, IRC channels and MUDs, all language-based environments);
- *communities*, intended as groups of people sharing the same interests, as well as actions, are also possible in cyber-, physical and social space, whereas mental space is, above all, the space in which the organisation of these communities and actions, and therefore their time, starts being shaped, but still is not produced as modifying action.

I argued that the matter of cyberspace is language: it is written by it, and it is navigable by it; the navigation tools are nothing else but pieces of software, id est: language.

The advantage of compiled language is in its global versatility: when compiled (and sometimes even when not, such as HyperText Markup Language), it creates information which can be shared, transmitted and interpreted by a large number of computers.⁹ Computer language does not seem to be affected by 'babelisation': even though software can be written in different languages, when executable it works (and looks) the same. Other approaches to cyberspace are illuminating about its own nature.

Temporary Autonomous Zones

Now, let us explore another view of how to explain the matter of cyberspace. In this paragraph, I will give a glance to the concept of TAZ, Temporary

⁹ HTML (HyperText Markup Language), for example, is a language that, no matter the platform on which it's running, can be interpreted by different World Wide Web browsers (Netscape, Mosaic, Cello), and other authoring software packages

Autonomous Zone, which might appear quite distant from the linguistic approach proposed in this paper. It is, instead, useful to show how cyberspace responds to a linguistic structure.

The concept of TAZ is so expressed:

The TAZ is like an uprising which does not engage directly with the State, a guerilla operation which liberates an area (of land, of time, of imagination) and then dissolves itself to re-form elsewhere/elsewhen, before the State can crush it. Because the State is concerned primarily with Simulation rather than substance, the TAZ can 'occupy' these areas clandestinely and carry on its festal purposes for quite a while in relative peace. [3]

A privileged means for transmitting information is also a privileged means for growing TAZs. So is the Net.

We've spoken of the Net, which can be defined as the totality of all information and communication transfer. [...] Thus within the Net there has begun to emerge a shadowy sort of counter-Net, which we will call the Web [...] Generally we'll use the term Web to refer to the alternate horizontal open structure of infoexchange, the non-hierarchic network... [...] The TAZ has a temporary but actual location in time and a temporary but actual location in space. But clearly it must also have 'location' in the Web, and this location is of a different sort, not actual but virtual, not immediate but instantaneous. The Web not only provides logistical support for the TAZ, it also helps to bring it into being; crudely speaking one might say that the TAZ 'exists' in information space as well as 'in real world' [...] If the TAZ is a nomad camp, then the Web helps provide the epics, songs, genealogies and legends of the tribe. [3]

The Net, being 'the totality of all information and communication transfer', is the place where the power of linguistic acts (and the *infoexchange*) can emerge. Also, TAZs are mainly constructions of language: the *guerilla* of which Bey talks is a *poetic terrorism*. This is a linguistic terrorism in which the evocative power of words reveals strengths and weaknesses of the networking system, through and by language.

Viruses and Information

A kind of life form can be recognised in TAZs and cyberspace: this form is a *virus*. Information, on the Net, is easily transmittable; so is a virus. The word 'virus' has moved from the biology field into the world of Information System:¹⁰ a virus becomes naturally part of the system from which it has been generated. If viruses are the main signs of the existence of organisms, then life on the Net¹¹ is to be considered an actual possibility.

Linguistic Presence in Cyberspace

Language itself lives its evolution; it is continuously modified inside cyberspace - as soon as the Net grows with new interfaces, the 'net-language' absorbs neologisms and finds ways among the several protocols and interfaces which build cyberspace. The complexity of the Net and its communities follows the one of language: if the language improves, so does the Net. Only advanced interfaces (due to advanced programming languages) have been able to create cyberspace, virtual communities, and virtual objects.

Moreover, language is indestructible. So is cyberspace, and the Net. The nature of the Net is (un)structured in a way which excludes a pyramidal chain reaction. If a local breakdown occurs, the entire Net will not 'fall down', and information will find other ways to get through. Moreover, the Net is based onto two main elements: telecommunications and computers. Neither of them seems to be close to disappearing.

Language and Privacy

In cyberspace no physical danger is possible, therefore, we do not need physical shelters, but electronic (and linguistic) ones. Our privacy is again a linguistic question. PGP¹² guarantees it. Any constraint found in cyberspace has roots in language, and it can be changed, improved or made worse by language. There is a mutual relationship between the matter of cyberspace and cyberspace

¹⁰ The information viruses are well described in Rushkoff [22]. Also "pranks" [23] can be considered one of the "sicknesses" of the information system.

¹¹ [7], for a preliminary approach to the construction of 'cities of bits'.

itself, between language and cyberspace: one influences and modifies the other, and vice versa, in an ongoing fluxus.

Linguistic Behaviours in Cyberspace

I have been arguing that our behaviour in cyberspace is constrained by language. Moreover, my approach is not one of definition, but more of explanation. Understanding characteristics of cyberspace will help us in finding ways of dwelling it.

One of the first concepts related to dwelling is behaviour. Some scholars have started thinking about the relationships between the complexities of space and our reactions. I am trying to use the same concepts related to cyberspace.

