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MAKING SENSE OF USERS PARTICIPATION IN OPEN SOURCE PROJECTS: THE CASE OF A
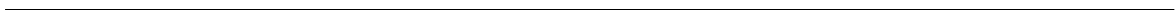MATURE VIDEO GAME

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Non alzatevi mai dal tavolo da gioco,

perché quando lo farete,

scoprirete di essere diventati troppo,

irrimediabilmente vecchi

F.M.Dostoevskij

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ANT Actor-Network Theory.

BfW The Battle for Wesnoth.

CABDIWML Can Already Be Done In WML.

CAQDAS Computer Assisted Qualitative Data Analysis Software.

CoP Community of Practice.

CS Computer Science.

DPD Distributed Participatry Design.

EULA End User License Agreement.

FLOSS Free Libre and Open Source Software.

FOSDEM Free and Open source Software Developers' European Meeting.

FOSS Free and Open Source Software.

FPI Frequently Proposed Ideas.

FS Free Software.

GFDL GNU Free Documentation License.

GNU Gnu is Not Unix.

GNU GPL GNU General Public License.

GSoC Google Summer of Code.

HttT Heir to the Throne.

IIRWIR It Is Ready When Is Ready.

IMHO In My Humble/Honest Opinion.

IP Internet Protocol.

IS Infromation Systems.

LoL Laugh(ing) out Loud.

LoM Lord of Music.

LoW Legend of Wesmere.

KISS Keep It Simple, Stupid!.

MMORPG Massive(ly) Multiplayer Online Role-Playing Game.

OSS Open Source Software.

PNG Portable Network Graphics.

RL Real Life.

SE Software Engineering.

SMS Short Message Service.

SSK Sociology of Scientific Knowledge.

SST Sociology of Science and Technology.

STS Science, Technology and Society.

VCS Version Control System (or Software).

VoIP Voice over Internet Protocol.

WIN Wesnoth Is Not. . . .

WINR Wesnoth Is Not Realistic.

WML Wesnoth Markup Language.

WoW World of Warcraft.

XHTML eXtensible HyperText Markup Language.

XML eXtensible Markup Language.

INTRODUCTION

Guided by the general question *how do users participation and software development relate to each other in FOSS?* This work addresses *the great unknown*[1] in Information Technology: users. Or better, it addresses the great unkown in a specific form of technology production: Free and Open Source Software (FOSS) development.

This thesis came out from my personal experiences with the use of FOSS and by the occasional participation to some of their projects. During the last years I used to report bugs or software shortcomings to developers and took part to community discussions concerning features to improve. Despite my participation neither I was ever moved enough to follow up the outcome of those discussions or reported bugs, nor I had time or the required skills for that. Nonetheless, the interest in better understanding what happened there and how my participation affected the general evolution of software grew up. Since then, thanks to confrontations with colleagues and other experts, literature, conferences and insights from the fieldwork, my personal interest has grown and has been refined until it turned into this Doctoral Thesis. Indeed, *Making Sense of Users Participation in Open Source Projects: The case of a Mature Video Game* is the result of a three-year-long work which allowed me to progressively refine the research and its design, organize the empirical work, master the twelve months of fieldwork, draft and revise the analysis of this phenomenon and, finally, write this final document.

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[1]The hint here is to a Special Issue of *Information Systems Journal* whose opening editorial is titled: "The user – the great unknown of systems development: reasons, forms, challenges, experiences and intellectual contributions of user involvement" (Iivari et al., 2010).

Free and Open Source Software

Free and Open Source Software is a broad concept dating back to the early '80s, born in opposition to the emerging production practices of software companies at the end of the '70s. The publishing of *The GNU Manifesto* and the parallel kick-off of the *GNU Project* in 1983, the establishment of the *Free Software Foundation* (FSF) in 1985 and the release of the first version of the *GNU General Public Licence* (GNU GPL) in 1989 can all be considered base elements for the establishment of FOSS and milestones in the creation of a completely free operating system. This project was born within the 'hacker culture' of the laboratories of the Massachusetts Institute of Technology (MIT) and was mainly guided by Richard Stallman, a programmer who worked for the Artificial Intelligence Lab (AI) of MIT. However, thanks to the parallel diffusion of the Internet, the project quickly drew the attention of people outside the academic labs (Williams, 2002).

Since 1991 an important contribution to the GNU Project has been provided by *Linux*, a kernel for UNIX-based operating systems started and developed as a personal project by the Finnish computer science student Linus Torvalds. The combination of components developed in the GNU Project[2] with a functioning kernel such as Linux resulted in a free operating system. As a consequence "GNU/Linux distributions" started spreading out as proper operating systems assembled to satisfy different users' groups (Torvalds & Diamond, 2001; Moody, 2002).

Permissive licences, public and open access, distributed and collaborative development were considered some of the pillars of the unexpected[3] success of GNU/Linux. These principles also gave birth to the *Apache web server* and the *Mozilla* browser. The former was abandoned[4] by the American *National Center for Supercomputing Applications* (NCSA), then it was resumed and taken over by some developers no longer at NCSA, outside the institutional context of the company. Currently, the Apache Web server is one of the most used[5] Internet servers worldwide (60%). The latter has so far represented a renowned case of industrial conversion to FOSS by an international software company. At the verge of

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[2] At that time one of the key missing components for the GNU project was indeed a functioning kernel.

[3] During the same period the emerging software industry witnessed the rise of start-ups such as Microsoft Systems and Apple. These companies made of strict exclusive licences, industrial secrets, and highly professional development teams their strengths. In this light the FOSS phenomenon, mainly incarnated in the GNU Project, seemed an amateurish effort doomed to fail.

[4] The original name of the project was: "NCSA HTTPd".

[5] Source Netcraft: `http://news.netcraft.com/archives/web_server_survey.html`. (Last visited 20/08/2012)

bankruptcy, Netscape Communication Corporation released the source code of its leading product, the Netscape Navigator web browser in the attempt to outsource to 'the community' some of the development efforts. Appropriated by the community and developed in different incarnations, today the *Mozilla Firefox* browser is a direct descendent of that project and one of the widest adopted browser (DiBona et al., 1999).

At the end of the '90s a group of 'hacktivists' and FOSS developers tried bringing this development model closer to the business-oriented philosophy by adopting the term "Open Source", founding the *Open Source Initiative* (OSI) and publishing the *Open Source Definition* (OSD). In this way, they tried to highlight the technical and pragmatical strengths of the Free Software phenomenon, while sending to the background the ethical and philosophical stands of the term "Free". After that period the redundant terminology of "Free and Open Source Software" started spreading to indicate a loosely defined set of development practices with their technical and legal artefacts, regardless of the ethical or pragmatical connotation intended for the phenomenon.

Clarified the above terminology, we still have to define "Free and Open Source Software". A software is considered *free*[6] – it is FOSS – if, and only if, it grants the following four rights to its users:

- Freedom to run the programme for any purpose;

- Freedom to study the software and to modify for own needs;

- Freedom to redistribute copies of the software;

- Freedom to redistribute modified copies of the software.

The legal device for granting these rights is the licence by which software is distributed[7] (De Paoli et al., 2008). Necessary requirement and direct implication of such licence is the public availability of the programme source code.

The basic dynamics of FOSS development can be summarized and simplified as it follows: a person starts writing a programme and makes it publicly accessible (typically through the Internet) under the terms of a free licence. If other people notice it and like it they may start using it. However, through use, besides the good aspects of the programme also the errors and limitations become evident. If users can fix these software errors (*bugs*) or may want to

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[6]See http://www.gnu.org/philosophy/free-sw.html for the manifesto including FSF's official definition of "Free Software". (Last visited 20/08/2012)

[7]Nowadays many different licences exist which grant these four freedoms, but the most widely adopted still remains the GNU GPL. For a comprehensive list see: http://www.gnu.org/licenses/license-list.html. (Last visited 20/08/2012)

add missing functions, they can do it because source code is available and licence allows for it. If users have no skills for editing software, they can anyway report bugs to the software author. Indeed, developers are not aware of all potential bugs that can be found in the source code and, unless someone reports them, they cannot fix them. In case the programme is no longer a small personal project but has become (or it was since the beginning) a larger and more ambitious programme, then the number of collaborators increases as they do the number of users, the feedback received, the bugs created, the ones reported and the ones fixed. As a consequence, the need for project maintenance, scalability, sustainability and innovation becomes real.

The chance to access and edit the source code is only one of the necessary conditions to make FOSS grow, but it is not enough for gaining people participation or for coordinating them in an efficient way. For this reason the intertwined dimensions of *participation*, *collaboration* and *coordination* emerged as the most investigated ones (Weber, 2004).

Participation. Answering the question why developers would voluntarily contribute to FOSS is not easy. Usually an heterogeneous set of motivations is adopted for this puzzle. Some people participate primarily for ideological reasons: for them, FOSS embodies a type of software which is ethically or technically superior to the proprietary one. Other people participate to overcome a personal need such as fixing few specific bugs that impede them to use to software as they wish. Other people see in the engagement with FOSS development practices a chance to improve their skills or learn new ones. Finally, there are also those ones who simply participate for fun, to express their creativity, or to affirm their reputation within the community (Lerner & Tirole, 2002; Lakhani & Wolf, 2005).

Collaboration. In FOSS this is considered crucial. A restricted number of individuals have the chance to totally dedicate to FOSS projects, thus many tasks get shared. They have many tools at disposal to make collaboration easier. The *revision control systems* for instance, allow people to collaborate remotely and work in distributed settings on the source code while keeping track of the history of every single change. Similarly, the *bug tracking software* keeps track of all identified bugs and the progresses made for fixing each of them. Mailing-lists, Internet Forum, and Internet Relay Chat (IRC) are the basic communication channels that are usually adopted within a FOSS project.

Finally, there is an heterogeneous set of normative elements which spans from official rules and guidelines which 'institutionalize' the correct way to contribute to the project (Crowston et al., 2006; D'Andrea et al., 2009).

Coordination. The two above mentioned aspects are not enough to coordinate efficiently participation. In most FOSS projects, it is valid the tenet of self-assignment of tasks: who participates is free to choose the type and extent of the contribution he is willing to provide (Crowston et al., 2007). However, in the economy of the project it is important that the contributions spread all over the needed areas of the development project. A system of socio-technical incentives and a meritocratic principle favours the rise of charismatic and trustworthy persons who occupy the 'central' roles and take care of most sensible tasks. Together with the hierarchy that establishes and evolves within the project, they also vary the participants' responsibilities, skills and contribution types (von Krogh et al., 2003; van Wendel de Joode & de Bruijne, 2006)

Research Question

Broadly speaking, this work places itself along the interest for understanding the changing 'working relations between technology production and use' that started emerging at the onset of the '90s (Suchman, 1994) and that, nowadays, has a similar reach to a paradigm change (Crabtree, 2003).

Already at the beginning of the '90s, Suchman highlighted the relevance of putting under critical reflection typical 'objective' and 'objectifying' views of technology production since they were no longer able to frame actual designing, production, appropriation and consumption dynamics at the time of the Computer and Information Technology 'revolution'. She called for exploring new ways to study these dynamics and suggested for the relational and networking nature of these processes to be made central (Suchman, 1994). She suggested to move from engineered views of working processes in technology production and use to socially performed and constructed ones:

> a shift from a view of objective knowledge as a single, asituated, master perspective that bases its claims to objectivity in the closure of controversy, to multiple, located, partial perspectives that find their objective character through ongoing processes of debate. (Suchman, 2002, p.92)

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Introduction

Today, as Information and Communication Technology (ICT) became pervasive for our society and Internet-based technologies evolved to increase our capacity for personal communication, production, publication, distribution and sharing (Hagen & Robertson, 2010), the development processes of such technologies critically changed even further and Suchman's call turned paramount.

The necessary competences for producing ICT often go beyond the boundaries of a single organization or company and are dispersed outside their institutional frame. This brings development processes under the 'jurisdiction' of a network of heterogeneous actors. More importantly, the production of these technologies heavily blends with actual use contexts throughout their design, implementation and maintenance. Here, outstanding cases are those bottom-up, collaborative and inclusive forms of innovation and technology production which are known in Innovation Studies as forms of *democratized innovation* (von Hippel, 2005) and in Media & Cultural Studies as expression of an emergent *participatory culture* (Jenkins, 2006).

Enthusiastic and skilled hobbyists, users or developers take action and responsibilities for putting into concrete forms their ideas for better, different or innovative technological artefacts and in so doing let complex socio-technical aggregates to emerge from such efforts. Here, traditional boundaries among roles and formal processes blur. Who is a user, a designer, a developer or a maintainer in such contexts? Where does designing ends and developing, testing or using begin?

The present work tackles seriously these blurred boundaries and practices by looking beyond traditional dichotomies and by trying to understand their intersections in a recently established way to understand and perform software development: Free and Open Source Software (FOSS). As I explained above and as I will repeat in the next chapter, FOSS is harbinger of that kind of *design in use* that is nowadays so central in Information Systems (Henderson & Kyng, 1991) and Computer Science (Dittrich et al., 2006), and which characterises social technologies (Lievrouw, 2006), contemporary software and system products (Botero & Saad-Sulonen, 2010; Eriksson, 2008), as well as many forms of "produsage" activities (Bruns, 2008).

In particular, my specific research interests have their roots in two emerging areas of FOSS studies. The first is the one on FOSS usability, which calls for a better understanding of how users influence design and implementation processes. The second is on FOSS sustainability,

which calls for an understanding of how participation in FOSS projects or communities can be made endurable over time.

The former area builds on a concern about Free and Open Source Software being less usable than traditional proprietary software (Nichols & Twidale, 2003). The implicit developers' practice to use an *I-methodology*[8] approach to software development emerged as one of the problem. In FOSS a part of the user population act as the developers team, but this team (even though is made by 'users') represents a very small minority. Furthermore it is hardly representative because it is composed by highly skilled people (Nichols & Twidale, 2006). Only a few developers involved in successful business-oriented projects[9] seem to be aware of the importance of usability. For this reason they are trying to involve Human-Computer Interaction (HCI) experts or similar professional figures in their development processes. However, such attempts resulted in a limited success, because these experts are either ignored by developers or find a hard time mediating users needs and developers interests (Bach & Twidale, 2010).

The latter area only recently it emerged a proper focus on the users and their relation with the sustainability of projects. Previously, sustainability was mainly framed in relationship to the renewal and replacement of developers throughout the projects lifecycle (Lattemann & Stieglitz, 2005). As I mentioned in Chapter 1, the ability to involve newcomers – *operational health* – and the capability to be efficient regardless of any individual contributor – *survivability* – are often considered key aspects for sustainable FOSS projects (Fogel, 2006). For this reason a lot of literature explains the socialization and training processes of new developers progressively moving from marginal to core development activities (Crowston et al., 2006; Ducheneaut, 2005). However, we know very little[10] about *what* and *how* keeps users affiliated with communities or projects when they know they would not become developers.

In light of this, the overall research question unfolds into different directions and levels of inquiry. Indeed:

- *How do users participation and software development relate to each other in FOSS?*

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[8]It is an approach in which designers and developers think of themselves as the final target user group for the technology they are developing. Often designers and developers may also do it unconsciously (Oudshoorn et al., 2004).

[9]For instance the GNU/Linux distributions or renowned products such as Mozilla Firefox.

[10]It should not surprise that the overall topic of the 8th edition of the *International Conference on Open Source Systems* in 2012 was "Long-term sustainability" `http://oss2010.org`. This is the leading international Conference on Open Source Systems and it is organized within the IFIP Working Group 2.13 `http://www.ifipwg213.org/`.

becomes first of all, an implicit inquiry of *how to approach FOSS* and *how to figure "users" out* at the practical level. However, in more substantive terms it also calls for understanding issues such as how far do FOSS projects allow for the integration of end users' needs into development processes? How does participation in non-core development activities relate to core development processes? What and how keeps participants involved in projects in the medium and long term?

Thesis Content

In the attempt to answer these research questions, my arguments unfold through seven Chapters which make my thesis. The first chapter provides a theoretical definition of the phenomenon and it brings inside the research frame three macro areas: (*i*) Free and Open Source Software (FOSS) development; (*ii*) users participation; and (*iii*) software design. When it was possible, I built the chapter upon FOSS literature, but some of its limitations forced me to rely on different sources too. The second chapter establishes the epistemological foundations and the research design used to tackle a 'research object' which manifests mainly through Internet-based technologies. I explained the rationale behind an efficient (cyber-)ethnographic approach and how I employed literature from Science and Technology Studies (STS) and from the Organizational Theory. I also summarized the overall fieldwork activity and concentrated on the techniques to collect data. The third chapter describes the peculiarities of the case to be studied: *The Battle for Wesnoth*. It clarifies how the various elements interact to give players a real experience of a strategy video game and it narrates the evolution of the collective as it matured from a personal project to a widely recognized (at least in the FOSS niche), successful and participated collective.

The fourth and fifth chapters are analytical. They concentrate on the relationships between participants and non-participants in the collective, and also on the connection between the dynamics of participation and the continuous development of artefacts. In particular, Chapter 4 shows a certain resilience to accommodate suggestions coming from people external to the collective, which is more responsive to issues which emerge as widespread among participants. In order to better understand the raise of such widespread issues, Chapter 5 focuses on: few grouping patterns amongst participants; the phenomenon of *wesbreaks*; and the individual motivations for participating.

Last, but not least, in Chapter 6 and Chapter 7 I made final considerations about the epistemology and method used for this work, I summarized the objectives and the results of the thesis and drew the conclusions on users participation in *The Battle for Wesnoth*. Finally I also tried drawing some implications of my conclusions.

Terminology and conventions – A readers' guide

Here are some of the terminological and style related conventions I used in this thesis.

Participating and Contributing

The *Dizionario di Sociologia*[11] (Gallino, 2004) attributes two different meanings to the term *participation* a 'strong' and a 'weak'. The stronger meaning indicates the intervention in the governance centres of a collectivity (group, association, company, state). In this case people have the power to concretely affect the decisions concerning the life of the collective. The weaker meaning indicates the participation to the activities of the collectivity in a more or less steady way, regardless of the real chances that exist to directly affect the governance and decision centres. However, these two types of participation are not necessarily mutually exclusive. In any collective there could be sub groups of people participating both the stronger and the weaker way (Gallino, 2004, see "partecipazione", p.479). Participation described in the thesis is closer to the weaker meaning than to the stronger one. Moreover with the term *contributing* I referred to a specific instance of participation that is aimed at creating (or directly editing) artefacts.

On projects, communities and collectives

In Chapter 1 I explained the use of the term "collective" and its definition as a means to overcome some limitations of using the dichotomy between "community" and "project". The idea of *collective* is compatible with the epistemological grounds of the research. However, during the reading you may find referrals to "projects" and to "community" in the quotations of natives and informants.

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[11]*Dictionary of Sociology*.

Anonymity and informants' aliases

In order to keep informants anonymous I replaced their real names and nicknames with aliases. I chose them randomly by referring to names of characters from the fantasy world of the game. In this video game a few characters act as enemies or evil forces, but I made no association with the ethical principles of informers. Furthermore, I am aware that making informers completely anonymous was not totally possible, because of the public nature of the video game project. I kept on using aliases throughout the thesis, even though informers identity might be easily found out. On the contrary, the names of the investigated case was not hidden.

FOSS/FLOSS/OSS/FS

What once started as the *Free Software* (FS) movement in mid '80s, goes today under a various set of names and acronyms, such as *Free and Open Source Software* (FOSS), *Free/Libre and Open Source Software* (FLOSS), *Open Source Software* (OSS). I am aware that slight differences do exist amongst these terms, but to keep consistency across the thesis, I will use "FOSS" as general term to refer to this phenomenon, since it is one of the most used within academic works. If clarifications or distinctions will be necessary I make them explicit within the text or footnotes.

Reporting data

In this thesis there are different kind of excerpts (*e.g.* fieldnotes; Forum/E-mail discussions, IRC conversations, and interviews). To help readers distinguish them I adopted a few conventions. At the bottom right of each excerpt I always provided details for the **medium** the excerpt comes from (*e.g.* fieldnote, interview, Forum), an **identifier** for the object (*e.g.* e-mail subject or name of the IRC channel) and the **date** of the interaction. If reported interactions happen at different times, date is provided inside the excerpts (*e.g.* in Forum discussions). Only for Forum discussions I provided the title of the Forum thread at the top of the first reported message.

This excerpt is an example taken from an IRC conversation:

[. . .] 22:26:59
<BfWEthnographer>: 'evening
<Reglok>: welcome in chat BfWEthnographer

<BfWEthnographer>: thanks

(IRC, #WIF, 16/11/2010)

Last but not least, to avoid introducing too many pseudonyms in the excerpts I used the following conventions for identifying actors: participants I had contact with as informants have a pseudonym, the other debaters have assigned names of "Participant A" or "B" and "Developer A" or "B", as they progressively appear. The progression of letters regards the specific reported discussions (For instance "Participant A" in Section 5.1.1 is not the same "Participant A" in Section 5.1.2).

Artworks and code artefacts

All artworks, game snapshots and code artefacts belonging to *The Battle for Wesnoth* that are included in this manuscript are used only for illustrative purposes. All copyrights remain to their original authors.

Acronyms

As far as abbreviations and acronyms are concerned, in the attempt to provide clarity and simplicity, I always reported the term in its full extension every time it appears for the first time in each single Chapter. Yet, if my attempt failed and the reader gets lost, I have provided an abbreviations list at the end of this document, in Appendix . Please forgive the writer and refer to it.

CHAPTER 1

DEFINING USERS PARTICIPATION IN FREE AND OPEN
SOURCE SOFTWARE

In this first chapter I establish the research object and define its theoretical boundaries. However, I should warn readers that this part includes arguments and theoretical standpoints borrowed from different disciplines. At first they may seem unfitting or too far-off with each other. I am convinced that collecting heterogeneous theoretical and epistemological approaches from different disciplines is necessary to properly frame how participation and the shaping of software artefacts combine in Free and Open Source Software (FOSS) collectives.

Besides the fact that multidisciplinarity has been characterizing FOSS studies[1] for a long time, I argue that relying on different research areas and disciplines in my research is due to a limited consideration to users in such studies. Or, in other words, it is due to the narrow framing of *participation* adopted in these studies. For this reason it should not be surprising that the subjects introduced here include literature from Computer Science, Management Studies, Political Economy, Cultural/Anthropological studies, Science and Technology Studies (STS), Participatory Design, Human Computer Interaction, Information System research, Media Culture, Software Engineering and Ergonomics.

In the attempt to combine together the different literature streams in a clear and

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[1]With "FOSS studies" I refer to those studies which have FOSS and any aspect related to it as the main objects of inquiry. These studies include a broad and heterogeneous range of disciplines from Software Engineering to Computer Science, from Sociology to Economy, from Law to Political Science. For an overview of various disciplines which build the field of FOSS studies and for an overview of the different approaches see Muffatto (2006); Amant & Still (2007).

comprehensible frame, I organize them in macro areas: (*i*) Free and Open Source Software (FOSS) development; (*ii*) users participation; and (*iii*) software design. To a certain extent these subjects overlap and interrelate, but I keep them apart to make reading easier and to highlight their crucial points.

1.1 Framing Free and Open Source Software development

> Free Software is changing. In all aspects it looks very different from when I started, and in many ways the Free Software described herein is not the Free Software readers will encounter if they turn to the Internet to find it.

(Kelty, 2008, p.301)

Free and Open Source Software (FOSS) is any kind of software that can be run, distributed, studied, changed and improved by users. Broadly speaking the concept "Free Software development" refers to making software complying with these principles (or *freedoms*). The idea of 'embedding' these principles into software dates back to the early 80s and bloomed by a few people, who believed on the role that software would have in society and how it would affect users. In the 80s many actors (people, companies, organizations) acknowledged the value of both these moral principles and the development model used to pursue them (Williams, 2002). A few years later this kind of development have become an emergent and valuable paradigm in which software licence and source code availability became key factors. It became common knowledge that since 'many eyeballs' could look at and thinker with the source code[2], then a better software would arise (Raymond, 1999).

Despite the source code availability and the free software licences, the failure[3] rate in FOSS projects is about 95% (Fogel, 2006, p.2). Licences, source code, and 'eyeballs' are only a part of the story, but as the opening quote in this section suggests, investigating into the phenomenon of FOSS seems difficult and ephemeral, which is mainly due to its short-time existence and its fast-evolution. I should also note that FOSS relates to all varieties of software products: from home-entertainment applications to niche professional utilities; from gaming applications to management and analytics software.

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[2]This idea was formalised by FOSS practitioner and theorist Eric Raymond in the renowned Linus' Law: "given enough eyeballs, all bugs are shallow". Or in another formulation: "given a large enough beta-tester and co-developer base, almost every problem will be characterized quickly and the fix will be obvious to someone."

[3]Understood here as dysfunctional or abandoned software projects.

In FOSS each project, due to its emergent nature, is a unique entity and can be very different from others[4]. Anyway some common traits be found: FOSS development is often described as a transparent, open and distributed process of collaborative development. Indeed it can involve large distributed communities of developers collaborating over the Internet and dealing with the creation of complex artefacts such as software programmes.

1.1.1 From project management to knowledge production processes

I discuss now two early accounts of the FOSS phenomenon and I highlight the need for going beyond them. From a point of view, FOSS development is considered a form of software creation which *differs* from traditional proprietary software practice, but which shares the fundamental goal to make a software programme. The key interest here is spot differences and how they affect software development. The accounts provided by Karl Fogel and by Steven Weber do that, even though they focus on different aspects: the former bases on project management, the latter more on the socio-political principles governing such projects.

In *Producing Open Source Software*, an experienced FOSS practitioner as Fogel dwelt on the FOSS projects failure rate mentioned above and highlighted the necessary elements to support efficient and sustainable FOSS projects. In order to explain the main aspects to keep in mind, he highlighted the following macro elements (Fogel, 2006).

Technical infrastructure. This is crucial for managing information and providing efficient working tools. It can be broadly divided into tools for communicating (*e.g.* mailing lists, IRC channels) and for working (*e.g.* bug trackers, version control systems). Not any project needs the same infrastructure, but each one does request a minimum set of tools. The technical infrastructure should fit the needs and the working practices of the project as this matures and progresses. For instance new dedicated mailing-lists or an improved version control system might be fundamental in case the project grows too much.

Socio-political infrastructure. This is tightly associate with project governance[5]: it helps contributors gauge their expectations, it grants power to 'worthy' members, it acknowledges different social statuses on meritocratic principles, and monitors projects'

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[4]For instance, the differences among 'corporate', hybrid or pure community-based FOSS projects are non-trivial and hardly comparable. For a partial overview on issues concerning hybrid and community-based projects, see: Lin (2006); Shah (2006).

[5]See below for further discussion on this aspect.

performance. In mature and large projects this mechanism can involve formal governance structures, but in small-scale and younger projects this is usually quite informal. Regardless of the form governance takes, contributors should always be aware that a way to ensure equity exists. Besides project managing, governance should guarantee *operational health* and *survivability*. The former aspect refers to the ability to integrate contributions and new contributors in an efficient and responsive way. The latter refers to the projects' ability to continue functioning, regardless of individual contributors, so that project would persist, even if contributors left.

Volunteers management. This aspect is crucial to getting people's consent on what project requests and to coordinating them during work. People with more responsibilities in the governance should leverage on contributors to do their best and make sure all tasks are accomplished. The figure of project leaders (usually the project founder) as *benevolent dictators* and the idea of a consensus-based democracy are crucial here. Leadership and authority are granted to 'leaders' provided they warrant fairness and respect to other developers efforts. When the size of projects increase and leaders have no more resources at disposal to monitor the whole work, decisions are taken in a more collective way on the base of consensus.

Packaging and release management. This is necessary to cope with the non-centralized nature of the team and the self-assignment of tasks. It requests that multiple branches of the programme are developed and maintained in parallel and are released on a loosely defined roadmap. Typically we can find a 'stable' and a 'development' branch. The former is intended for wide adoption and supposedly includes software which has been thoroughly tested. Only maintenance changes get introduced in this branch, but no new features. The latter is used by developers to introduce new features, improving old ones and remove the previously identified bugs. The software in this branch is not intended for end-users. The release management should fit projects' working practices and should be resilient to the frequent issues which voluntary contributions can meet.

For all these elements Fogel provided a set of guidelines and examples of prescriptive *dos & don'ts* to 'run a successful FOSS project'. In this perspective FOSS development can be engineered by *setting up a project* and, if well carried out, can make successful software. Proper management of information and volunteers are crucial. The first concerns a combination

of tools such as mailing lists, revision control systems, bug-trackers and adequate release management, whereas the second one sticks to the figure of the 'benevolent dictator', a consensus based democracy and the shadow of a project's fork. Of course this perspective does not trivialize the problem arising in these projects, but it takes a quasi-engineeristic approach for achieving their solution. Moreover, it puts on the background the social dynamics in relation to which such project components are considered good or bad. However it is worth highlighting that Fogel's book is widely adopted among FOSS practitioners and it is also distributed in a way similar to FOSS projects[6].

My personal dissatisfaction with such an approach is due to the fact that I do not agree on the idea that these projects are manageable, at least not in a strict and formal sense. Indeed, I am in favour of approaches which consider FOSS socio-technical assemblages as emergent and unique entities, such as epistemic communities (Edwards, 2001), communities of practices (Ardichvili et al., 2003) or recursive public (Kelty, 2008). By definition, such entities evade any attempt to be framed under a classical top-down institutional management. For instance when he defined Communities of Practices (CoP), Wenger turned upside down the idea of managing such entities in favour of the one of *nurturing* them (Wenger et al., 2002). This change of perspective helps highlight the process of FOSS projects adaptation in relation to their emergent dynamics and needs, which I consider more appropriate for my investigation. I further discuss this aspect in Section 1.1.2, but hereby I mention another important way to reckon FOSS development. Indeed, it is possible to consider FOSS development as

> a community and knowledge production process that has been fundamentally changed, or created in significant ways, by Internet technology (Weber, 2004, p.128)

and to focus on the general principles that support it, instead of considering project management as structural component.

Here software is intended as a public good which is developed and maintained in a collaborative way. The two fundamental puzzles which need an answer are at the level of micro-foundations and at a macro-organizational level: why do people voluntarily contribute

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[6]Similarly to a FOSS project, the book has its website where people can download it from and where language translations are stored and handled: http://producingoss.com/. The book also exists in traditional paperback version.

to FOSS projects? How do they collaborate, so that their contributions add up to make a coherent and complex product?

To avoid falling into the self-fulfilling prophecy of *self-organizing* (virtual) communities, Weber outlines an explanation of the phenomenon that is based on social, political, technical and economic arguments. The two puzzles are explained by a further division resting on (*i*) individual motivations and (*ii*) economic logic of the collective good; and on (*iii*) coordination principles and (*iv*) complexity management. Simply speaking: a process where different people contribute motivated by heterogeneous personal reasons to the furthering of a non-rival public good.

For a long time developers' reasons for getting involved in FOSS projects have been a key point of academic interest. Developers have rarely been seen as cold rational agents[7] who evaluate the benefit-cost ratio of their involvement. They seem to be willing to contribute because of the social-cultural principles of hackers[8]. These are fellows who greatly enjoy problem solving activities through computer programming especially when it is done in a nice, socially-useful and technically-valuable way.

> [They] build and configure technology at work and for fun, communicate and collaborate copiously with one another using these technologies, and, most significant, derive and express deep pleasure and forms of value by inhabiting technology. (Coleman, 2011, p.512)

Non-practitioners may find it strange that someone may enjoy so much to work on programming. However, it is often common for people involved in creative activities (even in programming) to find themselves so much engaged in such activities, that they lose track of time (Csikszentmihalyi & Csikszentmihalyi, 1975).

In this light FOSS developers participate in projects for satisfaction and personal

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[7]Early accounts of such motivations based on classical Behavioural Economy arguments of rational agents.

[8]I should note that the hacker culture has been largely shaped by the FOSS movement. Therefore, there is a close relationship between FOSS developers' motivations and hackers' principles (Williams, 2002). Furthermore, the term "hacker" does not necessarily refer only to computer programmers. *The New Hacker's Dictionary* states: "hacker n. [originally, someone who makes furniture with an axe] 1. A person who enjoys exploring the details of programmable systems and how to stretch their capabilities, as opposed to most users, who prefer to learn only the minimum necessary. 2. One who programs enthusiastically (even obsessively) or who enjoys programming rather than just theorizing about programming. 3. A person capable of appreciating hack value. 4. A person who is good at programming quickly. 5. An expert at a particular program, or one who frequently does work using it or on it; as in 'a Unix hacker'. (Definitions 1 through 5 are correlated, and people who fit them congregate.) 6. An expert or enthusiast of any kind. One might be an astronomy hacker, for example. 7. One who enjoys the intellectual challenge of creatively overcoming or circumventing limitations. 8. [deprecated] A malicious meddler who tries to discover sensitive information by poking around. Hence 'password hacker', 'network hacker'. The correct term for this sense is cracker" (Raymond, 1996).

enjoyment. They can also be attracted to such projects for personal needs[9] or simply for hobby. Regardless of what bring them closer to the projects, there is a general agreement about their fun building on a combination of intrinsic and extrinsic motivations (Krishnamurthy, 2006). Part of the enjoyment comes from the act of participating itself: because they feel part of a common battle (*e.g.* the ideological quest against proprietary software monopoly); they boost their ego by increasing their own reputation; they test their creativity by solving problems others could not. The other part of the enjoyment is more indirect: engaging in such activities means improving or acquiring new skills and, at the same time, increasing own value for the labour market[10].

Individual motivations partially explains the phenomenon: if FOSS is a non-rival public resource, why is *free riding*[11] not a major concern? The FOSS licences make the source code publicly available, thus software can be considered a *public* (or non-excludable) good: everyone can access and use it. At the same time, its nature of a digital artefact makes replication and distribution costs unimportant, thus it can also be considered *non-rival*: by using it, people would not reduce its availability (Weber, 2004, p.151). In a traditional framing of 'common pool resources' (Ostrom, 1990), people would feel compelled to defend and preserve the common pool, if abusing it undermined its existence. However, FOSS features a non-rival nature, so there is no danger of 'running it out' even in the case that only a minimal part of the population get active for preserving it. It is widely renowned that participation amounts to less than 10% of the whole users population for FOSS or for similar distributed volunteer projects (Crowston & Howison, 2005; Nakakoji et al., 2002). The vast majority of end-users 'free-ride'. Why is this not considered a relevant issue?

The key to understanding this puzzle is the meaning that *non-rivalness* has for software. According to Weber (2004, p.154): "the value of a piece of software to any user increases as more people use the software on their machine and in their particular settings". Compatibility, standardization and ease of use are all considered effects of a wide software adoption. Basically, Weber refines the famous *adagio* of the Linus' Law by claiming:

> The more users (and the more different kinds of users) actively engage in using a
>
> piece of software, the more likely that any particular bug will surface in someone's

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[9]*e.g.* Fixing a bug which prevents them from properly using an application they need.

[10]It is very common to find key developers of successful FOSS projects being hired by large software corporations such as Google Inc., Oracle Inc. Moreover, experience on FOSS development is increasingly more required in the labour market (Riehle, 2007).

[11]Using and consuming a public good without contributing to its maintenance or survival.

experience [. . .] The point is that open source software is not simply a non-rival good in the sense that it can tolerate free riding without reducing the stock of the good for contributors. It is actually anti-rival in the sense that *the system as a whole positively benefits from free riders*. (Weber, 2004, p.154)

The acknowledgement of this relationship is important because it highlights that also non-participant users are important: maintenance and debugging are tightly connected with an heterogeneous pool of users who do not necessarily contribute in direct ways. In FOSS *free-riding* is a positive benefit.

So far the arguments about micro-foundations express collaboration *per sè* – the collective action – but they say little about how this collaboration is coordinated towards a focal point to 'produce a software artefact'. This results in a dual answer. On one hand we can find a coordination mechanism that relies on individual incentives, cultural norms and leadership practices: a governance structure that is responsible for steering contributors and shaping contributions. On the other hand, we have the technical design of the source code which helps reducing and managing the complexity of creating software in a distributed and decentralized way: modularity of software design (González-Barahona et al., 2004; Baldwin & Clark, 2000). This makes it possible for a programme source code to be split into several interdependent modules which can be developed, tested and kept apart from one another. In this way developers can deal with the development of each module without having to worry too much about the development of other modules.

The two complementary approaches discussed above are important for my research, because they point out two aspects: the structural elements which allow dispersed volunteers to bring forward the development of a software project in an open and collaborative way, and the explanation of the logic of collective action by framing software as a particular kind of public good. However this is not enough to properly frame users participation as I need for my research.

The limits of these approaches lie in their framing of the phenomenon as *functional* to software production. Fogel dwells on the infrastructure and how it supports the creation of the software products, while Weber focuses on the (micro/macro) foundations of such a creation process. These approaches do not include all the actors who are not directly involved in the development of source code, but influence the development project nonetheless. For instance Weber provided only limited theoretical space for end-users participation and

free-riding: users are considered important because they test the software and provide feedback or bug reports, but since the focus is on the software development, once users have reported a bug then their role, their function, seems fulfilled.

FOSS projects governance

In summary, underlying the two approaches above is the interest for exploring and understanding FOSS projects *governance*:

> the means of achieving the direction, control, and coordination of wholly or partially autonomous individuals and organizations on behalf of a FOSS development project to which they jointly contribute (Markus, 2007, p.152)

This is a multidimensional construct which includes both 'structural' elements and 'procedural' ones. While Fogel's account focussed more on the former, Weber's one did so on the latter.

Today such a construct has been thoroughly explored, but a decade ago it was of the utmost interest to understand how a complex activity, such as software development, could be pursued outside the tenets of software engineering and formal project management, via informal, mediated and relatively decentralized collaboration (Weber, 2005).

Broadly speaking, FOSS governance aims at solving the 'collective action' dilemma: why people do contribute voluntarily? FOSS governance monitors and favours coordination in development activities: how do contributions from dispersed volunteers match-up to build a functioning software? FOSS governance strives for nurturing an adequate climate for contributors and collaborations: how can projects attract and retain contributors in order to develop an 'healthy' community which take care of the software development project?

As I explained above, in order to deal with these challenges, governance explicates at different levels for which the whole community is responsible for and where participants who reached sepcific roles, core developers and project leaders play a major role. For instance, the ownership of assets, the chartering of the project, the volunteers management, the monitoring of development processes, the solution of conflicts, the re-assessment of rules and guidelines, the development of adequate tools and infrastructure (Markus, 2007, p.157–158).

1.1.2   From knowledge production to recursive and collective experiments

In this section I shift from a focus on the development of software products to one where the creation and maintenance of the socio-technical collectivity itself is central. I begin from the idea of a *recursive public*, as defined in Kelty's work[12], and move to the concept of a space – a laboratory – for collective's experiments.

In Kelty's thought:

> A recursive public is a public that is vitally concerned with the material and practical maintenance and modification of the technical, legal, practical, and conceptual means of its own existence as a public; it is a collective independent of other forms of constituted power and is capable of speaking to existing form of power through the production of actually existing alternatives. (Kelty, 2008, p.3)

A recursive public is a concept, not a real ontological entity, and it extends beyond the substantive domain of FOSS and it could include other phenomena such as the Creative Commons[13]. However, it is *in* and *through* FOSS that Kelty grounds the definition of the concept.

> Free Software as an exemplary instance of a recursive public and as a setting of practices that allow such publics to expand and spread. (Kelty, 2008, p.28)

By framing FOSS as a recursive public the creation of a software programme becomes more similar to a by-product, which result from the collectivity's effort to create and maintain their own publics, rather than to the key final product of such collectivity. By framing FOSS as a recursive public, the common interest for keeping 'alive' the infrastructure of this public becomes paramount. Fixing a bug is as important as reporting a bug or as administering the bug-tracker platform.

In this light sharing source code or adopting free software licences are still key elements of FOSS, but they can also be considered a way to support people's joint effort, and not only as necessary preconditions in function of software production. It may sound trivial, but if source code is not available, no one would be able to deal with it. If licences do not allow it, no one could share software editing. Therefore the preservation of source code availability or

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[12]Christopher Kelty is an anthropologist and his interest primarily rest on the cultural significance of Information Technology. In *Two Bits* he focuses particularly on hacker, geeks and FOSS.

[13]A movement and an organization devoted to the sharing and reuse of creativity and knowledge through the provision of free legal tools. See http://creativecommons.org/ and (Lessig, 2001).

the adoption of proper licences should be considered as key efforts in ensuring the continuity of the collective. Coding, patching, sharing, reusing and hacking are no longer activities which people engage in to produce a software programme, but they become some of the means used to conduct a discourse. They are forms of socio, cultural and political actions. A recursive public includes the activities of making, maintaining and modifying the software, the infrastructure and collective's discourse that is there enabled: FOSS participants discuss *about* technology, while discussing *through* it (Kelty, 2008, p.29).

In order to better explain this last aspect is useful to recall the concept of *software informalism* which tries to capture how typical formal elements of software development change in the case of FOSS (Scacchi, 2010). Given the mediated and distributed nature of FOSS collectives, software requirements are elicited, analyzed, specified, validated, and managed through Internet based artefacts and take the form of descriptive documents which can be treated as software informalisms. These informalisms are the information resources and artefacts that participants use to describe, proscribe, or prescribe what is happening in the FOSS development effort. They are informal narrative resources codified in lean descriptions that are comparatively easy to use, and publicly accessible to those who want to join the project, or just browse around (Scacchi, 2010, p.619). In this sense, they discuss about technology and through it: bug-reports (and related bug-fixes) take the form of (relatively) open discussions in the bug-tracking system and define the bug and indicates a potentially adequate fix while they unfold.

A direct implication of adopting the framing of the recursive public is the broader space that is granted to those participants and activities which were neglected in Fogel's and Weber's accounts. Indeed, I argue that it is possible to call into question the hierarchy[14] of roles and activities which was previously organized according to participants' relationship with the development of the source code. If we focus our attention on the recursive and collective's endeavour to maintain the infrastructure then also the maintenance of spaces such as the ones dedicated to users support or socialising activities become central.

Another implication of this concept relates to the ever present concern for coordination in FOSS. In this case participants' coordination promotes the infrastructure's *adaptability* to emergent collective's need, rather than the planning and designing of the software artefacts. Promoting adaptability does not mean allowing any kind of contribution. Instead, it implies

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[14]I further discussed this aspect in Section 1.2.1.

a preference for solutions that make, maintain and improve the 'openness to change' of the recursive public. Favouring adaptability is a way to keep both people's fun in experimenting and their will to create software artefacts (Kelty, 2008, p.211). The underpinning principle of adaptability concerns the fact that the development of a FOSS programme often has no formal goals, or at least not as traditionally intended in Software Engineering: due to a continuous development, FOSS is 'always in beta' and never 'complete', each released version of the software is an artefactual version, neither the final result of a planned development roadmap, nor the fulfilment of formally defined designing goals[15] (Weber, 2004, p.78). In this light it is easier to understand that the infrastructure, too, does not need to 'be planned' or managed.

An example to make this aspect clear is used by Kelty on the Minix and Linux projects. At level of software design they both feature a kernel for UNIX-inspired operating systems. Minix was developed by a Computer Science professor, Andrew Tanenbaum, whereas Linux was started by a Computer Science student, Linus Torvalds. In the first case, Tanenbaum wanted his kernel to be easily comprehensible by students, so the kernel had specific design principles to follow. Tanenbaum was willing to integrate into Minix only students' contributions that would respect those principles. On the contrary Torvalds was interested in experimenting the development of a kernel only, and when more people approached his idea, he had no clear goals or blueprints to follow. Linux was open to any kind of contributions that 'would work', not only to those contributions that would respect specific development goals.

> Tanenbaum's goals and plans for Minix were clear and autocratically formed. Control, hierarchy, and restriction are after all appropriate in the classroom. But Torvalds wanted to do more. He wanted to go on learning and to try out alternatives, [. . .] clearly he was not alone in his desire to explore and extend what he had learned (Kelty, 2008, p.219)

Therefore in Linux case *coordination* is an issue which does not regard too much the need for respecting fixed development blueprints, but it actually underlines the desire for keeping the whole system open and flexible to external contributions. With this general interest in remaining open and flexible, the collective experimented with adaptability in response to the nature of contributions and contributors which changed and evolved during the years.

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[15]I discussed this aspect in Section 1.3.

The idea of FOSS as a recursive public is valuable, because it allows to deal with FOSS projects without recurring to functionalist perspectives. However it also requires attention because it feateures a shift a focus which may create confusion if left unnoticed: in recursive publics software is better seen as an artefact, a by-product of the experiments with adaptability 'that have worked', either at the level of the technical infrastructure, social infrastructure, cultural norms, legal artefacts or governance mechanisms.

Kelty thoroughly explained why adaptability is preferred to strict planning and why this is the result of a continuous experimentations of potential solutions, but he did not explain how experiments take over other ones. In order to fill the missing gap I drew a comparison with the process of experimenting in a laboratory as outlined in the work done by Cornford et al. (2010), in which FOSS development is defined as a *laboratory activity*.

An experimental laboratory

FOSS collectives work in conditions of emergent nature, fast changes and uncertain contributions over highly complex tasks. In order to work efficiently, such collectives often face the need for new alignments among human actors and technical tools. Experimenting with possible solutions is a viable way to go.

> [...] the collective worked, to a degree, as a laboratory, a place where experiments were undertaken and new ideas that mix together people, technical apparatus, code patches, ideologies, or social structures were tried out. (Cornford et al., 2010, p.815)

Cornford et al. highlight the concepts of "collective" and "laboratory" as used in *Science and Technology Studies* (STS), in particular by Bruno Latour. The former is defined as "the association of humans and non-humans" and is useful to go past the dichotomy of "FOSS projects" and "FOSS communities". The idea of collective regards the combinations of people, things, and ideas and how they interact together (Cornford et al., 2010, p.815). The latter is defined as:

> A laboratory is a place where we create a microcosm of the world and where "scientists" can work to prove or disprove facts. Central to this activity is the attempt to stabilize an idea or concept – that is to produce a fact – as an accommodation of various interests, and to do this in a way that it can be returned

> to the world reinforced and made more powerful. The kind of stabilized "fact"
> that the laboratory tries to produce can be in different forms but often presents
> itself as a socio-technical device or arrangement that holds together the various
> interests. (Cornford et al., 2010, p.815)

In order to explain the process of experimenting, Cornford and colleagues reconstruct the different attempts made by Linux collective to find a suitable Version Control System (VCS)[16]. Hereby is a brief summary.

Due to the unexpected success that Linux Kernel had in its early years, Linux collective has grown thanks to both end users feedback and participants' contributions. Thus, at a certain point it needed to reorganize the management of collaborative work and to adapt it to the (changing) collective itself. In particular, the VCS was identified as the bottleneck which prevented from efficient collaborative work. Over the years different solution have been tried, until one was permanently adopted.

Initially and until the pace of contributions and conditions allowed for it, the project leader acted as 'human-VCS'. However, as the number of contributors, the source code size and the complexity of interacting modules increased, the need for automating large part of the work became fundamental. Three different VCS were tried: Concurrent Version System (CVS)[17], BitKeeper (BK)[18], and lastly Git[19]. The first attempt met limited reception by the developers and, more importantly, Torvalds' opposition, therefore it never seemed a suitable solution for the collective's needs. The second one had more success and Torvalds' support. This solution satisfied the technical needs of the collective and, at the same time, allowed the supporters of CVS, to continue using this last. Indeed BK was largely compatible with CVS. However legal and political issues prevented its full stabilization: BK software licence was considered troublesome by many participants In the end, Git, was adopted as the official tool for the Linux collective, since it was specifically developed by Torvalds to settle down the controversial decision about the VCS (Cornford et al., 2010, p.819–826).

According to Cornford and colleagues the process of stabilizing the experiment results into 'facts' is deeply connected with the hierarchy and governance mechanisms of the collective and it concerns (*i*) enrolling the 'right allies' around the interests of a given

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[16]A VCS is a tool used for storing, sharing and keeping track of collaborative edits to the source code of a programme. See http://en.wikipedia.org/wiki/Revision_control.

[17]See http://en.wikipedia.org/wiki/Concurrent_Versions_System.