The real world lives, co-operates and responds to the existence of cyberspace. As for Benedikt [2]:

With cyberspace the real world (let us grant some consensus here as to its physicality) does not become etherealized and thus, in the aggregate, less large or less real; nor does the 'mental' world become concrete and thus, itself, less mental or spiritual. Rather, with cyberspace, a whole new space is opened up by the very complexity of life on earth: a new niche for a realm that lies between the two worlds. Cyberspace becomes another venue for consciousness itself. And this emergence, proliferation, and complexification of consciousness must surely be its universe's project. (p. 124)

Behaviour in cyberspace is regulated by tools, we can change behaviour if we change tool (Web browsing, full immersive computer graphics, electronic chatting), that is to say, behaviour changes if/when language changes. Tools are pieces of software, at the very end, and the hardware is the 'matter' on which they run. The more these tools evolve, the more our degrees of freedom increase.

As bandwidth burgeons and computing muscle continues to grow, cyberspace places

¹² Pretty Good Privacy. This system of encryption has been developed by Phillip Zimmermann in 1990. See the Cypherpunk archives at <http://www.hks.net/cpunks> and the documentation included with the software, which is freeware.

will present themselves in increasingly multi-sensory and engaging ways. They will look, sound, and feel more realistic, they will enable richer self-representations of their users, they will respond to user actions in real time and in complex ways, and they will be increasingly elaborate and artfully designed. We will not just look at them; we will feel present in them. ([7], p. 114)

The linguistic resources of cyberspace are as numerous as the ones the programming languages allow to produce, compile, and use sources. Cyberspace is under construction and so is its language.

Studies about computer mediated communication (CMC) and its linguistic dynamics have been conducted in the last few years.¹³ These studies demonstrated how we adapted our ways of communicating to the new medium (for example: email), and how our expressions are evolving inside that medium to take the highest advantage of its possibilities. They also argue that local 'digital' communities can develop 'dialects' and local slang.¹⁴

Summarising, there are two main uses of language practiced in cyberspace:

- *communication*; natural language is progressively adapting itself to the new media and protocols made possible by the Internet. Communication in cyberspace is made possible by a typical language which considers the limitations of the medium, and is able to cover the loss of 'emotivity', if there is any;
- *construction*; programming languages contribute to develop, extend and modify cyberspace. Browsers and interfaces in general are language based. On their complexity relies the ease and the efficiency of the use of cyberspace.

Both of these uses are legitimate and fundamental for the existence of cyberspace. Moreover, our own 'identity' in cyberspace is linked to how we use language and how we can build an 'avatar',¹⁵ a personæ which resembles ourselves or what we think we are. The more language is refined, the more cyberspace becomes host for virtual

¹³ See "<http://shum.cc.huji.ac.il/jcmc/jcmc.html>", and Paccagnella [24] for extended bibliographies.

¹⁴ Somebody (see "<http://www.dsiegel.com/tips/wonk9/usage.html>") is also arguing that "English language is a lot like HTML".

¹⁵ This word indicates a representation of an entity in electronic spaces (see also [25]).

communities, which, eventually, will be able to state their independence from the structure of the physical world.

Some Final Considerations

This paper has tried to show how certain theories about space [3,15–17] can be analysed to understand better the emerging nature of electronic space. Whilst there are many complex debates in research which relate to the design of Virtual Communities and cyberspace(s) (for example linguistic constructions, metaphor, virtuality, speed of information, and so on) theorising about cyberspace and its evolution is yet to develop a strong philosophical and theoretical background.

Some of the theories exposed [16,17] give the first hints for this purpose, whereas some others [2,3,7,19] develop a more specific proposition for cyberspace. Metaphor becomes a relevant topic, and Kuhn's article, as quoted above, informs on the relationship between language and science.

Scholars are not looking for a definition of cyberspace, as much as they are not looking for a definition of space, that is also beyond the scope of this paper. However, programming languages and Net interfaces show a possible direction towards a 'shape' for electronic space. The characteristics of cyberspace can be found in the characteristics of the language(s) on which it is based.

The more users and developers understand the relationships between language and cyberspace, the more they are able to use specific metaphors for dwelling and inhabiting it. In particular, MUDs/MOOs and the Web are interesting places for observing social behaviour and dynamics. *Speech acts*, things that can be done with words [13], can be redefined in their performative forms for cyberspace. I wish to emphasise again, how this field of linguistics can be useful for a formalisation of a design language for cyberspace.[26].

Future research will continue to seek spatial and linguistic metaphors for an optimal organisation of cyberspace, in the belief that an architecture of cyberspace is not only possible, but also necessary. A deeper understanding of the linguistic nature of cyberspace could lead to the development of more constructive forms of design and communication.

Acknowledgements

This paper is an evolution of "Which language for cyberspace?", presented as a poster at CVE 1996, Nottingham. The research is being conducted within the Faculty of Architecture of the University of Sydney, Key Centre of Design Computing, to which goes my gratitude. The help and support of Mary Lou Maher and Justin Milne are greatly acknowledged.

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