[18]See http://en.wikipedia.org/wiki/BitKeeper.

[19]See http://en.wikipedia.org/wiki/Git_%28software%29.

experiment: bringing to your side the most suitable people for shifting the balance in favour of one solution rather than another; (*ii*) reinforcing (or weakening) the authority of the allies, in regard to the establishment (or rejection) of a specific set of interests; (*iii*) reifying the politics of the sophisticated infrastructure that that supervises communication, coordination and control in FOSS activities. For instance, when Linux switched to CVS, Torvalds was one of the key actor who was not satisfied with that solution, so he never used CVS, even though other core developers tried convincing him. This situation put Torvalds under pressure and other contributors who started using CVS saw him in a bad light. However later Larry McVoy, owner of BitKeeper and a renowned Linux contributor, convinced Torvalds to adopt BK and thus got by his side one of the most influential person of the Linux collective. This permitted the switch to BK to keep more stable than the one to CVS and re-established the full authority of Torvalds in the project.

Implied in the idea of experimenting in a collective laboratory there is the rebuttal of one recurrent myths about FOSS communities: being decentralized and somewhat anarchic entities. Here is paradigmatic the idea of FOSS as a *bazaar* where everyone would be allowed to act as pleased and to self-organize (Raymond, 1999). As it has been showed in recent years this idea is *naive*: FOSS collectives feature forms of centralization, hierarchies and governance mechanisms that permeate and constantly interact with the collectives' work, growth, success or failure (Demil & Lecocq, 2006; Weber, 2005).

Concluding remarks

In this part of the chapter I introduced different approaches and issues concerning how to focus on Free and Open Source Software development in a coherent and comprehensive framework.

Firstly, I started from an account on FOSS development as a 'traditional development project': certainly made by its own peculiar elements and specific dynamics, but nonetheless a *software development project* nonetheless. Here the relevance of a technical and socio-political infrastructure emerged, along with the necessity of creating mechanisms to steer and coordinate volunteers. Secondly, I focused on the phenomenon as a *process* and highlighted it under a macro and micro level point of view. Contributors' motivations, along with the software non-rival nature and its socio-technical mechanisms and governance make the process sustainable for the whole project duration. Lastly, I turned to two recent

complementary approaches: the recursive public and the experimental laboratory. The former focuses on the process of sustaining the collective's infrastructure and on the need for making both process and infrastructure flexible and adjustable to fit the evolving nature of the collective. The latter highlights the idea that solutions in FOSS collectives are not the result of a careful planning, but actually of successful experiments. Also, the success of experimental solutions is strictly related to the proper socio/political/technical alignment.

By reflecting on these approaches, I believe that a proper way to consider FOSS development is to define it as a process. Thus in this thesis I talk about FOSS develop*ing* as:

> a process where associations of humans and non-humans emerge from experiments with adaptability in the attempt to maintain and further their own means of associations, and where artefactual by-products result from such experiments.

Defined as such, I can put on the same level human and non-human actors without the need to define an a priori difference in terms of agency among them, and neither to consider non-human actors as mere objects. In addition, this frame brings to the fore the shared interest in maintaining and furthering the collectivity as such, while putting on the background functionalist framing of 'communities' or 'projects' that produce software. In light of my research goals this allows to consider users as participants in a fairer way, than just thinking of them as 'followers of developers/development'.

1.2   Users participation

In the Introduction of this thesis I broadly defined *participation* as "the taking part in a more or less sustained and regular way to the activities that are distinctive of a given collectivity, notwithstanding the fact that real chances to directly affect the governance and decision centres exist or not.", by borrowing from the *Italian Dictionary of Sociology*.

Keeping in mind this definition, in this section I motivate my recession from the traditional way to consider *users* participation in FOSS studies by highlighting its limitations regarding my research goals. Afterwards, by borrowing the tradition of Participatory Design (PD) and some of its emerging areas, I introduce a different approach to thinking about users participation and, finally, I revise the initial general definition and propose a proper one for my research.

1.2.1   In Free and Open Source Software

Since the mid of the 90s, with the increasing success and diffusion of FOSS programmes, literature trying to explain FOSS has been spreading out. A large part of early literature reported experiences and critical reflections by FOSS practitioners. As I previously mentioned, a few 'beliefs' about this phenomenon report: a big deal of users contribute to FOSS development and quality; volunteers are free to choose *what*, *when* and *how* to contribute; FOSS projects are not properly organized and self-managed. At the same time a stream of academically and empirically grounded literature addressed such claims more critically to highlight: developers' mutual learning, elicitation of tacit knowledge, socialization of newcomers, reproduction of social relationships, values and commitments.

These studies often implied that each FOSS development project would associate with a specific kind of human formation. Typically, a *community* of (mostly) volunteer developers and users: whether it is an 'online community' (Hemetsberger & Reinhardt, 2006; Stewart, 2005), an epistemic one (Edwards, 2001) or a community of practice (Ardichvili et al., 2003), such human formations were considered the nurturing environment for the above processes. Other approaches depict FOSS projects in different ways, for instance, as a complex ecosystem (Scacchi, 2007), socio-technical systems (Ducheneaut, 2005) or networks (in which each participant is a 'node') (Gao & Madey, 2007). However, regardless of the type of framing, their social structure emerged as quite standard among them. Indeed, studying community members in regard to their participation in the source code development allows us to identify pretty clear stratifications.

In this view whoever participates in projects is considered a user. However users' role in the community (or their positions in the network) can change according to the scope of their contributions. As Figure 1.1 shows, users can be *active* or *passive*. If they are passive, they do use the software, but they do not contribute to the project. On the other hand, active users are divided into *non-developers* and *developers*. If active users contribute only by submitting feature requests or bug-reports, they are non-developers, while if they also review code and fix bugs, they are developers. These last are further divided into *core developers* and *co-developers*. The main difference lies on the fact that core developers have free decision-making power about code editing and can access software source codes directly, whereas active users, who act as co-developers, have less decision-making power and cannot

access sources codes directly[20]. These statuses are dynamic[21] (Nakakoji et al., 2002). Passive
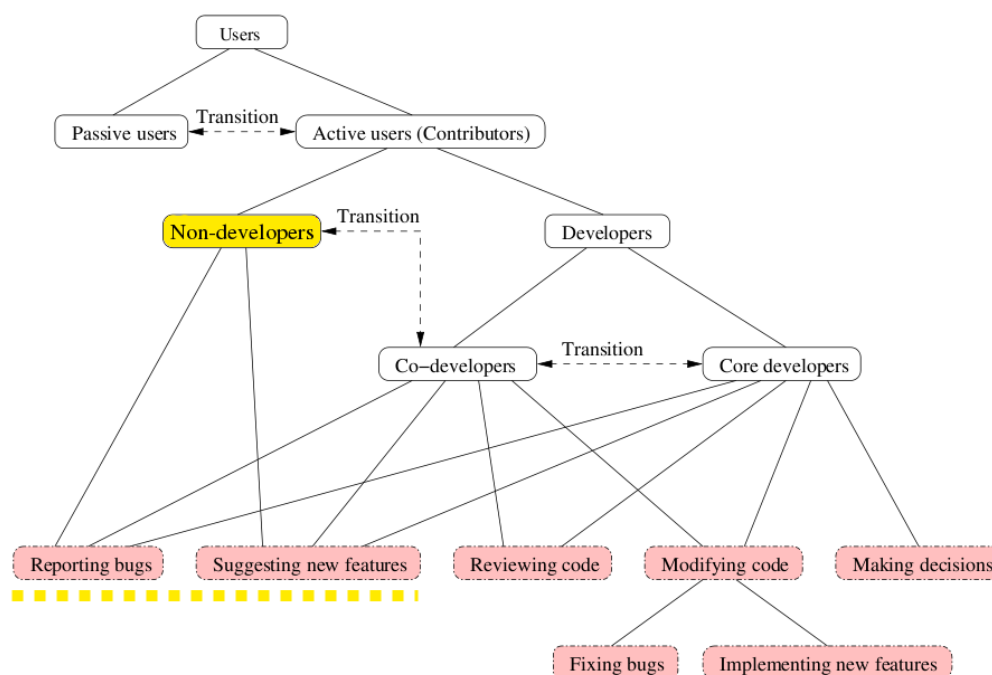
Figure 1.1: The social structure of FOSS communities according to participants' contributions to the source code. The upper part of the diagram shows the status of the members and their transition opportunities. The specific development tasks associated to each status are linked in the lower part. Adapted from Gacek et al. (2001, p.10).

users can become active, by starting reporting bugs. Also, through a continued participation and with the required skills newcomers can become co-developers, for instance, by fixing some of the bugs they or others reported. Certainly if users lacked of skills, this process would last longer and would require more consistent efforts, because such skills are fundamental and need to be learned, but newcomers can rely on other users' support (Ducheneaut, 2005) and the learning process itself can bring them closer to more central roles (Ardichvili et al., 2003).

The distribution of work within these roles and activities is completely biased towards the developers. Usually a very small part of the population (*i.e.* developers) is responsible for most of the work done (bug fixing and reporting included) (Crowston & Howison, 2006). For this reasons, most of the people involved in a FOSS project (*i.e.* non-developer active users), is responsible for a small part of the overall source code work (and mostly for bug reporting only). Despite the fact that active user's activities and their relationship with the

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[20]They usually submit their code or patches to the core developers who review it and integrate it into the source code.

[21]As I mentioned in the previous Section, transition and renewal of roles is rather important for the sustainability of FOSS communities and thus for the longevity of the projects.

ones of developers are largely unchecked, which would be a good reason for inquiring, the thoughts I expressed in the previous section do not fit this approach. In my thesis the source code and the resulting 'software product' are no longer the core focus.

From a more conceptual point of view the traditional approach of FOSS studies still points out a clear separation between people and infrastructure[22], between human and non-human, which I tried to avoid in this work. Moreover I am convinced that this traditional approach also features more limitations, regardless of the purpose of my thesis. On one hand, if we focus on users who are develop software, *de-facto* we look at the developers and co-developers of that software. On the other hand, if we took into account non-developer participants and, at the same time, if we limited the scope of *participation* (so to include only the core activities to the code), all other participants who populate a FOSS project and contribute to peripheral activities[23] would be left out.

More recent approaches suggest that users participation also relates to software in different ways than direct contribution to marginal activities of source code development. For instance, users participate (indirectly) through the representations and configurations which developers make of them[24] when discussing about technical development issues with other developers (Iivari, 2009). Moreover, as I explain in the next section, although users activities in development specific channels is relatively marginal, they do tend to be present in general purposes channels of the infrastructure. In these venues they discuss, reinterpret and evaluate software weaknesses and strengths. Similarly, they also mature potential features suggestions for the developers (Barcellini et al., 2008a). In this light users participation might be relevant for software designing, even though this does not imply their direct presence and activity in development processes.

After explaining the limitations that the framing of users participation in traditional FOSS studies has for my research, I elaborate further the phenomenon by borrowing from the field of Information Systems (IS) development. In particular, I focus on the insights coming from Participatory Design (PD).

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[22]Usually a bug-tracker is considered just a tool which gathers the bug-reports submitted by participants. In my framing it becomes an artefact which is itself contributing to the co-construction of the bug-reporting activity. For instance, Reagle Jr (2007) shows how bug-trackers in FOSS are complex and evolving public spheres, rather than just technical tools.

[23]Such as translations, infrastructure maintenance, end-users support, documentation writing and revision.

[24]By referring to users as "skilled users", "newbies", "non-skilled", the developers bring them in their discussions about development.

1.2.2   In Software and Information Systems development

In the late 60s, the idea of involving (future) users in the process of making new technological artefacts, which would bring benefits to both technology and users, started taking place. Today this has become a fundamental requirement for any development effort, not only in the field of Information Technology (Oudshoorn & Pinch, 2003).

The very first interest for users in Information and Software Systems dates back to the 60s and it embodies the *political*[25] nature of the Scandinavian Participatory Design (PD) tradition. However, nowadays PD also acknowledges the *theoretical* and the *pragmatical* reasons for involving users in systems development (Greenbaum, 1993). Basically system designers and system users do not experience the same 'world' when it comes to how they think about the system or software. This situation prevents an efficient communication between these two groups, resulting in systems that are either difficult to deal with or inappropriate to integrate into the existing working practises. Bringing users to co-design the technology helps minimize the distances between the two. Moreover poor and inadequate requirement specifications[26] are often the reasons for inefficient systems, which could be greatly improved with a closer interaction between systems experts and systems users.

More practically "users participation" (UP) refers to the involvement of future end-users in the design and implementation processes of the system that they will deal with. Commonly recognised benefits of this participation are: (*i*) an increased system adoption and diffusion; (*ii*) a higher system quality in terms of a more accurate understanding of user requirements; (*iii*) a better and more efficient system use deriving from the possibility for participants to understand it 'from within' (Schuler & Namioka, 1993).

There is more than one way[27] to classify UP. However, I consider important the one that differentiates between direct and indirect participation (Cavaye, 1995). In the first case a subset of the users population actively participate in the development project in different ways (*e.g.* in design workshops, prototypes testing, mock-ups development). In the second case users are either represented in the aforementioned activities by professional figures (*e.g.*

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[25]In a personal and political statement, one of the major figure in PD claimed: "Coming from a Scandinavian tradition, we believe that in a democracy people have the right to influence their own work place, including the use of computer technology. As systems developers we have the obligation to provide people with the opportunity to influence their own lives." (Greenbaum, 1993).

[26]I provided details on this aspect in the next Section.

[27]For instance, it is *consultative* when designers make decisions after asking feedback to the users; it is *representative* when user groups' spokespersons are present in the design team; it is *consensus based* when the design process attempts at reaching (at least via informative communication) the widest possible number of users (Mumford, 1981).

Human-Computer Interaction or Usability experts), or they are asked for general feedback, but they do not actively participate in these activities.

Regardless of the type of UP involved, the key advantage that participation should provide is the promotion of *mutual learning* processes between users who will use the system and the ones who produce it. Designers and developers are often highly trained and skilled at creating technically valid artefacts, but they lack proper knowledge of the working field where artefacts are going to be used. On the contrary users have sound knowledge of the working domain and properly understand what kind of working practices the new system should adapt to, but they do not grasp strengths and limits of system development, so they do not really know what they need and what they may expect (Bødker et al., 2004, p.58–65). *Mutual learning* is supposed to reduce distance between these groups and to solve a fundamental design problem[28], which any software development must tackle:

> The hardest single part of building a software system is *deciding what to build*... No other part of the work so cripples the resulting system if done wrong. No other part is more difficult to rectify later. (Brooks, 1987, emphasis added)

As I explained in Section 1.3.1 the specification of system requirements is one of the earliest tasks to be carried out in system development so the earlier UP is integrated in system design the more effective it is. According to the specific development methodology used, UP can last as long as it is needed, before the system is release as full-finished (Bødker et al., 2004).

So far I have highlighted that UP is a phenomenon which occurs during the production of technological artefacts as a means to improve the final product for users and to increase its adoption. UP is lead by professional figures (*e.g.* designers, HCI experts) in various phases of formal development projects through specific techniques (*e.g.* workshops, focus groups). Here a sub-set of (future) users population is directly or indirectly involved to ease a mutual learning process between who uses the system and who created it.

It should now be clear that, in this light, users participation seems inappropriate in FOSS development and also in many contemporary 'social and participatory technologies'. For this reason, I now turn to how PD problematizes users participation where there are no clear boundaries among designing, implementation and use and where participation manifests in a distributed and mediated way.

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[28]For a more detailed discussion on design and design processes, see Sec. 1.3.1

In Social and Participatory Technologies

A large part of contemporary software systems and information technologies can be easily grouped under the generic term of *social (or participatory) technologies*. With this term I am referring to "tools and practices that constitute our increased capacity for personal communication, production, publication, distribution and sharing." (Hagen & Robertson, 2010, p.31). For instance, Short Message Services (SMS) and multimedia messaging, social network platforms (*e.g.* Facebook, LinkedIn), media sharing sites (*e.g.* Flickr, YouTube), open source blogging tools (*e.g.* Wordpress), and collaborative platforms for knowledge creation and dissemination (*e.g.* Wikipedia) can all be considered social technologies (Hagen & Robertson, 2010; Napoli, 2010). They are the technological 'layers' which contemporary *participatory culture*[29] builds upon and through.

About these technologies, participation is no longer limited to the designing phase and is no more just a means to a better product. On the contrary users participation extends to the use phase and becomes an indicator of validity, success and efficiency of technological artefacts. A well-designed system does not only have few bugs and works efficiently at level of technological artefacts, but it is also capable to attract and motivate users, so they get involved and contribute in a satisfactory way and they keep on doing that as long as possible:

> Participation is both the means of designing usable and meaningful systems and content, and participation is also the goal or outcome of well-designed technologies. (Lievrouw, 2006, p.8)

Two more aspects featuring UP are its *emergent* and *distributed* nature. The former dwells on whether participation can be predicted and managed. The latter problematizes how users and designers/developers access and share information and foster mutual learning.

It this case participants are often integrated into the development of new social technologies when these are not yet completed and UP becomes tightly intertwined with both the technology improvement and diffusion. Let us take, for example, the new service *Google plus*[30] by Google Inc.: a social network service (SNS) which is competing with the currently most renowned one: Facebook. In June 2011 Google Plus was launched as a SNS in a beta

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[29]Two accounts of this newly emerged culture can be found in Jenkins (2006) and in Schafer (2011).
[30]See http://www.google.com/+/learnmore/.

version[31], so it was supposed to feature shortcomings, possible bugs and limitations. The launch in beta stage aimed at attracting a 'large enough' users base to test, use and populate the SNS. During this phase a part of users simply used the SNS, so this was useful because designers and developers could verify the SNS 'behaviour' under real usage circumstances. At the same time many other users also reported feedback, ideas, critiques and bugs. This active participation was valuable for better tailoring the SNS to users' needs and expectations on SNS. For this reason even though this last social network platform had not been completed yet, UP started with the purpose to both improve the system and enlarge the users base. Since then such participation has more or less steadily continued and it will be going this way, as long as Google Plus keeps on being an 'active' SNS (developed and maintained by Google Inc. with and through the help of users).

In social technologies participation occurs distributed at three levels: physical (or geographical), organizational, and temporal. The physical level is the most evident dimension of distribution and it implies users participating from different locations (cities, countries, continents). The organizational level refers to the heterogeneous areas of participation and it implies that although every user does use the system not every user participates, nor that they contribute evenly on the same component or activity. Finally the temporal level refers to the 'synchronicity of working hours' and it points out that people might not always be available for the same-time interaction (Gumm, 2006). In a traditional setting participant users would share the same-time interaction in the same physical place and the same organizational context with designers, developers and managers. This no longer occurs in social technologies, so mutual learning processes spread out over the technology infrastructure (Titlestad et al., 2009; Loebbecke & Powell, 2009).

Concluding remarks

In regard to my research goals, I described users participation in the light of different perspectives and issues.

Firstly, I discussed UP as it is commonly framed in FOSS studies and pointed out its limits. in projects through diverse activities, not only by means of those which are strictly related to code development. I stressed that both direct and indirect participation in the development activities can be interesting to understand how UP deals with the shaping of software

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[31]For a general overview, see: `http://en.wikipedia.org/wiki/Google_Plus`.

artefacts. Secondly, with reference to the PD tradition I highlighted the importance that UP has in the design of Information and Software Systems, as a phenomenon promoting mutual learning among users, designers and developers. In this case UP is a means for creating systems that better fit users needs, their working methods or usage practices. Lastly, I put emphasis on some of the features that UP acquires in 'social and participatory technologies'. In this last case, steady presence and active participation of users in projects are not only means for improving design, but they also are the goal and the "result" of properly-designed systems.

Hereby I recall the initial definition of "partecipazione" and revise it in the light of what has emerged in this section. So *users participation* is:

> an emergent phenomenon by which end-users of a technological artefact take part to the diverse activities of a collective. This phenomenon influences and is influenced by the evolution of the socio-technical collectivity, despite the fact that real chances to directly affect the governance and the decision centres exist or not.

In this light, I stressed the unpredictable nature of the phenomenon, along with the importance of focusing on end-users.

Collectivity affects users participation (*e.g.* by making it easier, more pleasing or rewarding to contribute) and, at the same time, single users affect the collectivity (*e.g.* when there are increases or decreases of contributions in a specific activity or when a particular element is heavily criticised or praised). Obviously, affirming that UP affects and is affected by the collectivity does not mean that this ambivalence is easily identifiable as a two-ways relationship. This intricate relationship has been deepened through the next chapters.

1.3 Continuous design

> "What, precisely, do you mean by design?"
>
> We don't really expect we will ever be able to agree on one answer
>
> ———————————————————————————————
>
> (Dittrich et al., 2002)

Despite the various meanings of the term in different fields, a basic definition of the verb *to design*[32] is: "deciding upon the look and functioning of an [object], by making a detailed

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[32]It originated from Latin *designare*: "mark out, choose, delineate". From *de-* "out" + *signare* "to mark".

drawing of it[33]". People making these decisions and producing such drawings are referred to as "designers".

FOSS is often represented as a form of continuously designed software (Gasser et al., 2003; Barcellini et al., 2008a), which puts it at odds with traditional software development approaches and brings it closer to the new modern ones. In order to properly understand how users participation and software development interrelate, we need to focus on how software is designed[34].

1.3.1 Designing for solving the requirement problem

In Information Systems (IS) development, Computer Science (CS) or Software Engineering (SE), the activity of *designing* often escaped a formal and shared definition, mainly because: (*i*) formal definitions are rarely satisfactory when actual design, the design in practice, is carried out; and (*ii*) its application domain changed rapidly and dramatically in the past few decades[35]. However, software designing request a consistent effort to decide in details 'what to produce'. Also, this requires to properly understand what is needed in the context of future technology deployment and create artefacts fitting those needs. *Design* can be defined as "the interaction between understanding and creation" (Winograd & Flores, 1986, p.4). Usually, this is an activity performed by pros, namely software (or system) designers who operate in "formal development projects".

In formal development projects design is just one phase in a broader productive context which aims at solving the 'requirements problem'. To achieve this goal, steps are: (*i*) identify as objectively as possible the features that the new system will have, (*ii*) improve the starting status quo (*iii*) thinking about the needs of all actors involved, (*iv*) find a suitable compromise among needs (Sommerville, 1995).

Depending on the specific development methodology, the design phase features a specific position and role. For instance, the *Waterfall Model* is a widely adopted linear and sequential design process, which exists in many different versions[36]. The most common model consists

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[33]*Oxford Dictionary*. Oxford University Press. `http://oxforddictionaries.com`.

[34]This Section has been refined more than once during the research period and it resulted in a reflection about emerging design practices, published in *TECNOSCIENZA* (Poderi, 2012a). This Section, in its current form, partly builds on that work.

[35]See the critique to the rationalistic approach included in Winograd & Flores (1986) and Greenbaum & Kyng (1991).

[36]These sprung out in the attempt to solve the methodology problems highlighted in the critical review by Royce (1970).

of the following seven phases: requirements specification/analysis, design, implementation, integration, testing, installation, maintenance. During the requirement specifications phase, designers evaluate whether software is feasible, they look into the future use scenario[37] to understand what 'is needed' and formally define the features of the new system by writing the requirements specification. In proper design phase, requirements are modelled into a detailed blueprint that can be developed into an artefact during the implementation phase.

This model is useful to properly identify the logical elements of design process. However, although it was widely adopted from the 70s, the severity of the consecutive phases and the reliance on the requirements that are specified during the early stage, pose limitations to it and make it difficult to adopt it for contemporary software development. Indeed, it heavily relies on the assumptions that requirements are easily identifiable, keep constant throughout the whole development cycle and they are decomposable in problems and solutions (Avison & Fitzgerald, 2003).

Several development methodologies have been established to reduce the limits of the Waterfall Model such as rapid application development (Beynon-Davies et al., 1999), extreme programming (Beck, 2000) and the spiral model (Sommerville, 1995). However, from a critical standpoint these methods just repeat or combine the steps of Waterfall Model[38] in different ways, in the attempt to introduce new mechanisms able to properly fit initial design into the process, so it can be part of the final artefact. As rationalist approaches they all share the same fundamental bias: the idea that problems are identifiable, definable and solvable through analytical steps and engineered procedures.

With reference to my definition of FOSS projects as 'collective experimenting with adaptability' and participation as an emergent (and unmanageable) phenomenon, it should be evident that the above ways for designing are not appropriate. This is particularly true, if we consider that software development and use happen at the same time. Indeed, studies focusing on the FOSS design process consider it as a *continuous distributed collective software specification and design* process (Gasser et al., 2003) or, more simply, as a *continuous form of distributed design* (Barcellini et al., 2008a, 2009). With the term "continuous" we refer to the fact that new features can always be proposed, discussed and evaluated at any time of the

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[37]For instance, this could be the organization where the software will be used, or the work-site which will adopt it.
[38]Methodologies falling in the group of agile development (Larman & Basili, 2003) try to take more radical distance from the Waterfall Model.

project life. With "distributed" we refer to the fact that FOSS collectives are dispersed at the physical, organizational and temporal level and distribution both regards: the socio-technical collective, which is actively involved in the design process (Farshchian & Divitini, 1999), and the collective forming the contextual environment and the reference group in regard to which desing decisions are taken (Martin et al., 2007).

1.3.2 Continuous and distributed designing in FOSS

About the continuous activity of designing we must think about two aspects. Firstly, the key FOSS principle of "release early, release often" (Raymond, 1999) requests that when project is drafted and software artefact reaches the very first usable status, this last one shall be released and tested. From then software development and usage proceed together. Therefore, designing processes occur in a context where mediation with *current use* is unavoidable. The activity of designing no longer needs to 'envision' future use scenarios. Secondly, all 'logical' elements of designing such as requirement analysis, implementation, testing and evaluation all happen in a continuous and parallel way: FOSS collectives never end up receiving and evaluating features requests, generating bug reports and fixes, extending old functionalities and adding new ones. Simultaneous processes are possible, thanks to the same infrastructure allowing for distributed participation, the parallel development branches and the source code modularity (Michlmayr et al., 2007).

In this light FOSS allows forms of *design in use* that is nowadays so central in IS (Henderson & Kyng, 1991) and CS (Dittrich et al., 2006), and which characterises social technologies (Lievrouw, 2006), contemporary software and system products (Botero & Saad-Sulonen, 2010; Eriksson, 2008), as well as any forms of "produsage" activities (Bruns, 2008). For this reason I believe it is important to focus on the 'role of the infrastructure' as highlighted by the approaches of: continuing design-in-use (Henderson & Kyng, 1991), continuous design and redesign (Jones, 1983) and unfinished design (Tonkinwise, 2003). These approaches refer to the fact that it would be impossible to anticipate future users behaviours or forecast scenarios to embed in artefacts. For this reason they attempt to enable highly flexible development processes over the formal phases of traditional development projects, which would combine usage and development dynamics. In this light they all highlight the importance of the infrastructure for carrying on design in use.

I reckon the infrastructure as a system of substrates that is, by definition, invisible and

part of the background for other kind of works[39] (Star, 1999, p.380). Usually, infrastructures promote "a dense and differentiated layering of people, activities and things, each operating within a limited sphere of knowing and acting." (Suchman, 2002, p.96).

In FOSS the infrastructure is the 'locus' where distributed participation happens. On one hand, there are the core developers and active contributors who collaborate via a system of heterogeneous tools and communication channels in which each tool is used for a specific activity and each channel is a place where specific topics are discussed. For instance, while system evaluation happens through bug reporting by using the bug-tracker, the implementation of new features happens on the Version Control System (VCS). Similarly, while specific matters require to be discussed on an asynchronous medium such as dedicated mailing-lists, other subject request a quicker and synchronous interaction, so they are discussed in IRC channels. It follows that the history of individual contributions along with their associated design decisions, implications and discussions rest stored in the archives of these tools, which track the emerging preferences of the co-emerging FOSS collective. The code itself together with these stored traces constitute the evolving specification of the software. On the other hand, we have the distribution of the users pool with their heterogeneous installation and usage settings. Large part of this users base[40] is unknown to the collective because they do not participate. The remaining part participates on the same infrastructure that is used by the developers. For this reason users' preferences, suggestions, criticisms and needs are dispersed throughout it.

At this point it would be useful to clarify the aspects related to the general meaning of *design knowledge*: the information which is gathered, transformed and used to design software. In Table 1.1 I related some of the assertions I made so far with the aspects on design knowledge, which Gasser et al. (2003) considered relevant to FOSS.

In traditional software development design knowledge is *learned* by various actors (designers, developers, users) in various phases and is considered acquired once learned. In FOSS the collective *continuously construct* this knowledge through the development of artefacts. Therefore, there is no specific moment when actors can say to 'have learned' that knowledge. In traditional software development, even if design knowledge aims at embedding users requirements, it is defined and codified by experts. On the contrary, in

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[39]*E.g.* a set of rules, norms and tools which allow the fulfilment of other activities.
[40]The percentage of non participant users in FOSS projects is about 95% (Nakakoji et al., 2002; Crowston & Howison, 2005).

Design knowledge	*Traditional Design*	*FOSS/Continuous Design*
Acquisition	Learned (by designers from the users, by users from the final artefact)	Constructed and negotiated while the 'final' artefact is under development
Embeds	Experts' viewpoint	Multiple viewpoints
Representation	Formal, stable, bounded	Interpreted, informal
Use	In a 'linear with feedback loops' process	At the centre of network of socio-technical processes

Table 1.1: Main differences between knowledge that is useful for designing related processes. Summarized from (Gasser et al., 2003).

FOSS, since it is continuously constructed on publicly accessible infrastructures it already embeds a multiplicity of viewpoints. Moreover, the representation of design knowledge is different in both cases. In traditional development, knowledge features stable and formal objects (such as reports, drawings or mock-ups) which are supposed to be objective. In FOSS, if any relatively stable representation of this knowledge can be identified, then it is a constantly interpreted and questionable entity. Finally, the use that is made of this design knowledge is quite different too. In the first case, this is embedded in a "linear with feedback loops" process structure. Knowledge is therefore used in each phase, modelled by feedback and transmitted to the next phases. In FOSS, this knowledge is always at the core of a network of socio-technical processes (Gasser et al., 2003).

Finally, I focus on two emergent figures which acquire a prominent role in FOSS designing: *cross participants* and *boundary spanners* (Barcellini et al., 2007). Since FOSS collectives employ a set of heterogeneous tools and communication channels to deal with specific activities, information, which is potentially relevant to solve specific design problems and to bring software design on, spreads out all over the infrastructure, and tend to be localized in specific areas. For instance the technical description of a reported bug is most likely stored on the bug tracker. However, relevant software behaviours that relate to that reported bug might have been discussed on the users' support channels. Also, a component in the area of the software affected by the bug, could currently be discussed for changes elsewhere, such as in the developers' mailing list.

In order to properly design the software it is crucial to bridge information across the

'places' where 'relevant information' tend to localize. Of course, *which* are the relevant information as well as *which* are the proper places where they are localized is not knowable in advance. For this reason users who participate in multiple channels (or tools) are an important resource to the collective, in particular when they act as boundary spanners. A boundary spanner is anyone bridging information needs, or knowledge gaps, among groups not linked to each other (Barcellini et al., 2008a). Bridging gaps is related to specific design problems, thus every time development decisions are discussed, a cross participant may act as a boundary spanner. Therefore, the *role of designer* as a person who seeks for relevant information to design problems and who transforms them into design knowledge, leaves place to people who, not only 'gathers' information, but also construct them, by participating, and allow such information to travel across the different areas of the infrastructure.

Concluding remarks

In this last part I discussed some designing principles from formal development projects and those aspects which characterise continuous and distributed design in FOSS.

Firstly, I described the design as one of the phases to make new software. This phase has the purpose to identify the requirements needed and draft a project embedding those requirements that developers would use to implement the system. Conceived in this way designing involves professional figures integrated within the boundaries of a formal organization or a well-defined project. Thus, in order to solve 'the requirements problem' designers have to spot potential users working practices by observing or involving them directly into the process. Both design phase and actors are located in specific geographical, organizational and temporal 'loci'. Secondly, I discussed the peculiarities of FOSS and how these affect the design processes. Design is neither focuses in a specific timespan, nor in the same physical place. In addition, the emergent and collaborative way to make FOSS requests a continued and parallel process of identifying requirements, making changes and evaluating them. Software developing is then possible thanks to the infrastructure featuring FOSS collectives. This infrastructure is also the repository of the collective knowledge about *what* should be improved and, possibly, *how* to shape it.

In FOSS designing is not an easily identifiable activity within clear boundaries and stated goals. To properly understand it, this should be reconstructed by observing how the people who are involved in the collectives make sense of: (*i*) what is needed and what is the best

way to satisfy these needs; and (*ii*) how they rely on the information available in the 'archives' of the infrastructure and in the people they collaborate with.

In traditional IS development and SE Winograd and Flores' definition of design may be understood more directly in its substantive terms: it largely occurs in a phase between requirements analysis (*i.e.* understanding) and implementation (*i.e.* creation). It is a bridge allowing the two phases to interact. In the case of FOSS the definition takes on a new meaning: there is no clear-cut separation among those phases, requirements analysis and implementation are continuous processes that happen without any formal mediation of a design phase. *Designing* no longer portrays an interaction. *Designing* becomes the continuous sensemaking of that enacted and ongoing interaction.

1.4 Drawing things together

I begun my thesis by showing my intent to look into users participation in the case of Free and Open Source Software. As I stated in the Introduction Chapter I wanted to answer the question: how do users participation and software development relate to each other in FOSS? In this chapter I provided a first theoretical definition of this phenomenon.

During the journey for defining the 'research object' and its theoretical boundaries I often took distance of renowned approaches used in FOSS studies to deal with software development and participation activities. This requested me to rely on the insights coming from other fields and areas of research, as well as to enlarge the initial scope of the phenomenon. Therefore I went beyond the framing of "users participation in FOSS development" from traditional FOSS studies by relying on insights coming from Anthropological studies, Science and Technology Studies (STS), Information System research, Participatory Design, Human Computer Interaction, Media Culture, and Ergonomics. Figure 1.2 shows the key constructs used to define the phenomenon which is the 'research object' of this work.

More importantly, if the initial interest of this research may have been drawn to investigate how users influence software development by getting involved in specific (yet marginal) activities, now potential answers result in being widened and more blurred.

Also, I defined FOSS development and the human formation that takes care of it as a process in which associations of humans and non-humans emerge from 'experiments with
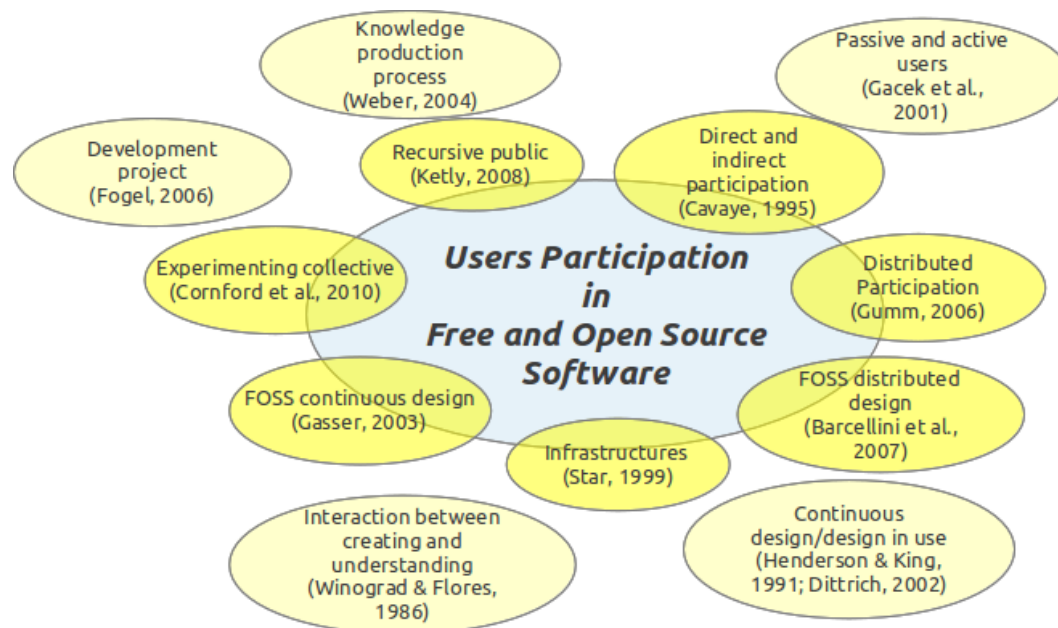
Figure 1.2: Different constructs contributing to the definition of the 'research object'.

adaptability' in the attempt to maintain and further their 'own means of associations', and where artefactual by-products result from such experiments. Here the dichotomy *project* and *community* fades away and software programme becomes a by-product of the collective.

I defined users participation as an emergent phenomenon which is relevant for a collectivity, regardless of the chance to directly affect the governance centres of the collectivity and which is in close relationship to the infrastructural elements through which it manifests. Here participation by members of the collective is relevant even though it does not occur in specific development channels through specific development related tasks. For this reason the distributed dimension of such participation cannot be neglected.

Moreover, I brought inside the theoretical 'map' of this research a few considerations on FOSS designing process. In order to understand how a distributed participation relates to the software (by-)product through the ongoing and emergent work of the collective, we need to properly understand of how such collectivity enact designing. It also emerged that designing is not an easily identifiable activity which is confined within clear boundaries and stated goals. On the contrary it is the continuous sensemaking of the emerging and ongoing interactions which manifest in the collective infrastructure.

In the next Chapter I will clarify how I tackled practically this study, by setting forward the epistemological foundations for my work and the overall research design. Furthermore, I will recall the techniques and research activities involved in my fieldwork.

APPROACHING ETHNOGRAPHICALLY THE STUDY OF FOSS

In Chapter 1 I defined the relevance that an investigation of users participation in FOSS collectives has on a theoretical level. In order to be able to reach a proper account of users, I highlighted for the need for moving away from some traditional framings of the phenomenon which has to do with "projects", "communities","roles" towards more all-encompassing ones, such as "recursive public" and "collective" which allow to enlarge the spectrum of actors and activities framed and provide the theoretical space to better account for users and users participation.

In this part of my thesis, I explain how I practically tackled the investigation of such participation and how I addressed the empirical work in order to answer my initial research question. In particular, I clarify the properness of a qualitative inquiry of the phenomenon and the epistemological premises it stays upon.

Given the fragmented and continuously evolving landscape of the Internet and computer-mediated studies that the last two decades witnessed, I will not attempt to provide a complete overview and a full fledged epistemological reflection on such studies, but I will rather focus on a few specific aspects which emerged as problematic during my fieldwork.

In the first part of this chapter, I briefly set out the epistemological foundations for studying phenomena that are heavily embedded into and manifest through computer-mediated environments. I argue for the need and suitability for approaching FOSS collectives through a cyberethnographic approach and outline the analytical concepts borrowed from Science and Technology Studies (STS) and Organizational Studies which I used during my research work as *tools for looking at things*. In the second part, I clarify

the general design of the research at its methodology and techniques level. In particular, I provide an overview of the techniques adopted to collect data and to move across the field. In the last part of the chapter, I recollect the preliminary phases of the fieldwork with some reflections that will help the reader make their mind on this field.

2.1 Epistemological foundations for studying FOSS ethnographically

FOSS studies follow a trend which is increasingly prevalent on the Internet and CMC studies: the adoption of quantitative methods to collect and analyse the large amount of data generated by computer-mediated interactions across the Internet (Stol et al., 2009; Crowston et al., 2012). Of course, I am not arguing that in-depth and qualitative studies do not exist within FOSS inquiries, but certainly they are a minority. For instance, Stol and colleagues examined a sample of 63 empirical research papers presented during the first five editions of the major international FOSS conference [1] and pointed out that only seven works, out of the total sample, explicitly acknowledged a qualitative methodology[2].

Broadly speaking, whether we study "virtual communities" (Rheingold, 1993), "net surfers" (Wellman & Gulia, 1999), "online groups" (Cavanagh, 2009), "social networks services" (boyd & Ellison, 2007) or, as it is my case, "FOSS collectives", we face socio-technical phenomena, where actors' interactions generate large amount of data and meta-data. Such data are relatively easier and faster to collect and analyse automatically than how it would be for researchers to negotiate positions and roles in foresight of long permanence at the centre of those phenomena.

> These «virtual» groups, in fact, leave many material traces of their activity. Examples of such traces are project web sites that act as vectors of information and communication; discussion lists and instant messaging services that are used as exchange and co-ordination means; media forums or blogs that list the points of view and opinions of the participants. [...] These sources alone, however, are not sufficient to analyse the functioning of free software development collectives. The main reason for this is that such digital data supply an incomplete trace of the activities performed (exchanges between members, the behaviours of the participants, the regulations supporting the projects). (Demazière et al., 2011, p.211)

I agree with Demazière and colleagues, when they claim that these residual traces of

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[1] The *International Conference on Open Source Systems (OSS)* conference series. Supported and promoted by the IFIP Working Group 2.13 `http://ifipwg213.org/`.

[2] These are: Grounded Theory, Ethnography/Field Study, Action Research.

interactions are not sufficient to understand the complexity of distributed and mediated development. Approaches which are solely based on distant observation may limit my research because not all online exchanges and interactions are equally accessible. Private spaces whose strategic function is proportional to the control of the participants entry may exist. Coordination and exchange of information among contributors may take place outside their usual online interaction space (*e.g.* telephone, message services, direct contacts).

As Demazière pointed out, even though qualitative or in-depth approaches are increasingly used in FOSS studies, they often imply distant observation rather than researchers' *in situ* involvement. Research based on distant observation and also on automated data-mining/analysis are numb to the above mentioned concerns. If we are to understand FOSS collectivities in their complexities and socio-technical background, then, as researchers, we need to "get the seats of our pants dirty" (Paccagnella, 1997) and address FOSS inquiries with more ethnographically informed studies.

Adopting an ethnographic approach for a FOSS study is desirable due to the possible cognitive gains. However, the fact that FOSS primarily manifests[3] through computer-mediated interactions over the Internet, it poses some challenges. Some of these challenges are similar to the ones mentioned by Demazière while others emerged from my own fieldwork. I will address them later in this chapter, but first I address some of the epistemological foundations for studying virtual- ,or better intended, cyber- fields. In particular, I will discuss the nuances of the two terms and argue in favour of the *cyber* terminology.

After longer than one decade of attempts to adapt ethnography to the study of the Internet and computer-mediated phenomena, these approaches gained their legitimacy within different disciplines[4]. For this reason, I only briefly discuss the epistemological legitimacy of the intended cyberethnographic approach to my research, while I dwell longer on its pillars and reflect on a few critical aspects I faced during my fieldwork.

Although ethnography is today one of the many research approaches that can be found in social sciences, the origin of the term comes from Western anthropology with Malinowski's pioneering work (Malinowski, 1922). Here, ethnography was used to provide descriptive

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[3]Since this research investigate volunteer-based non-hybrid form of FOSS, this claim is largely true. However, hybrids form of FOSS development exist in which part of the development is pursued by a software company or organization. In this case developers (or a part of them) may share the same office. For few insights on collaboration in hybrid form of FOSS development see Shah (2006); Lin (2006).

[4]In anthropology (where ethnography first sourced from) and also in social sciences at large.

accounts of 'exotic', distant, unknown human formations, by focusing on their culture. The ethnographers' work involved participating in people's daily lives for a relatively long period of time, monitoring what happened there or asking questions through formal or informal interviews, and collecting documents or artefacts (Hammersley & Atkinson, 2007). Made clear that, ethnography is a research approach requiring very long periods of fieldwork and long trips to reach specific groups to study during a stay with them (Malinowski, 1922). However, with the progressive adoption of such research approach within the social sciences, and sociology in particular, the prominence of these two dimensions started fading out. Indeed in sociology, ethnography is often used to study specific subcultures, but also in more sociologically oriented studies, such as organizational studies (Bruni, 2003), working practices (Orr, 1996), communication studies (Lindlof & Taylor, 2002), information systems development (Crabtree, 2003; Fele, 2009) and, alternatively to groups, specific *themes*, regardless of: (*i*) the distance dividing researchers from the phenomenon to study, and (*ii*) the possibility to be involved in very long fieldwork activities (Atkinson et al., 2001).

With the diffusion of the Internet and Internet based technologies, contemporary society has witnessed the progressive formation of supposed new types of human aggregations which had in their *online* computer-mediated and networked dimensions a fundamental novelty from other forms of renown human associations or domains of activity (Castells, 2000; Dijk, 2006). The concreteness of 'the place to go' for fieldworks and the co-location of human actors in a shared time/space dissolved. Groups became *online*, communities became *virtual*, interactions became *mediated*.

Along with the emergence of these new social phenomena, new methodologies (or better intended, reinterpretation of the old ones) rose to tackle the related epistemological challenges. Rheingold (1993) and Escobar et al. (1994) were pioneers in addressing online groups. Although the former talked about "virtual communities" and the latter about "cyberspace", they both approached them as specific phenomena to study as meaningful 'research objects'[5]: phenomena which carried socio-cultural values per se. However, early reflections on the methodoly for studying online groups can be found in *Cyborgs@Cyberspace* (Hakken, 1999) and in *Virtual Ethnography* (Hine, 2000) [6].

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[5]I do not claim here that the trends of cyber-/virtual- ethnography are the only or most important ones for online studies. They are the most reasonable for my research and as such I pursue them. A broad range of methodologies and techniques which rest on a few different epistemological positions do exist. For a fairly substantial overview see *The SAGE Handbook of Online Research Methods* (Fielding et al., 2008).

[6]Both authors continued to expand their original work with a collection of essays (Hine, 2005, 2008) and a

I argue that the two approaches are practically very similar and partly overlapping. However, at the epistemological one they show differences that cannot be neglected in relationship to my research interest and to my decision to adopt a cyberethnographic approach. In particular, I make clear why the "virtual ethnography" epistemology is limited for my case and then I argue for the suitability of a cyber approach to ethnography.

The idea of a "virtual ethnography" points out two potentially problematic aspects which both relate to how we interpret the adjective *virtual*. Do we understand *virtual things* as being less real, or opposed to the reality of other things? Is virtual ethnography an ethnography of the virtual – something less real? Or, is virtual ethnography a form of ethnography which is itself less real? This may sound like a wordplay, but this issue brings implications in how we reckon and think on the phenomenon that we are studying[7].

The dichotomy 'Virtual vs Real' has always been problematic and more than one scholar has tried disentangling it. The virtual can be considered as being identical to what exists, but yet belonging to the realm of the possible. Something that is possible, but which yet misses the quality of existence: "the possible is already constituted but it still remains in the limbo [. . .] the possible is exactly like the real: just the existence is still missing in it" (Deleuze & Guattari, 1987, p.6). A similar point is claimed by Lèvy & Bononno (1998), who ground their arguments on Deleuze's prior works, and they state that the virtual should not be opposed to the real, on the contrary to the actual. "Virtual" is everything existing in potential but (yet) not actual, not present. "The tree is virtually present inside the seed [. . .] virtual is not opposed to the real, it is an opponent of the actual instead: virtuality and actuality are just two different ways of being" (Lèvy & Bononno, 1998, p.5). By focusing more on the socio-technical implications derived from the use of the technologies that support 'virtual interactions', rather than on the philosophical meaning of the term "virtual", in *Virtual Society?* Woolgar (2002) critically reflects upon what he calls the "Five rules of virtuality":

Rule #1 The uptake and use of the technologies depend crucially on local social context

Rule #2 The fears and risks associated with new technologies are unevenly socially distributed.

Rule #3 Virtual technologies supplement rather than substitute for real activities.

Rule #4 The more virtual the more real.

Rule #5 The more global the more local.

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monograph (Hakken, 2003). For reference, I will use their earlier works and explicitly point to their more recent evolutions if needed.

[7]The further reflection on this section rests upon the work done by Teli et al. (2007).

Woolgar detaches himself from the discourse between what is real and actual and what is real, but yet not actual (virtual). By paying particular attention to the first, third and fourth rule, it emerges pretty clear that the virtual (as something only potentially existing) is more an oxymoron than anything else. If we look at those technologies in use, virtual is real, actual, situated and intertwined with the rest of the reality and I personally agree with Woolgar on this interpretation.

I recall the initial puzzle and how Hine herself framed the approach of a virtual ethnography:

> Virtual ethnography is not only virtual in the sense of being disembodied. Virtuality also carries a connotation of 'not quite', adequate for practical purposes even if not strictly the real thing [...]. Virtual ethnography is adequate for the practical purpose of exploring the relations of mediated interaction, even if not the real thing in methodologically purist terms. (Hine, 2000, p.65)

Strictly speaking, in Hine's work virtuality regards more the nature of ethnography than the nature of the object of inquiry. It is the ethnography to be virtual – not quite a real ethnography – because the object of inquiry is "disembodied". However, in order to justify the use of a different ethnography we should assume that the disembodiment, Hine refers to, characterises the object of inquiry in such a different way that a 'normal' ethnography would not be appropriate.

We should face then the opposition between ethnography of the offline conducted offline and the ethnography of the online conducted online. Now, I don't deny that a difference between what happens online and what happens offline is evident, both in practical terms of conducting an ethnographic research and in more substantive terms. However, by resuming Woolgar's position on virtuality, I state that the two realms should not be kept apart as if they were distant and incommensurable entities. In the end, is an inter-organizational meeting held via VoIP technology considered an online or an offline event? Is a teenager hooked into *World of Warcraft* instead of finishing up his or her homework[8] an online or an offline phenomenon? What about buying online clothes to wear offline? Or what about spending 'real' money to buy clothes for a 'virtual' avatar[9]? In order to go beyond such problematic standpoints, I introduce the concept of *cyborg* and unfold its relationship with *cyberethnography*.

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[8]For some considerations on gaming addiction and virtual worlds see Nardi (2010, Ch.6).

[9]I am referring to the diffusion of 'real' online shops such as *eBay* and to the 'virtual shops' existing in permanent virtual worlds, where it is possible to pay extra money to receive improved artefacts for the virtual worlds. It is the case of renowned *Second Life* or *World of Warcraft*.

2.1.1 Cyborgs and cyberethnography

Academically rooted in the STS tradition, which adopted it from science fiction lexicon, the concept of *cyborg* refers to an hybrid. "A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction." (Haraway, 1991, p.149). Cyborgs are hybrid of human and non-human components, systemically conceived so that each part is interdependent yet removable and interchangeable. The cyborg epistemology can be considered as a *non-modern* one.

> The cyborg figure is non-modern because it makes explicit the collapsing of boundaries between the different ontologies, as well as making questionable the origin of these ontologies and the political meanings they have acquired, which give form to the different meanings of reality. [...] A cyborg lexicon is able to show both that humans and non-humans (nature/culture, mind/body, virtual/real) are inextricably connected but, at the same time, how such dichotomies take shape and spread. [...] From this point of view, the cyborg lexicon is anti-reductionist; it doesn't allow the predominance of only one translation, but it calls for a space of multiplicity of knowledges and voices. (Teli et al., 2007)

A non-modern epistemology takes distance from the modern one, which is instead characterised by the separation of nature and culture, humans and non-humans, things and society. Thinking of cyborgs as hybrids, we are lead to eliminate these distinctions and highlight any linkings that such entities features with their surrounding. By paraphrasing the example given in Teli et al. (2007), am I *essentially* worth a PhD in Sociology, independently of the chapters I am writing, the books I am reading, the colleagues I am discussing with, the computer and software I am using and the glasses I need to read? Along with the cyborg epistemology, I argue that my worthiness as PhD in Sociology strictly relates with my ability to align and enrol these (and many more) elements with my endeavour of pursuing a PhD degree, and to translate them into an artefact (a PhD Thesis) that can be examined and judged (positively or negatively) by other cyborgs.

A cyborg is "every entity carrying culture" (Hakken, 1999), or to use a more STS-oriented vocabulary: an actor-network of entities which translates and produces meaning and culture. In this light, *cyberethnography* is the study which addresses the "cyborg selves" or "cyberselves" of the actors when they both interact online and offline, and in relation to those digital technologies that mediate (and simultaneously construct) the same subjects. This is the attempt to account for the fluid and heterogeneous processes that are enacted and re-enacted by those entities and actions which are inherently hybrid. It is not an attempt to account for entities and actions which solely show in the online or in the offline

realms (Hakken, 1999). To conclude on the implications of the concept of cyborg and of the approach of a cyberethnography, I argue that it would be perfectly reasonable to conduct a cyberethnography which does not involve the study of an 'online group', provided that we do not neglect the bonds that 'human' actors have with the 'non-human' entities around them. For instance, I consider *Talking About Machines* (Orr, 1996) or *Plans and Situated Actions* (Suchman, 1987) excellent examples of cyberethnographies which have not address online/virtual groups/communities. After all "we have always been cyborgs" (Hakken, 1999) even prior to the Internet burst.

Once made clear the epistemological foundations of the cyborg, the questions of what cyberethnography of a FOSS collective does and how it does it are still open. Basically, if cyborgs are hybrid entities continuously constructing and re-constructing their relationships with other cyborgs and, given that, if everything always look undone, evolving and intertwined, what should I look at when dealing with my fieldwork? More importantly, how do the (cyber-)ethnographer get to grasp what the relevant field is and where its boundaries are? In Section 2.3, I address the former question, while in Section 2.4 I deal with the discovery of the field and the construction of the researcher's identity *in* the field. The following Section, discusses a few analytical concepts I used as leading tools during my fieldwork. I specifically call them tools because in my research they did not act as analytical frames of interpretation, but as compasses to 'better thinking' on how to look at the field and to move across it. I borrow these tools from Actor-Network Theory (ANT) and Organizational Studies.

2.1.2 A Conceptual toolbox for the inquiry

Along with its non-modern epistemology, the concept of cyborg brings a set of implications which helps and, at the same time, forces avoid prior assumptions about the ontological value of reality and potentiality[10]. Moreover, it helps avoid reductionist interpretations of phenomena we are interested in studying. Hereby, I take some constructs from the two areas of STS and Organizational Theory that are really in tune with what has been expressed so far and which, in my opinion, are well complementary to each other. In particular, I borrow from Actor-Network Theory (ANT) the idea of *translation* related to the process of stabilizing stakeholders' interests into an actor-network (Law & Hassard, 1999; Latour, 2005) and the

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[10]As discussed in the previous pages, once abandoned the distinction between 'what is real' and 'what is virtual', we can approach the phenomenon by looking at it 'as it is', rather than approaching it with a priori assumptions on how (we think) it should, or could, be.

idea of *local* and *translocal* actions from Action Nets (Czarniawska, 2004; Czarniawska & Czarniawska-Joerges, 2008).

In recent years, ANT has proved insightful and increasingly adopted for the study of the 'come into being' of technological artefacts and socio-technical assemblies (or collectives). It was successfully adopted for studying designing and development practices of 'things' (Storni, 2010), of *produsage* (De Paoli & Storni, 2011), and to reflect upon design in general (Yaneva, 2009). It was used in the area of Information Systems design and development[11], such as in the study of the development of a set of IS for the UK National Health Service (Bloomfield et al., 1992). In particular, ANT proved useful to explain collective dynamics in the case of FOSS. D'Andrea et al. (2009) used it to describe how, within such collectives, even non-human actors such as the "programming guidelines" have a great deal of influence in enrolling and mobilizing developers' coding practices. In a related work, the authors use the same approach for understanding how the licences adopted by FOSS collectives deal with their participatory practices by configuring and re-configuring the relationships amongst participants (D'Andrea & De Paoli, 2008). In the end, as already mentioned in Section 1.1.2, Cornford et al. (2010) used ANT to describe how the Linux collective repeatedly has experimented the use of different infrastructure components, over the years.

However, one thing I should make clear before entering the complex and controversial realm of ANT is that Actor-Network Theory is not a theory[12]. On the contrary, ANT is actually a methodological tool and as such I understand it.

> For us, ANT was simply another way of being faithful to the insights of ethnomethodology: actors know what they do and we have to learn from them not only what they do, but how and why they do it. It is *us*, the social scientists, who lack the knowledge of what they do, and not *they* who are missing the explanation of why they are unwittingly manipulated by forces exterior to themselves and known to the social scientist's powerful gaze an methods. [...] far from being a theory of the social or even worse an explanation of what makes society exert pressure on actors, it always was, and this from very inception (Callon and Latour, 1981), a very crude method to learn from the actors without imposing on them an *a priori* definition of their world-building capacities. (Law & Hassard, 1999, p.19-20)

If ANT is a tool, what is it useful for? More importantly, is it a tool that can be used compatibly with the foundations of the cyborg? The answer to the latter question is relatively

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[11]For a partial yet well framed review of ANT in IS see Walsham (1997).

[12]In retrospective, also ANT's original supporters (M. Callon, B. Latour, J. Law) highlighted the unfortunate combination of names composing "ANT". This favoured its adoption as if it was 'just another traditional sociological theory' theorising on *actors* and *networks*. A theory of agency and structures, of the movements between the micro and macro. Paradoxically, this interpretation was exactly what ANT was proposed to overcome (Gad & Jensen, 2010), despite its name. According to Latour, there are four things wrong within the name of ANT: the word "Actor", the word "Network", the word "Theory" and the hyphen (Latour, 2004).

easy. Both are rooted into the STS tradition and they share important tenets such as a non-modern and anti-reductionist epistemology. Similarly to the *cyborg*, ANT is about[13] *semiotics*: all things are what they are in relation to other things. Dualisms, like the one between humans/non-humans, dissolve. ANT is also about *performativity* and *symmetry*: things are what they are, because they are *done* in that way by actors (relating to other actors). Relative stability and fixation exist in relation to such performance. Moreover, things are without inherent qualities, thus they cannot belong to predetermined categories. A priori categorisation and attribution of 'order' for the phenomena we investigate are misleading. Finally, ANT is about *processes*: no version of the social order, no organisation, and no agent, is ever complete, autonomous, and final.

There is no reason to assume a priori that some actors determine actions of other actors. ANT does not distinguish between humans and non-humans in regards to agency. What exerts influence over actors are called *actants*, regardless of them being humans or non-humans. No perspective should be favoured a priori. No interpretation should be censored. Actors' identities should not be determined in advance, since they are negotiated and 'constructed' along with the progressive formation of the actor-network (Latour, 2005).

An actor-network can be thought of as an heterogeneous (humans and non-humans) network of aligned interests which is achieved through the process of *translation* of stakeholders' interests. Translation describes the process of aligning the heterogeneous interests of different stakeholders into a (relatively) stable actor-network. In other words, the process unfolds in four steps. (*I*) problematization: is the moment when one or more actors (*spokespersons*), who have issues to deal with, try finding a solution for it, but also look for potential allies (human or non-humans); (*ii*) interessement: is the attempt to involve these potential allies to the initial spokespersons' cause, but also to fend-off the attempts for competitive (or anti-networks) actor-network to stabilise; (*iii*) enrolment: is the moment when spokespersons try to gain legitimacy or authority to speak on behalf of the new enrolled allies, through machinations or socio-technical devices; and (*iv*) mobilisation: when the former spokespersons gain this legitimacy and are entitled to talk on behalf of all enrolled allies, so translation is successful. Proof of a stabilised actor-network is a new (or a renewed) spokesperson which can talk and represent all stakeholders (Callon, 1986).

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[13]I built this argument based on the readings of critical works about the status of ANT. In particular: Law (1992); Law & Hassard (1999); Latour (2005); Gad & Jensen (2010).

Key 'trick of the trade' for looking at this process is for researchers to be able to *keep society flat*. Every actor in the process carries an own set of interests and every actor in the process is also potentially an actant for other actors. Therefore, every interaction we are able to identify overflows connections and elements that researchers could pursue in order to look for the context of the 'social action', looking for a 'macro-element' explaining actors' behaviour and reduce the complexity of those overflowing interactions. However, the temptation to abandon the work of tracing associations is like the case of Ulysse's sirens and it defies ANT's non-modern epistemology, bringing back the dichotomy of micro/macro, agency/structure. Therefore, researchers should refrain from stopping tracing association as long as possible and keep considering society flat. Each interaction is important if this allows actors to take action or prevent them from doing it (Latour, 2005, p.165–172).

Initially developed, ANT was used to observe how scientists constructed scientific facts within the daily 'laboratory life' (Latour & Woolgar, 1986). A topic of broad interest studied in a very specific setting. When the Sociology of Scientific Knowledge (SSK) slowly expanded to include considerations on Technology production and their relationship with the society[14] (Woolgar, 1991), settings changed. In *On the consequences of Post-ANT*, Gad & Jensen (2010) state the need for a reflection on such changes and their relationship with current understanding of ANT as an epistemological/methodological tool. In particular, they stress two issues: multiplicity and fractality[15]. The process of translating and mobilising actors' interest into an actor-network is always intricate with other actors' attempt to establish other actor-networks (regardless of being in competition or simply 'parallel'). ANT never neglected this, but to some extent it failed to provide a method to account for them in a more prominent way. ANT implies that if we truly follow the actors and the actants as they machinate ways to stabilise an actor-network, then we are able to look at and to localise 'everything that matters' in that process. Actors themselves bring the "global", the context and the macro, into the process. In this case, the 'theoretical perspective' used to look at the phenomenon is the *single* actor-network formation. Regardless of how heterogeneous and rich they can be, 'things are multiple' depending on how we look at these things (Mol, 2002).

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[14]Such as in Sociology of Science and Technology (SST) which later meshed-up with the current understanding of STS.

[15]The recursive replication of the relationship between theoretical perspectives and the world we look at: "[. . .]theoretical perspectives are seen to be produced as much as they are producing the world. Indeed, they seem to be *folded* into all kinds of empirical matters on any number of different "levels." Theoretical perspectives appear here also as fractal figures – partial views, engaged in ontological politics, vulnerable and changeable, situated as they are in the thick of things" (Gad & Jensen, 2010, p.73).

Therefore, we fail to see the multiplicity of the phenomenon we are interested in studying. ANT lacks a solid way to account for multiplicity and fractality.

Action net is a construct that is both rooted in new institutional theories of organizational studies and the sociology of translation (Czarniawska-Joerges, 1997) which, I am convinced, is appropriate for overcoming these limitations. Similarly to ANT, action net can be though of as a methodological tool:

> Latour (1998b) once compared ANT to a shoebox: it is somewhere to put your findings until you know where to file them. In the same vein, I see action nets as 'empty concepts,' to be filled with contents until it is clear what label might be put on them. Action nets are, for me, a way of looking at things, not another ontological element of social reality, at least not yet. (Czarniawska, 2004, p.783–784)

Action net goes beyond the limitations posed by the issues of multiplicity and fractality by explicitly acknowledging that each action (or process of actor-network formation) always happens when other actions are ongoing. Thus since the stabilisation of an actor-network is always a long-lasting, contested and not always successful process, the focus of attention should not be granted to potentially 'successful actor-networks' only:

> The focus of attention is different in action nets: organizing may or may not lead to a construction of macro actors, depending on the degree to which the connection between actions become stabilized and whether or not there is a spokesperson to represent such an actor-network. (Czarniawska & Czarniawska-Joerges, 2008, p.20–21)

If we look at each local action and to how it relates to the other actions in the net, we do not need to rely to any macro structure or global action in order to realize complex social formations and their activities. Indeed, studying action nets means answering a dual question: what is done, and how does this connect to other things done in the same context?

What looks like a macro structure or a macro phenomenon from a distant perspective is actually only a multitude of translations which happen at the level of local actions. In other words, "all actions are local, but some of them are connected to a great many other actions and repeated in many other places; in this way they become *translocal*" (Czarniawska & Czarniawska-Joerges, 2008, p.31).

In conclusion, a cyberethnographic approach and the lenses presented hereby to spot how users contribute to the development of FOSS collectives results in a couple of considerations. Firstly, participants are cyborgs, they bring their own socio-cultural background through their contributory efforts. As such, the 'offline part' of participants' background does not disappear, but it is traced in the collective's infrastructure. In addition, it means that any

contributory effort by participants can be intended as an attempt to stabilize an actor-network: one action among many other in the net. In such attempts participants try translating their own ideas and plans into something concrete and, as a consequence, they enrol and mobilise everything relevant and useful, whether this is an authoring tool for assisting the drawing of artworks, a piece of documentation, or the expertise and support of other participants. Finally, regardless of being successful or not, it implies that such efforts can be spotted as a net of local actions. Some of these actions relate (explicitly or implicitly) to many other actions and are so often reified, that they transcend the locality of single, specific actions and become translocal. In my thesis, in order to grasp how users participation relate to the collective development, we need to focus on how individual participation become translocal across the collective, or, in other words, how participation locally performed by non developers, becomes a local matter for the developers' domain of activity too.

2.2 Researching users participation in a cyber field

2.2.1 The case of The Battle for Wesnoth collective

Given the current limited knowledge on how participant users integrate with and relate to FOSS development practices, I preferred to approach the phenomenon by focusing on a single collective and deepening its understanding, rather than designing the research in comparative terms among different and multiple cases (Stake, 2006). I conceive this study as an in-depth analysis of an individual unit – one FOSS collective – that strives to achieve an interpretation of the observed events in a way that these may be considered sound and comprehensible by both the investigated collectivity and by readers unfamiliar with it.

The design of this research may recall what in some fields (such as education and business oriented ones) is loosely defined as a 'case study research'[16] or, in the particular field of Information Systems, as 'interpretive case study' (Walsham, 1995). However, since there are plenty of definitions of this methodology, which are often diverging (either in their

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[16]Case study research has been widely used in many areas such as business (Dul & Hak, 2008), management (McCutcheon & Meredith, 1993) and organization studies (Suchman, 1987). In recent years, the method has been increasingly adopted also in the field of Information Systems and Computer Sciences as a way to unravel the complexity of socio-technical assemblies which relate to the production of information systems, software, and information technologies in general (Hirschheim & Chen, 2004). Since *interpretive* case studies do not share the presumption for the researcher to be able to 'understand reality', they slightly detach themselves from more traditional approaches to case studies, where a positivist stance is implied. In interpretive case studies researchers aim at reading social actor's working domain interpretation and their taken actions (Walsham, 1995).

epistemological approaches, techinques or scope) among themselves, I should clarify that, strictly speaking, my work is best described as a cyber-ethnography of a FOSS collective rather than as a case study of it (Flyvbjerg, 2006).

About the reasons for grounding the investigation on a single collectivity, I claim the following. It is true that other phenomena sharing similar foundations to FOSS collectives already exist and have been theorised upon with regards to the users[17]. Therefore, comparisons or 'theory validation' research would be possible by building on the literature available on these phenomena. However, studying users participation in FOSS through comparisons among multiple cases requests the adoption of some theoretical stances and specific focuses about what users do and how they do it in FOSS collectives. While this would be theoretically feasible, it defies the epistemological foundations laid out so far. Indeed, these imply to minimize the set of assumptions that are used to access the field and to observe what actors do in practice, rather than superimposing preconceived theoretical stances on the collective.

The choice of *The Battle for Wesnoth* (BfW) project as case for this research is based on a few criteria which helped me identify a FOSS collective engaged in an active and ongoing development work and in which users could participate in several different ways. *Battle for Wesnoth* as a collective is both an active community-based FOSS project and a turn-based strategy game. I will introduce the case in details in the Chapter 3. Hereby I provide the rationale for its choice which is based on a *theoretical sampling* strategy (Silverman, 2002).

The preliminary phase for the case selection started with the choice of 40 cases from two of the most used *FOSS forgeries* – web platforms which provide FOSS collectives with tools, communication channels and Internet accessible resources often used by FOSS collectives in order to make their collaborative work easier. In particular, I used *Freshmeat*[18] and *Sourceforge*[19] to gather potential candidates. These platforms allow filtering the list of all active projects according to some criteria. I filtered on two conditions: project status "active" and version "1.0 and later"[20]. In about three weeks, I progressively reduced the number of these cases by spotting the projects' homepage, their Internet support forum and their

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[17]Studies on the phenomena of *crowdsourcing*, *produsage*, *prosumerism* or *collective commons* are examples of this (Surowiecki, 2004; Bruns, 2008; Tapscott & Williams, 2008; Lessig, 2001; Ostrom, 1990).

[18]Freshmeat recently changed its name into "Freecode" `http://freecode.com/`. (Last visited 12/12/2012)

[19]`http://sourceforge.net/`. (Last visited 12/12/2012)

[20]To look at a project from its very inception and to look at how users integrate in that developmental effort since the beginning could have been an interesting option, but the unpredictability of development for such collectives, made it too risky to engage in such a study. Therefore I opted for collectives in a relatively advanced status of development, which is conventionally set after the release of 1.0 version.

"Contribute"[21] sections, and by discarding the ones which did not have an active development and did not allow users to participate actively (or did it only partially). The final choice of Battle for Wesnoth happened among seven candidates[22] and mainly rested on the following aspects:

Active project: Started in 2003 it reached the first full major release (v 1.0) in a couple of years. In May 2010 the stable version 1.8.1 was released. Although the core development of the software and infrastructure are largely concluded, the project is still rather active. Indeed, on average, BfW releases two versions within the stable series per year and about one version every two months within the development series. The *credit file* of the project lists more than 150 developers[23] and the International support forum had 14125 registered members at that time.

Cross-platform availability: The software is developed to run on all major operating systems available today. BfW works on GNU/Linux, Windows, Mac OS, and also for smart-phones such as Apple iPhone or Google Android. The cross-platform availability is important because it puts a FOSS technology also at the reach of a user base which is traditionally less used to FOSS socio-technical practices.

Community-based: The software is entirely run at the level of 'community' and volunteer-based contributions. BfW does not have an hybrid model where corporate actors or traditional software companies interact with the collective and try to 'steer' the developmental effort of such collectives. Although such form of hybrid collaboration (Lin, 2006; Shah, 2006) is one of the many possible ones in the FOSS paradigm, my interest was on a end-users volunteered participation.

Integration with user-made-content: BfW allows participants to create their own additional content to be play the game and share it with the other users. This additional content is available in the game using a dedicated "Add-ons" function. This user-made-content (UMC), along with its development and maintenance is not an 'official part' of BfW, however the collective sustains infrastructural resources for it[24].

Multiple usage modes (single-/multi-player) BfW provides two distinct modalities of use in the software: single player and multiplayer. In the former, players engage against the Artificial Intelligence (AI) to win the progressive objectives set for the narrative of the campaign. In the latter, there are no explicit goals, but players challenge each others by selecting common maps

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[21]Usually these are Forum sections or Website pages including information to help people starting to contribute to the project.

[22]Four video games, two audio/video editors and one managerial software.

[23]The credit file (or credit page) is a document which explicitly acknowledges those people who provided key contributions for BfW. This credit file includes artists, coders, patch submitters and translators.

[24]Such as the *Coordinated Wesnoth UMC Development project*, shortened as *Wesnoth-UMC-Dev*: http://wesnoth-umc-dev.ai0867.net/.

and compete. The availability of diverse game modes allow the flourishing of different use practices: another relevant aspect for the research objectives.

Given the uniqueness of each FOSS collective (Nakakoji et al., 2002) and the specificity of the selected case, my research does not aim to generalization to other FOSS collectives about users participation, software development or design. In line with what expressed by Flyvbjerg (2006), the point of strength of this research is deepen the insights of specific topics provided in the individual case. Broadly speaking, four types of insights may derive from this research: development of concepts; generation of theory; drawing of specific implications; and contribution of rich insights (Walsham, 1995). The choice of the case, along with the research interest in exploring a relatively unknown area of FOSS studies and the specific objectives to investigate the relationship between users participation and development dynamics result in one of the two last types of insights proposed by Walsham.

Earlier, I argued for the need for finding an active collective. The number of developers, the activity level (*e.g.* bug reporting, mailing list messages), and the frequency of software releases are all acknowledged as good indicators of healthy and active development projects (Crowston et al., 2003) and they set BfW apart from the other potential cases. However, after few weeks of effective fieldwork I realized that the extent to which BfW can be considered active, it is a much more complicated matter than expected. Indeed, if I consider a life cycle approach[25] to software development, I shall state that the BfW collective has already passed its stage of *growth* and that has been in its *maturity* stage since few years and during my whole fieldwork. For this reason I will provide an overview of the collective's history in Section 3.2.1 and I will reflect on this issue in my final methodological considerations (Section 6.3).

> For instance, if you went back, say, five years earlier, there would be very few people from that era that are still around today. The members from that period that are still around are present infrequently (even people like our [area] Director, Pirk, are no longer as active as they used to be once upon a time). Even the founder of the Battle for Wesnoth project, Haldric, is pretty much inactive in Wesnoth development now. But he was able to do so because the project had become pretty much self-sustaining, insofar as there were enough contributors (both consistent contributors and incoming new ones) that the project carried on just fine without him.

(Interview, Cylanna, 01/06/2011)

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[25]In software development, a life cycle approach states that, similarly to living organisms, software projects have different life stages. Each one should fit specific organizational dynamics, working activities and objectives. A basic life cycle includes four stages: introduction; growth; maturity; decline or revival (Lattemann & Stieglitz, 2005).

2.2.2   Research Phases and description of the work done

Broadly speaking my fieldwork consisted of five phases [26] spanning from November 2010 until March 2012. From the point of view of the empirical extent of the fieldwork, I 'entered the field' right after the release of the 1.8.5 stable version and in-between the 1.9.2 and 1.9.3 development releases. I started disengaging from the field slightly after the release of a new major version: 1.10.0. In Figure 2.1 you can find my fieldwork period with the ongoing releases of new software versions.

The main work involved in the first phase – from October to December 2010 – consisted in gaining a better understanding of the field extension and of a suitable way to interact with the collective. The last part was guided by the implicit questions: how intrusive should be my participant observation? Should I intervene in any interaction I find interesting, or should I also spot what happens without my intervention? In Section 2.3.1 I discussed these in details. The issue of field boundaries was more complex to deal with. Of course, I considered all the official part of the collective's infrastructure as central part of my field, therefore if a communication channel was listed as part of the project in the official website (or International Forum), then I would consider it part of the field. However, not everything that is important for the Wesnoth collective rises up there. For instance: I happened to know about the *IV Italian Wesnoth Tournament* through a message in a mailing-list that almost has nothing to do with BfW and which I was following for other personal reasons. In rare occasions some contributors were hired with the collective's funds through public calls on generic web platforms for digital artists. Some participants are used to publishing information related to Wesnoth on their own websites. When independent Internet magazines publish reviews on the game, these have great influence on the expectations that new users grow on software. Therefore, understanding the boundaries of the field has become a continuous process which followed the emergent relevance the observed interactions had for my research. In the end, during my whole fieldwork, I would have never expected that attending a conference in Brussels would be a key activity for this.

In addition to the introductory and public announcements of my research intentions to the collective, the only active involvement in this phase was my participation to the *IV Wesnoth*

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[26] I should note that the clear separation of phases, as narrated here, was never so clear-cut during the fieldwork. Awareness of passages amongst phases was an a-posteriori acknowledgement of my research status which was facilitated by artefactual instances (such as preparing a draft of a chapter, a submission for conference, a tentative article). As I said, these phases were not formally defined or planned a priori, so they should be understood as narrative artefacts.

Italian Tournament. Data collected during this phase are limited to a few methodological fieldnotes reflecting on my role as a researcher/participant and on the key activities brought forward: (*i*) implementing my research website; (*ii*) acquainting myself with the video game (both in single- and multi-player game modes); and (*iii*) getting the collective know me.

The second phase – from January to May 2011 – started when I felt that the collective was adequately informed about my arrival and that I had a general grasp of where key interactions took place. Moreover, by that time I had already been keen at entering conversations in forum threads or in chat-rooms. During this phase, I considered key field sites: the IRC chatrooms (one was development oriented, one for users support, one for the user-made content and one pertaining to the 'Italian community') and the development mailing list. I also followed, in a less focused way, the Italian collective and the International Forum.

Two distinct and prevailing cognitive interests guided this phase: the understanding of development processes and developers' interactions on one side, and the relevance of the collective's infrastructure for the participants' daily activity, on the other one. This phase ended when I realized that developers and the collective did not have highly institutionalized procedures[27] to gather, integrate and to evaluate non-participant users' requirements in the software development (Chapter 4 will address this aspect).

Therefore, during the third phase – from May to August 2011 – I shifted my attention to the contributing users' base. My key field sites became the International forum and the platform specifically intended for supporting user-made-content (UMC) creations. The key cognitive interest of this phase was understand which forms of contributions participant users engaged in and how their contributory efforts unfolded. Participant observation was pursued in parallel with interviews during this period.

In the fourth phase – from August to October 2011 – I stopped the fieldwork to start a preliminary sorting of data and a re-alignment of the research design with the insights emerging from the field. No participant observation was involved during this phase, although the conduction and the closure of a few pending interviews continued to be an ongoing activity.

The last phase – from November 2011 until the end of March 2012 – concerned the understanding of how the users' contribution (as observed during the third and fourth

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[27]Which basically results in an open Forum board where anyone can suggest ideas, but no one is 'officially' responsible for taking care of them. Furthermore, there are no official procedures for Quality & Assurance (Q&A) activities in the collective.

phases) related to the general development process (as observed in the second phase). During this phase, I constantly spanned through the sites I got to know upon that time to find missing connections for my data, although the starting point in this wandering continued to be the International Forum. As I already mentioned, a pivotal action for this phase, was my attendance at the most influential practitioner based FOSS conference in Europe, held in Brussels: *Free and Open source Software Developers' European Meeting* (FOSDEM) 2012. There in an area dedicated to FOSS game development, one of the BfW developers gave a speech about the challenges of fine tuning Wesnoth in relation to the collective's demands.
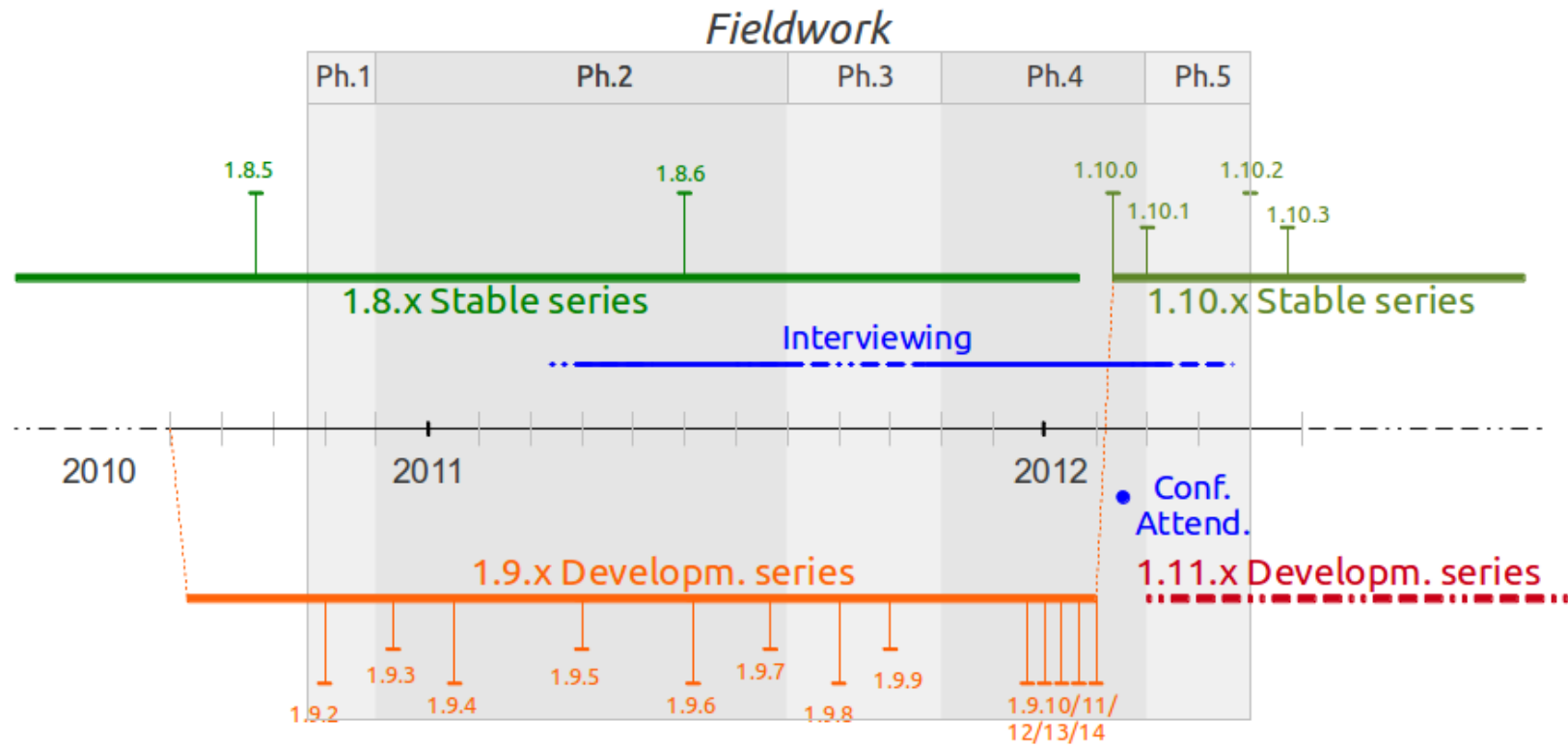
Figure 2.1: Overview of the fieldwork phases contextualised in relationship to the software versions released in that timeframe. Light-shaded areas indicate periods of limited fieldwork activity.

2.3 Techniques for a cyberethnography

The key techniques used during this empirical research are participant observation, ethnographic interviewing, and notetaking. All of these are well documented in social sciences and they are widely adopted in cyber/virtual/online research[28]. However, given the mediated nature that accompanied the use of such techniques, it might be helpful for readers to see how I used them in practice during my ethnographic fieldwork. Hereby I provided the following overview.

2.3.1 Participant observation

I have already highlighted the relevance that a participant approach to observation has in this ethnographic study. In Section 2.4.1 are described the different 'identities' I used to conduct the participant observation in the most overt and consistent way. Hereby I further elaborated my general approach to participant observation.

It is often difficult to define whether a participant observer's effort can be considered participatory in a strong or weak sense and also whether that is consistent across the whole range of fieldwork activities (Cooper et al., 2004). At one side of the spectrum there is a completely distant and 'invisible presence' of the researcher who can read informants' discussions and unfolded interactions without being noticed. This raises ethical concerns beside the aforementioned cognitive limits. On the other side of the spectrum there is a strong form of participation, more in tune with *action research* approaches (Whyte, 1990), in which researchers get involved with informants' behaviour, try affecting it moved by theoretical assumptions and watch informants reactions to researchers' 'probes'.

About my approach, it is stuck to a more traditional and moderated form of participant observation (Waddington, 1994), somewhere in the middle of this spectrum. Basically, I thought of myself as a participant user and acted as one of them. Therefore, most of my interactions with the collective related to my direct experiences with the use of the software and my attempts to contribute, in a concrete way, to its improvement. For instance, at the time of my participation to the Italian tournament, I still was a beginner and unaware of some game mechanisms to competitive strategy matches. Therefore I started asking other players for tips and information. Similarly, I also provided feedback for game content and reported

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[28]For an overview of how such techniques are used in empirical research see Hine (2005); Fielding et al. (2008).

the bugs I found. This approach of the naive participant also became useful when conducting interviews, because it allowed to share common or similar experiences between me and the interviewee. However, this approach is not suitable for any situation. For instance, in the communication channels used by the developers for development related matters, I did not participate as a naive user, but I rather played the role of a distant observer. In any case I behaved in conformity with collective's rules and guidelines[29] with all knowledge and 'good sense'. For instance, I never started a new forum thread without having first used the forum "search" function to make sure that somebody else had already discussed that topic. More simply, I tried to keep my behaviour consistent with the one of a relatively inexperienced and marginal participant user.

In practice, this participant observation always[30] happened via my laptop and mainly involved the use of a web browser for navigating across the collective's infrastructure, an e-mail client to read e-mail messages, an instant messaging client to attending IRC channels, and a micro-blogging client for twitter messages.

All these tools allow to store and, basically, collect data by either *logging* the conversations (such as is the case of instant messaging and micro-blogging conversations), or by saving a copy of the resource on the computer. In particular, the e-mail client was used to retrieve e-mails, categorize, comment and sort them into specific folders that I progressively created in my client software. A similar approach was used for web pages and forum threads, thanks to a browser extension[31].

2.3.2   Mediated interviewing

The role of interviewing in ethnographic researches slightly differs from the one of researches which are primarily based on the interviews. Both of them share the implicit goal of gathering the *research subjects*' oral accounts (and interpretations) by means of guided conversations. In interview based researches the definition and composition of the interviewee population, as well as the design of the interview itself, are rather formalized[32], while in ethnographic researches, 'interviews' can range from casual interactions to more formal interviews (Hammersley & Atkinson, 2007, p.99-107). Here, I am referring to (mediated) interviews

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[29] All components of the infrastructure have links or direct information on 'how to behave', such as the *Posting guidelines* for the forum or the *Code of Conduct* for the multiplayer server.

[30] Except for the cases of one face-to-face interview and of my attendance to the FOSDEM conference.

[31] I used the extension *Scrapbook* for the *Firefox* web browser.

[32] For an extensive overview of the interview based research approaches see Gubrium & Holstein (2002).

to indicate planned and guided discursive interactions which are aimed at gathering data about informants' interpretation and understanding of specific topics. I consider the data gathered through unsolicited, fortuitous and pretty unstructured conversations to fall within my participant observation activity.

The selection of informants did not follow strict sampling criteria, on the contrary it pursued emerging cognitive interests associated with the evolving understanding of the field and of the studied phenomenon. The informants interviewed in this research can be simply divided into two groups: privileged and participant informants. The first group (8 interviews) consisted of long-term core developers[33] and I addressed them as *privileged* informants, since the key cognitive interests of my interviews did not consist in coding practices and code development in a strict way, but rather on the history and general overview of the collective, as seen by the ones who had been close to it for a relatively long period of time. The second group (21 interviews) consisted of participants to the various contributing activities which the collective has affordances for. Most of these participants can be considered relatively expert, but the sample also includes four 'newcomers' who have started for almost one year, since I entered this field. Hereby the key cognitive interests stayed on their activities, as they unfolded in practice, with particular focus on the use of the collective's infrastructure, the designing and planning of the intended contributions, the collaborative efforts with other participants, and the motivations for such efforts.

The recruitment process happened with two broad approaches: through public calls and by directly contacting potential interviewees. I made three public calls in the developers' mailing list, the international and the Italian forum at early stage of the fieldwork. In further steps the recruitment was done privately through the use of the international forum's private messaging system. The public calls went rather unnoticed and only five interviewees answered positively. I was more successful with direct and private contact. Public calls were made at early stages of my fieldwork, at a time when I still needed to get more contextual information about the Wesnoth project. For this reason, I sent the first public call to the developers' mailing list. This approach was satisfactory not for the number of recruited participants, but certainly it was for the preliminary understanding it gave me of the field. The following excerpt from my fieldnotes recalls my discovery of some 'hidden' social composition behind the medium.

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[33]Two of them explicitly presented themselves as "retired" although they continued to follow the mailing list.

[...]

For the whole day, I received no reply nor follow-up to my recruitment call, but then at late evening there were the first 3 public replies (which I noticed only today). I remained happily surprised by the interest and availability to help shown by who answered (both by volunteering for the interview, but also to clarify some aspects that I might overlook) In particular, they drew my attention on:

- -dev ML is not followed by all contributors (probably not even by all coders). IRC is perhaps a more dynamic channel, appropriate and populated (at least #wesnoth-dev). **Everyone who replied** highlighted this!

- other contributors such as artist and those working on mainline campaign are most likely on the forum. The -dev ML is very much **code-oriented**

- **I particularly liked** Eryssa's answer which attempted an explanation of dynamics related to the multi-player and to how some user-oriented discussions emerge in one place, but develops in another one.

[...]

(Fieldnote, "Interviewee recruitment", 22/03/2011, original emphasis)

Satisfied with this approach I thought I should also extend it to the general purposes part of the collective infrastructure, such as the International forum, but the limited responses I received brought me to consider a direct contact to informants. No one ever objected or complained about any of the two approaches. I received one denial to be interviewed and four unanswered private calls. The rest of people who answered were enthusiast and willing to help me. However, five of these interviewees stopped answering after a few questions and I did not manage to end up, even though I contacted them again more than once. Since these interviews have not been completed, I have not used them for my purpose.

In line with the idea of communicating with informants through their usual mode of interaction, I gave all interviewees the chance to run the interview in the way they felt most comfortable with[34]. Therefore I conducted 29 interviews: 10 through E-mail, 4 through IRC, 14 through the Forum private message system and, surprisingly, one face to face[35].

All interviews basically involved the mediation of a technology and I want to highlight a general aspect in this regard. Opdenakker (2006) warned that, in case of technology mediated interviews, the interviewee's acquaintance with the technology might pose challenges to the success of the interaction. In particular, the necessity to parse written questions and to formulate written answers by typing them on the screen could provide low quality interviews

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[34]No one used the possibility to conduct the interview by phone/VoIP. Therefore at later stages in the process, I removed this possibility, since no one seemed to be interested in it and because at a certain point, it would become too cumbersome to start introducing yet another interviewing method and integrating a new type of data format in my empirical research.

[35]One of the participant to the Italian collective, whom I got to know in the Italian IRC channel, needed to come to Trento for some personal reasons and offered me to be interviewed in that occasion.

in case of respondents' limited intimacy with the medium. Given the great familiarity of my informants with IRC, e-mail and forum messaging, which are their usual communication media in the collective, this was not a problem during my interviews. For instance I often received well-formatted and clear e-mail replies which even included direct references (via hyperlinks) to the subject matter, similarly in IRC my respondents could easily spot potential sources of misunderstandings and often clarified their statements on their own. I can also add that conversational elements, which are usually deemed important for interviews, such as voice intonation, facial expressions, changes of tone are not completely invisible in technology-mediated interviews (Opdenakker, 2006). Indeed interviewees' use of *emoticons* or overemphasis of punctuation greatly helped me in spotting irony expressions, jokes or idioms during the interviews.

	Shared place	Disjointed place
Synchronous	1 (FtF)	4 (IRC)
Asynchronous		24 (Forum/E-mail)

Table 2.1: Table shows the interviews I conducted for this research according to the type of communication and groups them in relationship to the dimensions of time and place.

Furthermore, among the types of interview I conducted, there are differences concerning how researchers and interviewees pursue the interaction with reference to the sharing of time and places of such interaction, as Table 2.1 showed. These differences affect the interview management. In this regard, the main challenge I had to tackle was present in asynchronous[36] interviews and related to the renowned issue of time management (Kivits, 2005).

My quickest interview lasted four days[37], while the longest ones took me 59, 60 and 69 days to complete. Furthermore, since I did not set specific time constraints[38], all interviews had cyclic "idle" phases in which my key problem concerned *uncertainty* about the interview completion. Indeed the delays of answers were not as much an issue as it was to be able to judge whether I was witnessing an answer delay (for an answer which was about to come) or an interrupted communication (in an interview which had been abandoned). To deal with this issue, I slowly developed some strategies which seem very similar to the ones

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[36]Synchronous mediated interviews too presented some challenges related to time management, but in comparison these were minor. In particular, the key challenge was to find a suitable day/time for both. This issue seems marginal, but when different time-zones enter in the context the problem is exacerbated.

[37]Measured from the first answer received to the last one.

[38]Neither for the overall interview nor for each question-and-answer

proposed by Kivits (2005): planning and conducting more than one interview at the same time; preparing a couple of pre-formatted reminders which I forwarded in case the answer took longer than two weeks; and shifting away from the idea of semi-structured interview while coming closer to a prolonged communication interaction guided by topics, specifically tailored for each interviewee. I also should acknowledge, that many interviewees often informed me in advance of potential answers delay (due to work, commitments, family businesses, trips...) and all of them always apologized for answering late.

In general the interviews can be described as semi-structured, but there was a substantial difference between asynchronous and synchronous ones. The latter did adhere more to the idea of semi-structured interview than the former ones, which allowed much more flexibility in the interview designing and unfolding, but unfortunately had the drawback of a lengthier process. In this case, I had a set of topics I wanted to address, but not an interview track in a strict way. Each interview included 6 or 7 questions, each one relating to a general theme. Each questions was forwarded only after the previous one was answered. Often, I asked to further clarify specific statements before proceeding with the next.

Consistent with the experience reported by Meho (2006), before starting any interview, I provided interviewees with information about how I would manage the interaction and handle data[39], to inform them about privacy and confidentiality concerns. After their consent, the interview started.

2.3.3 Notetaking

As for any ethnographic work, notetaking for collecting data was central in my case. Notetaking accompanied the whole fieldwork and covered all the 'field sites' and data collection activities (interviewing, participant observation, gaming, document research). Since "the writing of fieldnotes is not something that is (or should be) shrouded in mistery" (Hammersley & Atkinson, 2007, p.142) I explain hereby the conventions I used for writing my notes.

First of all, differently from classical ethnographic work, my notes were not jotted down on paper notebooks and later reported on well structured transcription of notes on computer, but actually they were directly written on a notetaking software.

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[39]I informed them that no automated tool for data gathering would be used, that data would be only manipulated by me, that no excerpts could be associated to their names/nicknames.

The software[40] I used to write and revise notes allows the creation of as many notes as needed. Each note can be given a unique title and categorized in a "bloc-note". Basic layout formatting[41] of notes can be used for linking directly to: (*i*) other notes, (*ii*) internet URLs, (*iii*) local resources (*e.g.* files and directories...). During the whole fieldwork, I progressively created five bloc-notes where notes and note categories are stored.

BfW Methodology: Includes 19 notes[42] on methodological issues such as the strategy for recruiting informants or the construction of multiple identities. Most of the current chapter is based on some of the notes included in this notebook.

BfW Informant: 49 notes each of which relate to a participant to the collective. I used this notebook to keep track of the informants' profile to better tailor potential interviews with them, but also to keep track of the multiple (and different) identities of some of these participants. In the end, I had direct contact with most of the participants listed in this notebook.

BfW Fieldnotes: 119 notes which constitute the largest bulk of notes and the central part of my empirical research. It includes direct observations of ingame interactions, IRC/Forum/e-mail discussions, reflections on the experiences gained from my tentative contributory efforts, historical tracking of important events.

BfW Analytical: this set of 24 notes focuses more analytically on some aspects that emerged from the field. Most of this analytical notes initially belonged to "Fieldnote".

BfW Theoretical & Reflections: Initially, this was a bloc for notes standing between the direct fieldwork observation and tentative analysis of specific aspects. Later, I started using it for connecting analytical notes to some theoretical aspects. It currently includes 29 notes.

As pointed out by Silverman (2002) classification systems for fieldnotes are yet something controversial. They do help to systematise data, but they also hinder researchers from looking at notes in a more holistic and flexible way. Therefore, I should remark here that these bloc-notes and the actual categorisation are an emergent result of the research process. Initially, there was only one bloc-note related to my PhD research, probably called "PhD Diary". I renamed it in a different way a couple of times as I realised I needed something to

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[40]Nowadays there are many software applications which can handle notetaking without being embedded in complex and cumbersome software suites (*e.g.* see http://en.wikipedia.org/wiki/Comparison_of_notetaking_software). My choice of using Tomboy http://projects.gnome.org/tomboy/ was made after a comparison among a few applications compatible with my operating system.

[41]Such as highlighter, emphasis, underlining and bullet list.

[42]Number of notes included in each bloc-note is counted as of the moment of this writing (August 2012) and while I consider the first three bloc-notes to be stable, I may occasionally revise and add notes to last two ones. There is also a sixth bloc-note "BfW Thesis Content" which includes only 3 notes at the moment, but I discontinued its use as I found more appropriate to draft the thesis content and its rationale on more suitable tools.
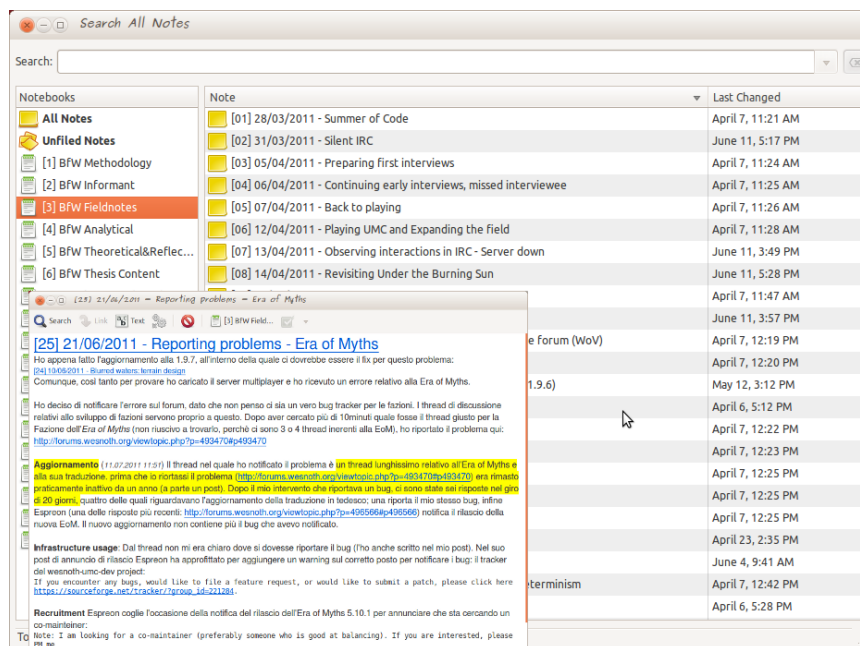
Figure 2.2: Screenshot of the notetaking software used to write ethnographic fieldnotes and analytical ones. The main interface of the software which includes the set of bloc-notes used for organising notes and the list of all notes created so far is on the background. On the foreground a single note is displayed.

reduce the increasing number of notes and the wide spectrum of typologies. Besides "PhD Diary", the only stable and relatively independent bloc-note I created was "BfW informant". The other ones resulted from iterative experimenting in relation to the observed phenomena and the way I learned to take notes.

Each bloc-note includes a note listing all other notes available in that bloc-note. In relation to writing conventions, each note always included at least three elements in its title: a progressive numbering of notes within the bloc, a general descriptive name for the content, and the date of the note creation. At the very top of the note content, just below the title, I provided a one/two sentences context for the rationale behind the note and, at the very bottom of the note, I provided references to other notes, literature or Internet resources. I never dealt with layout formatting, emphasising and highlighting, when I first wrote down a note. This happened when I revised them. In case of later content note editing I explicitly stated the date of the new revision close to the new addition. Direct quotes from the field in the notes were always reported by using a `monospaced character`.

In this way, I achieved the possibility to easily trace connections amongst different notes a relatively 'easy to grasp' categorisation system and a way to trace the evolution of single notes in my whole set of fieldnotes.

2.3.4 Data analysis

The various techniques used to ethnographically approach the Wesnoth collective in combination with the heterogeneity of the specific cyberplaces chosen during my fieldwork, produced a set of data consistent with the idea of multiplying access points to the field (Demazière et al., 2011) and data collecting on the same phenomenon from different actors and perspectives, in order to allow triangulation during the analysis (Hammersley & Atkinson, 2007). This approach generated different types of data formats, digitally stored on my working laptop[43]. Because of different data formats I decided not to use any Computer-Aided Qualitative Data Analysis Software (CAQDAS) for the analytical phase of this research. Currently, there are no CAQDAS which can handle e-mails, xhtml web pages, xml formatted text[44], chat logs and .odt/.doc file formats at the same time. Therefore, using such software for analysis would request data conversion into common and acceptable formats, which would drastically reduce the "data richness" as originally collected, commented and elaborated, although that would be feasible. Moreover, the use of CAQDAs can greatly improve data organisation, systematisation and coding, but, as a consequence, we would lose flexibility during the whole process (Coffey et al., 1996). For these reasons, in practise I analysed data manually: I avoided the use of specific analytic software suites, but I employed general purposes software packages that helped the progressive development of concepts and categories and their systematisation. For instance I used mind mapping software to sketch maps of the infrastructure; I created a few spreadsheets to summarize information about informants, bugs, revisions. However, the continuous expansion and revision of notes was my main activity in this process.

As already mentioned in the description of the note taking process, a preliminary form of analysis had already been made when collecting data, as they had been continuously revised, sorted and re-adjusted. Similarly, the categorization of the items collected through the web browser extension and through the e-mail client was a continuous process which basically continued in the whole fieldwork. Practically this resulted in the creation of numerous new notes, which I placed in the "BfW Analytical" bloc-note. With these new analytic notes I tried to connect and to consolidate my interpretation of the field. For instance in my analytical note about "wesbreaks" I summarized and organized manifestations of such

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[43]I also copied these data on an external hard drive for back-up purposes.
[44]This is the format used by Tomboy to generate and store notes.

events, actors and artefacts involved, and I tried to abstract potential implications and causes of this phenomenon[45].

Conceptually, the analysis of data followed an inductive and iterative process of reading, coding, systematising and connecting the emerging concepts in order to abstract their sound descriptions and theorisation. Here, the lenses of ANT and of 'multiple actions in the net' helped to frame how each individual's effort to produce artefatual changes in the collective relate with the feedback and the help of other participants. Basically I analysed how each participants' work mobilize an actor-network of competences and resources and how the several actor-network processes that are present in the collective relate to each other. The working thread in the Internet Forum were the focal point to frame this part of the analysis.

At a substantive level, the analysis focuses on two macro-aspects which will be addressed specifically in the two analytical chapters. Firstly, the analysis addresses the socio-cultural context the collective operates in, with specific regards to the relationship between users and developers. Initially, in my attempt to understand whether and how users get listened by developers, I focused on the proposals of new features. This seemed a reasonable point to focus on: literature usually depicts FOSS as a form of 'pushed by users design' (Barcellini et al., 2009) where users are always welcome to suggest new features, moreover BfW collective itself provides a few invitations for features proposals 'here and there' in the infrastructure. However, my difficulties in finding proposals which enrolled and mobilized developers and were transformed into concrete software changes, together with developers' publicly displayed distance from such proposals catalysed my first part of the analysis. Why do developers ignore new features proposals so 'blatantly'? Is this really a stance against users' proposals or are there other causes for i? How do other participants in the collective co-exist with such a position? These implicit questions accompanied my effort to organize and interpret my data about the socio-cultural context which frame the relationship among users and developers. Or, as I shall argue in Chapter 4, between participants and non-participants.

Secondly, I focused in detail on participants' activities and on their daily ongoing through the collective's infrastructure. In particular I analysed grouping patterns, stability of participation, motivation for participating and the rise of widely-shared efforts. Indeed, when I noticed a few (non-trivial) changes happening in the collective, I also noticed that they were often linked to shared concerns which emerged from the collective. So I started

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[45]Part of the arguments I made in Section 5.2 build on this note.

analysing this phenomenon. This brought me to look at how participants join together in order to pursue their own works and how, in so doing, they create design rationales by discussing, prototyping and commenting the development of such works. Moreover, the analysis of these grouping patterns called for deepening a related aspect: the instability these groupings are subject to due to the wobbling presence of participants in the collective. Why do participants contribute and why do they interrupt such contribution so frequently? What kind of implications do such breaks have for both the ongoing projects and the other participants? These implicit questions accompanied my effort to organize and interpret my data about how information travel across the collective and, in some case, emerge as widely shared issues.

2.4 Entering the field in a cyberethnography

All media and platforms used in the collective are openly accessible to anyone, researchers included. There are no 'gatekeepers' to deal with in order to negotiate access to these fields in the strict sense. For instance, I had no problem in accessing and attending the key field sites and no one ever complained about my overtly declared research intentions[46]. However given my participant observation intents, I considered as desirable a process of justification of my presence there and of integration in the collective. To me this was both an ethical choice in regards to participants and a practical one in proving them myself as a trustworthy researcher.

During the first two phases of my fieldwork[47] I maintained a sort of preoccupation about this issue. Indeed I was hesitant to intervene and my few interventions were not so spontaneous, but the simultaneous construction of my cyber-identities and the progressive acquaintance with the collective's norms and habits helped me gaining 'self-confidence' and becoming known to participants. The construction of several identities was not marginal in my work, as I showed below. Because, since the collective's infrastructure includes an heterogeneous set of channels which is unevenly populated, I faced the problem that any new analysed media renewed the challenges of a field access.

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[46]Even though I had no way to realize how much the overall population became aware of my research interest. In media such as mailing-lists or Forum, the discussions tend to fade in the background relatively quickly, so they become less visible to 'latecomers'. Similarly, account signatures are of minimal visual impact and the account's profile information are visible only if specifically looked for. Therefore my declared research goals and my role as researcher might have been overlooked by someone.

[47]See Section 2.2.2.

I mitigated the issues by publicly announcing my presence and intentions in three main places (the development mailing list[48], the International forum and the Italian forum) and by providing pointers to those announcements and to my research website from within all my 'digital identities' (Coffey et al., 1996). Therefore I generated multiple (consistent) identities and advertised my research interests in more than one place.

2.4.1 The cyberethnographer multiple and ethnographer's presence

In this section, I explain how I dealt with the issue of giving visibility to my role as a researcher, in a (heterogeneous) field composed by different media and infrastructure components.

As already pointed out, I avoided a purely observational ethnographic approach to the field in favour of a more 'participatory' one. This implied the question of how rendering my presence in the field, both recognisable, consistent and ethically sound during the research activities. Rutter & Smith (2005); Demazière et al. (2011) make clear that revealing consistently the researchers presence in such a field might be challenging and rewarding at the same time.

I use Annemarie Mol's idea of *body multiple* (Mol, 2002) as metaphor to explain how my identity was represented in different (cyber-)spaces, while, at the same time, I kept my ethnographer's identity consistent and my researcher role as overt as possible (Lugosi, 2006). Mol explained how atherosclerosis is differently reified in different medical spaces, but she also goes beyond the idea of what she calls 'perspectivalism'. The fact that patients describe the disease symptomatology in their own words, totally different from how physicians would, is not just a question of perspective, but also a diverse reification of the 'same' phenomenon, which becomes *multiple* (Mol, 2002).

In this research the various identities of mine (accounts, avatars and aliases) belonging to my ethnographer role do portray a 'cyberethnographer multiple': not just the same cyberethnographer viewed from different perspectives, but a *multiple* one, because, for instance, interaction modalities strongly differ between synchronous and asynchronous media. Similarly, the information that are conveyed through a Forum account or an IRC identity is different and differently accessible.

Most of these identities (except for the Research Website and for the International Forum account) were not planned in advance. The need for creating new accounts emerged as the

---

[48]My public mail to their developers mailing-list was the only one which was preceded by private contacts with an administration in order to gain his approval for sending it. This interaction of mine was the only one which resembled a field access negotiation, in the strict sense.

field was constructed along with the renewed understanding of the field itself. For instance, during my fieldwork I realised that some relevant communication among participants happened through social media services such as *Twitter*[49]

> Today I realised that some community members (mainly developers) use twitter to talk about their works on wesnoth and to announce (I think) important news about these. I decided to create a twitter account and to follow the ones I discover. Moreover, I can also use it to announce news about my research [...] *e.g.* if I publish a new post on my blog.
>
> (Fieldnote, "Expanding the field: twitter", 12/04/2011)

Similarly, I initially planned to start interacting with participants in the International Forum, but I realized that I had better to engage with the Italian part of the collective, because at the time of appearance in that field they had been setting up a game tournament. Therefore, I also created an IRC and a Forum account for the Italian part of the collective (which uses separate infrastructure to gather and interact) and started getting involved in such a tournament. However, the initial and foremost part of my identity construction work related to the research website setup (which worked like a personal blog, rather than a traditional website). This endeavour had already started at the time of the case selection, but the technical configuration and maintenance, as well as content creation and revision, made it a continuous work in the fieldwork. The website key purpose was making up my researcher identity, my "digital self" (Turkle, 1997), through an artefact (the website) which could provide visitors[50] a clear sense of my research work, my methods and, more importantly, my stand on some ethically relevant issues.

As already documented, the use of similar artefacts in cyber research can be helpful for establishing research relationships at two different levels: (*i*) by mediating the establishment of trust and clarity between researchers and informants; (*ii*) by favouring the co-construction of research through commenting and criticising published contents (Forte, 2004; Wakeford & Cohen, 2008).

Figure 2.3 shows a partial screenshot of my research website. In that website page, I introduce my identity of researcher but also provide some personal information on my hobbies and other interests. Besides contextual information, this website has two main parts. One called "My Research" which includes more static and sound documents related to the research (objectives, methodology, theoretical frame). In the other one, simply called

---

[49]See www.twitter.com.
[50]Regardless of them being BfW participants, academic colleagues, or friends.
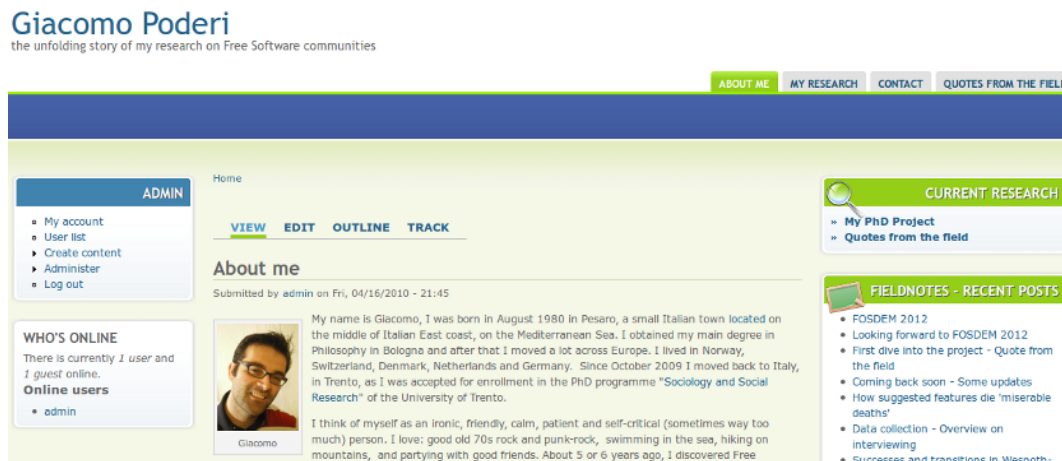
Figure 2.3: A partial screenshot of my research website. This specific page introduces my identity of researcher but also provides some personal information on my hobbies and other interests.

"Fieldnotes", I published reworked thoughts directly from interviews or fieldnotes in form of blog posts.

In retrospective, I received far fewer feedback and comments to my content, than what I was expecting, and this is probably due to a lack of time for keeping up with content publishing, which interrupts a sort "of dialogue" with the audience. However, informants did appropriate some of the reflections I published there. Indeed, they referred to my content a few times while interacting with me:

> Within an interview, one of my informant (Delfador) referred to what I wrote on my blog in order to help himself explaining his own point of view on the WML and Licence (Delfador Question 6):
>
> - Namely, it makes obvious shortcuts in terms of graphics assets and "appropriation" of such assets. Wesnoth's bar of entry is very low due to a combination of WML, which (as I've noted on your blog) bridges user desires and developer interests, and the GPL policy when it comes to rarer things like art
>
> The entry blog Delfador is referring to should be the one on WML http://www.poderi.eu/node/34 (Delfador does not link to it directly, but it is the only one that treats similar arguments to the ones pointed by him.)
>
> (Fieldnote, "Reflexivity and intrusion", 13/06/2011)

Finally, about the ethnographer's presence and its influence on establishing relationships with informants, the issue of multiple identities deserves some attention. Indeed, despite it sounds obvious, due both to the composition itself of the groups and to the affordances of the media, the various groups forming through the various media bear and perform specific identities and mode of interactions. It is important for ethnographers spanning across this kind of field, to be able to sense these differences by 'getting the seats of their pants dirty' in most of these groups and media (as I claimed at the beginning of this Chapter). To provide

a clearer idea of what I am trying to argument is enough to recall a few of such differences which I experienced during the fieldwork and which were particularly relevant to me at the beginning of my research, when I was still scoping the field and letting myself known to the collective (approximately during the first two phases of the fieldowrk. See Figure 2.1). At later stages, these aspects became less influential for my work.

The international Internet Forum[51] has an average presence of about 35 members connected to it throughout the whole day, and even though it is one the place I spent most of my time during my fieldwork, I got contacted privately and spontaneously only once by another participant. This made me feel relatively unnoticed, also because the public discussion I opened there to inform the collective about my research intents did not raise much of a reaction[52].

On the contrary, in IRC channels it happened to me to be greeted more frequently publicly and to be contacted privately to chat about general issues and getting to know each other. In Internet based communications, public greetings to people who join chatroom channels is a renowned behaviour part of so-called 'netiquette'[53], but being personally noticed and contacted privately, made me feel I raised some interests and more accepted.

Furthermore, the same type of medium (IRC), can portray different type of interactions if we look at different groups. In the Italian IRC channel, which is a small channel with about 15 people during the most crowded hours, people tended to discuss publicly about personal matters and about topics which are unrelated to Battle for Wesnoth (such as school or work related matters) and, there, I was jokingly greeted in the public room more than once, because users knew I had been 'studying them'. These events never made me feel uncomfortable or unwanted, but to me they represented occasions for interacting with them or reinforcing ongoing interactions.

> [. . .] 22:26:59
> **<BfWEthnographer>**: 'evening
> **<Reglok>**: welcome in chat BfWEthnographer
> **<BfWEthnographer>**: thanks
> **<Reglok>**: are you playing? anyone is yet available?
> **<Glonoin>**: good evening Reglok
> **<Glonoin>**: I and bfwe just started another one
> **<Reglok>**: welcome to you too Glonoin

---

[51] A similar argument seemed true for the Italian Forum as well, but since I spent far fewer hours there, I am hesitant to make comparisons.

[52] As of today, it received 9 replies and 488 views.

[53] Short for "Network etiquette", see http://en.wikipedia.org/wiki/Netiquette.

> **<Reglok>**: Glonoin: do not distract BfWEthnographer too much, otherwise he won't ever finish his thesis and we'll never get rid of him :)
> **<Reglok>**: Dacyn wanna play?
> 22:31:55
> **<Dacyn>**: allright!
> **<Reglok>**: how come? are you agreeing without complaining?
> **<Reglok>**: you are uncommon
> **<Dacyn>**: ah ... but did you mean with you?
> **<Dacyn>**: usually do people answer no?
> **<Reglok>**: no, unless you do not grant us something (a salary increase ...) depending on the person
> **<Dacyn>**: but once was good habit playing for free
> **<Dacyn>**: there's only BfWEthnographer who plays as work
> 22:35:10
> **<Dacyn>**: poor chap...
> **<Dacyn>**: 10 months forced to stay in chat, on the forum, on the multiplayer server
> **<Reglok>**: hopefully they did not assigned him a budget
> **<Dacyn>**: right! [...]

<div align="right">(IRC, #WIF, 16/11/2010)</div>

On the contrary, in the international IRC development channel, which is populated approximately by 35 people for most of the day, participants rarely discuss matters which are unrelated to BfW. There I was greeted publicly only by a couple of people, but I established good informant/researcher relationship with a few participants (Landar, Jarek and Eryssa) who occasionally contacted me privately. In particular, Jarek was initially interested in my research website posts, but after he found out I was Italian[54] we also started to casually and informally chat about contextual matters, beside focusing on BfW.

Provided that only the Forum requires 'registration' in order to write new messages and that IRC channels and the multiplayer lobby room allow for anonymous or randomly generated names, it was important for me to be 'visible' with my own accounts in these different part of the collective infrastructure. In Table 2.2 I summarised the accounts/identities I used during my fieldwork and the information that each identity included, in order to form a network of cross-references amongst them.

2.4.2 Vignettes on personal participatory efforts

As a conclusive part of this chapter, I briefly recall, in form of ethnographic vignettes[55], a few episodes which relate to my attempts to contribute to the Wesnoth collective and that can

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[54]Based in USA, Jarek planned a vacation to Europe, in particular he wanted to visit Spain, and was gathering information about Italy as a potential additional place to visit.

[55]The narratives of these vignettes are built upon fieldnotes and the reconstructions of feelings, expectations. The time line of events are faithful to their original recordings.

highlight some of the aspects participants might deal with when contributing. These will be deepened in the empirical part.

First feedback to mainline content

In the mid of November 2010 I still was learning to play the game. I had already played a few campaigns, but I managed to complete one only. Mostly, I used winning a few scenarios for each campaign and finding myself stuck relatively soon in the unfolding of the campaign, even though I always played at the *easy* or *normal* difficulty levels, never the hardest one.

I begun playing a new campaign: *The Eastern Invasion* which is considered an intermediate level campaign, but I encountered difficulties pretty soon. Somehow I found myself stressed by this situation, since I chose to play the campaign at a normal level and that I was following the hints explained in the *walkthrough*[56]. In the end I was not expecting that enemies would defeat me so easily.

I have read the walkthrough a few times before starting to look somewhere else for hints and interpretations of the walkthroguh, until I reached the Feedback thread for that scenario which, to my surprise, included a clear hint on how to proceed. As I wrote in my fieldnote after I managed to win the scenario:

> [...] As usual I cannot even win a single level. I really cannot play. (Not even by following the Walkthrough). This makes me angry!
>
> - *The Outpost*: To win the scenario I first tried to follow the walkthrough (which says **not to counterattack enemies**), afterwards I **watched a replay**[57] which I found in the [Feedback thread] of the Campaign (in the Forum). By looking at it I understood where I did wrong and I managed to win relatively easily. (Actually, the walthrough says to defend, and I did defend... without attacking. On the contrary in the replay I noticed that I should also attack. So I did and I won!! Satisfying!
>   - After I ended the scenario, I decided to post my related review into the forum (LINK)

> (Fieldnote, "Gaming fieldnote - singleplayer", 17/11/2010)

This Feedback thread is in a specific forum section: *Mainline Campaign Feedback*, which includes all the feedback threads for all the game mainline campaigns. The feedback system for each campaign is pretty structured: each campaign scenario has its own unique thread.

---

[56] All the official campaigns have a documentation page which puts into the Wesnoth context the story plot of the campaign and provides a walkthrough with hints and guidance for the best strategy to win each scenario.

[57] Each single match in BfW can be saved in a file and games can be resumed at a later moment. These 'savegame files' can also be loaded and watched in BfW as if they were sport events recorded on TV.

Inside this thread every player is allowed to provide the review in a concise and structured form. This was my first review, where I also provided my own replay as an attachment:

> "Scenario Review - EI: The Outpost"
>
> **[17/11/2010] BfWEthnographer:**
>
> **(1) What difficulty levels and game versions have you played the scenario on?**
> Normal; 1.8.5
> **(2) How difficult did you find the scenario? (1-10)**
> Without having seen a replay of a won match: 9
> Afterwards: 5
> **(3) How clear did you find the scenario objectives?**
> Clear
> **(4) How clear and interesting did you find the dialog and storyline of the scenario?**
> Clear and nice
> **(5) What were your major challenges in meeting the objectives of the scenario?**
> Keeping HI units in reasonably-good health before dawn comes.
> Finding the best map area where to bring the fight was also challenging. I tried north-east, south-east, east.
> A combination of east and south-east it seemed the best.
> **(6) How fun do you think the scenario is? (1-10)**
> 7
> **(7) What, if any, are changes you would have made to the scenario to make it more fun?**
>
> ---
>
> Attachments:
> EI-The_Outpost_replay.gz [18.49 KiB]
> Downloaded 54 times

<div align="right">(Internet Forum, 17/11/2010)</div>

While trying learning to play and win a scenario, I discovered the mechanism for reviewing the game content, put in place by the collective. In my case, this reviewing mechanism was also more helpful to solve my initial problem than the official documentation actually was. Since it was so helpful and since the replay I used to guide myself through the scenario referred to an older version of the game, it was rather natural to me to provide my own replay and feedback. Afterwards I got used to providing my feedback whenever I won a scenario, not only because I wanted to become more involved in the collective, but also to compare my skills with others.

Planning my own user-made-content

Still at the at the time of my entrance to the field, I considered to contribute with a more concrete artefact. Since the possibility to create *user-made content* (UMC) was one of the

reasons why I chose Wesnoth as a case of study, I decided to 'sail the ship'. Moreover, when I noticed on the website the announcement of a new plug-in, an authoring tool designed to ease add-on creators' work, I decided to take action.

This plug-in, *UMC Development IDE*, is a workspace, mainly written in Java language, which helps manage all the configuration files and elements needed to produce an add-on technically. However, along with trying using this plug-in for the creation of my planned add-on, I discovered that this plug-in only worked with the new development version of Wesnoth: v 1.9.2 (or the not-near forthcoming stable one: 1.10.0). For this reason, I downloaded and installed the new development version in parallel to the stable one already present in my system and, after that, I started setting up the working space for the UMC plug-in. Nonetheless, I still had doubts on how to configure the plug-in and whether it made sense to use it for developing my add-on or it would just make the whole process harder. For this reason, I asked clarifications to the Italian collective:

"1.9 SCENARIO DEVELOPMENT AND WESNOTH-UMC PLUG-IN"

[29/11/10] BfWEthnographer: Hi everyone!
Since I'd like to try developing some content for BfW I looked around (mainly at the official guide in the wiki) to understand how everything works. I also noticed the good tutorial section of this [Italian] forum. I think I will not lack material to study :)
What I'd like to ask is whether or not someone already started 'playing' with the new scenario editor [the plug-in] that they released for the 1.9 version of BfW. In short, given that, if I understood correctly, 1.8 content would hardly be compatible with 1.9 and later versions, I though to learn the new system.
I think I installed and configured correctly the wesnoth-umc [plug-in] for the 1.9.2 version, but before starting to work on it I'd like to hear opinions from more expert people
Thank you!

[30/11/10] Growloff: With regard to the new scenario editor, if you're referring to the plug-in for eclipse, I admit that I did not try it yet, or rather, when I wanted to it still had some installation problems, so I refrained [. . .] Not having tried it yet I really can not say anything else right now.
With regard to the creation of something for 1.9.x. A lot depends on what you plan to do, on the time you can spend on it, the ability to find documentation and testing new features. Fortunately, recently the syntax between one version and the other remains relatively unchanged, certainly more than a few years ago. [. . .] If you plan to do something simple and short perhaps is better to focus on the stable version. [. . .] But if you already know in advance that it will take a long time before your future creation see the light, or that you need a feature of the new version, then you might consider using the new.
By using the stable you are almost certain not to find bugs compared to several that could drive you nuts, much better documentation, more people that will test your extension. By using the development [version] you have a few extra features and are more ready for the future, but also many disadvantages. Consider what is best for you!

> Remember that both the tutorial here on the forum, but also guides the wml official website, are now old. Are based in fact (as the official site) on the version 1.6. However, the [WML reference] is almost always up to date and accurate, even for the development version, good or bad, although obviously it does not always document everything at its best possible way.
> Have fun.
>
> (Italian Forum)

While approaching the creation of an add-on, I noticed an authoring tool which could supposedly ease my content creation process. However, this tool also put me in relation with aspects I did not consider: the underlying Wesnoth version, whose the add-on is implemented upon, is not neutral in respect to the kind of challenges that can be encountered and to the user population which might potentially test and comment on my add-on. After trying understanding the mechanism for creating an add-on[58] and the additional time spent for grasping how the UMC plug-in worked, I realised that the effort involved in this project was not compatible with my other research agenda. So I slowly forsook it. However, discovering the plug-in gave me a first understanding of the socio-technical differences underpinning the stable and the development branches.

Where should I report bugs?

In a morning of mid April 2011, as I was used to, I updated my SVN game copy and compiled[59] it to spot what kind of new updates were available, if any. After a while, I received an error message during procedure.

```
[...]
src/whiteboard/highlight_visitor.cpp:28: fatal error:
  suppose_dead.hpp: No such file or directory
compilation terminated.
scons: *** [build/debug/whiteboard/highlight_visitor.o] Error 1
```

Since I could not use the SVN version of the game until the problem has been solved, I wanted to report it, but does a compiling error qualify as a software bug? With a quick look at the bug tracker, I found no category for submitting "compiling" or "SVN" related bug reports.

---

[58]As a preliminary idea I had in mind to develop what is known as 'mini-campaign': a fairly simple type of campaign that is made of a limited number of scenarios (usually, 3 or 4).

[59]In few and simple words, beside the stable and development branches of the software, the BfW collective makes publicly available also the *trunk* version. This is the version on which developers work to implement new features and correct bugs and it is the version from which the stable and development branches are created from. This version can be accessed and downloaded through the SVN program, but in order to function it needs to be *compiled* (or *built*) every time that new updates are available.

As it happened in that period, I was already logged in three IRC channels[60] and I decide to raise my issue there. However, as Baldras pointed me out, at first I raised it in the 'wrong' place; the most suitable channel was the development oriented one. After few minutes I raised the same issue again in the 'proper' channel. Baldras replied to me again and helped me solve the issue locally[61], with the intervention of other users. Moreover, some of the developers started discussing the problem and provided a solution, a fix at the level of SVN.

> [. . .] 16:28:31
> **<BfWEthnographer>**: Hi
> **<BfWEthnographer>**: is anyone having build errors with building BfW with the latest svn update?
> **<BfWEthnographer>**: Since this morning I receive "scons: building terminated because of errors.", should I report it somewhere, notify someone? (does it qualifies as bug?)
> **<Baldras>**: the actual error message is above that
> **<Baldras>**: #wesnoth-dev tends to be a more useful place to report build issues affecting non-released revisions
> **<BfWEthnographer>**: ok, I'll report it there, thanks
>
> (IRC, #wesnoth log, 18/04/2011)

> [. . .] 16:42:21
> **<BfWEthnographer>**: Hi
> **<BfWEthnographer>**: is anyone having build errors with building BfW with the latest svn update?
> **<BfWEthnographer>**: Since this morning, I get this error "scons: *** [build/debug/whiteboard/highlight_visitor.o] Error 1" (using the same build command I always use)
> **<Baldras>**: a little bit above that
> **<Aethyr>**: BfWEthnographer: use one revision older
> **<Aethyr>**: Kuhnar forgot to svn add files. . .
> **<BfWEthnographer>**: sorry, how do I go back one revision? (not very familiar with svn)
> **<BfWEthnographer>**: here's the complete error message http://pastebin.com/QkBevpaJ
> **<Aethyr>**: svn up -r REVISIONNUMBER
> **<Aethyr>**: looks at the current number, substract 1 and you should be able to compile
> **<BfWEthnographer>**: Aethyr: thanks!
> [. . .] 19:44:55
> **<Sagus>**: if no one beats me i'll commit the missing file though.
> **<Sagus>**: broken trunk is not useful.
> **<Aethyr>**: yeah
> [. . .] 21:58:16
> **<Kuhnar>**: damn... sorry for breaking compilation guys
> **<Kuhnar>**: that'll teach me not to commit when I'm tired
> **<Deoran>**: hehe

---

[60]The channel for users #wesnoth, for developers #wesnoth-dev and for the italian part of the collective #WIF.
[61]For the SVN version to function on my computer it was enough to go back using an older SVN revision which did not include the problem. However, all other SVN users would still encounter the same problem I faced until the affected revision in SVN was corrected.

(IRC, #wesnoth-dev log, 18/04/2011)

While trying using the SVN system to access the most updated version of the software, I encountered my first 'technical problem'. I had to decide whether reporting it, but more importantly, *where* reporting it. Either my problem did not qualify as a bug or the collective had other ways to deal with it (as I noticed in my preliminary overview of the bug tracker). By discussing it with the developers I rapidly solved it on my side and, a few hours later, developers also solved it for all the users of SVN. During my fieldwork, I encountered other problems which I reported as bugs, not in the bug tracker, but in appropriate forum threads. A couple of these bug reports went unnoticed[62], a couple of other ones turned out to be bugs not coming from Wesnoth but from my side[63], and another couple were discussed further and considered for future releases of the 'affected' artefact.

These recounts of direct interactions within the collective despite partial and fragmented, allowed me to highlight a few things. Firstly, my episodes sprung from situations tightly connected with usage (playing the game, trying using the UMC plug-in, using the SVN version) and they turned into concrete artefactual traces in the infrastructure of the collective (a scenario review, a bug report, a request for clarification). Secondly, I became aware of the underlying and relevant differences between the stable and development branches of the software (different users/developers base; different code reliability, different features' potential). Thirdly, they put me in contact with the multiple possibilities available for the same activity (winning a scenario by reading the documentation or looking at how others played it; creating content for the stable or the development version; reporting a bug on the forum, on the bug tracker or on the IRC channel). More importantly, I felt part of it, independently of how relevant, pervasive or effective my interactions with the collective were. I felt I was participating to it by: reading what others did; trying understanding how things work; sharing my expectations with them in the hope to create something, providing my simple scenario reviews and so on. All of this helped me develop forms of reflexivity or sensitivity in regards to the idea of participation, which will be a key part discussed in

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[62]I realised only afterwards that the problems I reported concerned game content which was no longer maintained.

[63]In particular one concerned the University firewall which, for security policy reasons does not allow Internet connections through untrusted internet protocols/ports, one of these is used by IRC chatrooms. The other one was originated by my new operating system, which modified the behaviour of the system 'key-bindings', making some keys unusable for Wesnoth.

Chapter 5. However, before moving there, I introduce the case of *The Battle for Wesnoth* in the next chapter.

Name/Identifier	Cyberplace	Identity Inform. provided	Location of Inform.	Creation date
	Ingame multiplayer	Connection to (Intern.) Forum Account	–	08/11/2010
	Forum (Intern.)	Link to research website	In the account signature and in the account information page	08/11/2010
BfWEthnographer	Forum (Ital.)	Link to research website	In the account signature and in the account information page	09/11/2010
	IRC (Intern.)	Real Name	In the profile information window	01/12/2010
	IRC (Ital.)	Real Name	In the profile information window	15/10/2010
	Twitter	Link to Research Website	In the account information page	12/04/2011
giacomo@poderi.eu	e-mail	Link to research website and BfWEthnographer alias	In the e-mail signature	15/04/2010
www.poderi.eu/blog	Research website/blog	University Dept. and BfWEthnographer alias	In a dedicated webpage	15/04/2010
Giacomo Poderi	Face-to-face	Introduction to research project	–	04/08/1980

Table 2.2: The table summarises the identities used during fieldwork. It displays the creation date for each account, what kind of information are included in regards to identity and the location of such information.

THE CASE OF THE BATTLE FOR WESNOTH

This descriptive chapter[1] introduces the investigated case and aims at better framing the context of the collective's efforts and the specific research setting. Here I deconstruct and present the case of *The Battle for Wesnoth*[2] (BfW) collective as a video game, as a FOSS development project and as a participatory platform. I consider this last element pretty important for understanding the BfW collective. The affordances for participation that BfW provides to people who would like to get involved are greater than the onoes of more traditional FOSS collectives. Beside providing the typical possibilities to 'contribute to the official project', BfW also provides great modding capabilities. Both these aspects are tackled in Section 3.3.

The chapter highlights the following aspects: (*i*) the fundamentals of strategy video game and the relationship between game elements and game experience; (*ii*) furthermore, since any FOSS collective nurtures its own project infrastructure in a unique way, the current case peculiarities are highlighted to understand in what specific context participation fits; and (*iii*) the various forms that participation can take.

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[1]This chapter is mainly built by making use of the official documentation and platforms of project, but it is also integrated with insights coming from participants and personal observations.

[2]The official website is http://wesnoth.org.

3.1   The video game

> The Battle for Wesnoth is a turn-based tactical strategy game with a
> high fantasy theme.

Wesnoth is a *turn-based* game, which means that players' actions are not simultaneous. Similarly to the game of chess or even card games, in Wesnoth each player has their own turn to move the units, recruit new ones or attack the enemies army. When the turn is completed, another player is up and makes their own movements. When all players are done, the initial player takes a new turn. BfW has a *fantasy theme*, which means that the campaign settings, the soundtracks and in particular the composition of the units and factions are heavily inspired by the fantasy world pioneered by writer J.R.R. Tolkien. Here, elves, dwarves, skeletons and orcs populate wild mountains, magic forests and similar scenarios. However, in order to clearly explain what a *tactical turn-based* game is, I explained in detail the game mechanics and the relationship with the game content.

3.1.1   The strategy mechanics

Briefly, the strategic dimension of the game involves fighting on a favourable terrain, at a favourable time of the day matching player's units against weaker or disadvantaged enemies. Technically this is regulated by a few elements such as: the Random Number Generator (RNG)[3]; the units/races traits; and the map characteristics. These elements, or better the relationship amongst them, influence the *chances* of successfully attacking enemies and the *damages* that successful attacks would cause.

Each unit has a specific set of characteristics and attack types which distinguish it and make it more or less strategically important in relation to specific battle conditions. For instance, as shown in Figure 3.1, a Merman Hunter can use two types of attacks (*melee* or *ranged*). By using the first type it is possible to strike twice with a damage of four Health Points (HP), while by using the second type it is possible three times with a damage of five HP. Given that the second type of attack seems more profitable, why not using that one in any case? The answer is simple and regards the fact that certain enemy units are more vulnerable to certain kind of weapons/attacks than others. For instance, a Merman Hunter

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[3]An algorithm included in the core engine of the software that casts a randomly selected number every time it is invoked by a software function.

(a) *First level Merman Hunter.* (b) *First level Skeleton Archer.*
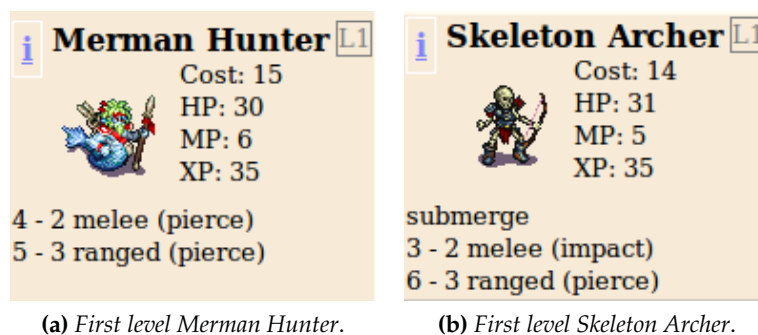
Figure 3.1: A comparison between two first level units which shows differences in **Cost**: Recruiting cost; **HP**: Health points; **MP**: Magic points; **XP**: Experience points; and in the number/type of attacks.

has no defense bonus against *pierce* attack type, while a Skeleton Archer has 60% of defense bonus against the same attack. The other important aspect is that not every strike equals one hit. At software level, hitting an enemy is designed to be unpredictable. Players can understand the *likelihood* or *improbability* of a battle outcome, but they can never predict it in advance. Every time a player attacks an enemy unit, his own unit will strike the enemy for as many attacks it has at disposal, but the outcome of each single strike is in any case determined by the RNG which, by definition, produces random outcomes[4]. The only aspect affecting the *chances* of hitting an enemy, or in other words the behaviour of the RNG are the attributes of the terrain types and their relationship with each unit.

Maps played in games are grids made of several hexagons and they constitute the equivalent of a game-board. Each hexagon is related to a specific *terrain type* and it can be occupied by one battle unit at a time, as it is shown in Figure 3.2. Terrain types are pretty important in regard to the strategy, because each of them grants units occupying them different defence bonuses.

For instance, while most water based terrains allow units belonging to Mermen to obtain a 60% defence bonus, the same terrains would only grant most of the Undead units a 20% defence bonus. On the contrary, Merman units only receive 30% of defence bonus on most mainland terrains, whereas the Undead ones receive a 50%. Since for attacking opponents both units should be on adjoining hexagons, the field of battle is an important strategy factor.

Another factor of strategic mechanisms is *when* battling during the day. Indeed, attacking in daylight gives *lawful*[5] forces units a 25% damage bonus. Whereas *chaotic* units would

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[4]Handling through an algorithm the goal of achieving randomness might seem an oxymoron and is not without challenges. However, it is possible to achieve probabilistic randomness.

[5]In the tradition of fantasy based role-playing games lawful and chaotic alignments are very similar to the

be penalized, because they would receive a 25% damage malus on their attacks. Attacking at night bonus and malus work in reverse. To summarise, one of the key element of game

Figure 3.2: The screenshot shows a Merman faction facing an Undead one at the shores of mainland. Hexagons are displayed for explanatory reasons and they can be removed during the actual game.

design – strategy – is technically achieved by relating a set of variables, which are defined in the game content artefacts (such as units, daytime, terrain), randomly generated by a core component of the game engine. Of course, this relationship only 'comes to life' when people start playing the game and put this variables 'in motion'.

3.1.2   Game modes and game content

Game Modes

Battle for Wesnoth (BfW) provides two different game modes each player can choose: campaign mode (single-player) and multiplayer (MP). In the first one, players can choose to play one of the 16 official campaigns and decide the campaign difficulty level. This level primarily affects the resources players have at their disposal, the Artificial Intelligence[6] (AI) and also affects the aggressiveness of AI units. Each campaign consists of several scenarios connected by a coherent storyline. Each scenario is defined by a specific map and a few goals to step up to the following scenario. A set of vignettes regularly appears to narrate the unfolding story either while playing the scenario or during the transition screens among scenarios. For instance, *Heir to the Throne* includes 23 scenarios which narrate *Konrad*'s efforts to regain his due throne of Wesnoth. In this campaign, players would impersonate Konrad

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dichotomy between good and evil forces.

[6]It refers to the algorithms mimicking human players. The AI can play any match that can be played by a human player.
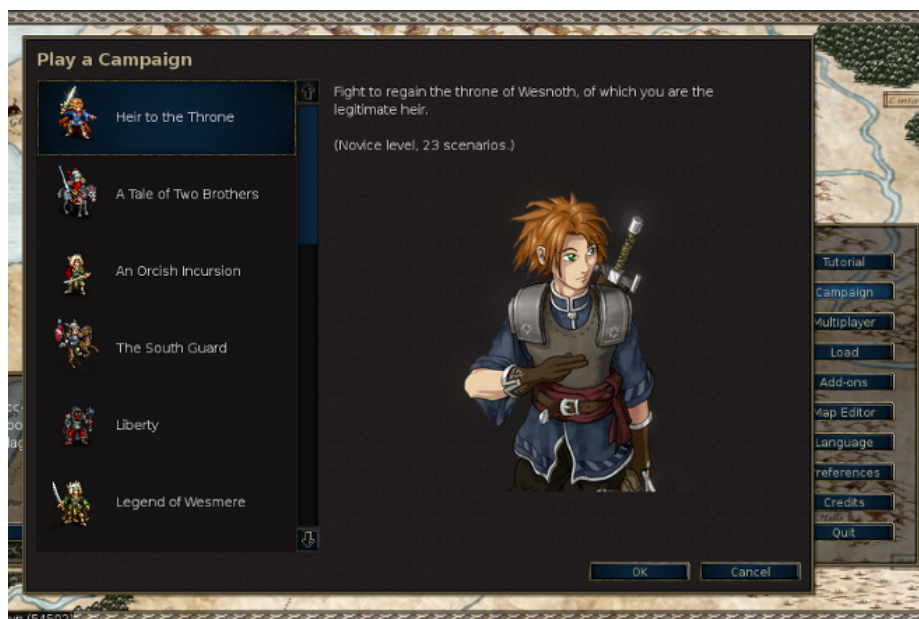
Figure 3.3: Game interface for selecting the campaign. *Heir to the Throne* is the first full campaign ever added to the game and the most played.

and build his army by facing orcs, helping dwarves and mermen and joining elves' forces. Figure 3.3 shows some of the official campaigns to select from the game menu.

On the other side the multiplayer mode does not include predefined 'long-term' objectives, nor a real storyline. Here players face each other in single matches played on single maps. Multiplayer games support a maximum of eight players[7] connected over the Internet. The design of the map determines the goal of the match: in some of them players join forces to defeat incoming enemies, but most maps are conflictual ones where players have to defeat the opponents. These matches might be played *1-vs-1*, *2-vs-2* and up to *4-vs-4* or *"free for all"*. In order to set up matches with other players, the game provides the *multiplayer lobby* (MP Lobby) interface: a sort of chatroom where all connected players can monitor all ongoing multiplayer matches and can plan new matches. Figure 3.4 shows the interface of the MP lobby.

Content

The game in its official release, which is sometimes referred to as *vanilla Wesnoth*, includes 16 single-player campaigns and 54 MP scenarios. However, it is possible to extend it by downloading and installing new content through the game *Add-on* function. This allows players to connect to a common server where all content created by the collective is stored

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[7]Not all players need to be humans, indeed it is possible to let the AI to control one (or more) playing team.
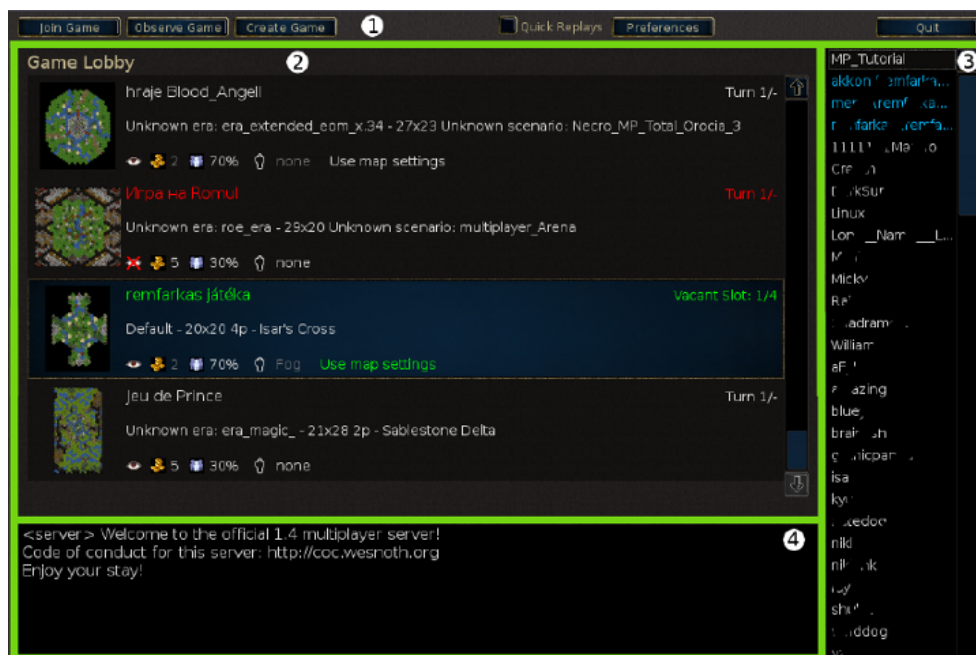
Figure 3.4: The MP lobby with its interface elements: (1) Game menu; (2) Ongoing games; (3) Logged players; (4) Chat area.

and shared. Hereby I briefly showed what the official content is made of with particular reference to units that players control in matches and to the battlefields that constitute the context for such matches. Furthermore I hinted at the content available through the Add-on.

Understanding the relationship among these content types is preparatory to Section 3.3 about content creation.

Units, Factions and Eras. The game *units* are the entities that players control during their own turns: new units can be recruited, these can be moved to attack or retreat. As I mentioned, each unit[8] has a wide set of properties and abilities related to the strategy of the game. However, every player has always a limited set of units that can be used. The ones available for recruitment are called *Faction*: "a group of units that are not necessarily of the same race". In single-player mode the faction is determined by the campaign design. For instance players cannot choose their faction to use for playing *Heir to the Throne*. On the other hand when setting up a match in multiplayer mode, each player can decide which faction to play with, but the choice falls to the factions available in the *Era* of the scenario: "Eras are groups of factions that cover a particular theme". The vanilla version of the game includes only one Era: the *Default Era* made of six factions, each with specific recruitable units, as shown in

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[8]Each unit belongs to one of the 18 existing races in the realm of Wesnoth. Races are important in the game because they too provide specific modifiers to attack-defense variables. However since these elements are rather stable and non-modifiable by participants they become marginal to my research interests.

Table 3.1. The add-on server allows multiplayer gamers to download additional factions and

Factions of the Default Era	Races involved	Recruitable units
Drakes	Drakes, Saurian	Drake Burner, Drake Clasher, Drake Glider, Drake Fighter, Saurian Skirmisher, Saurian Augur
Knalgan Alliance	Dwarves, Humans, Gryphons	Dwarvish Guardsman, Dwarvish Fighter, Dwarvish Ulfserker, Dwarvish Thunderer, Thief, Poacher, Footpad, Gryphon Rider
Loyalists	Humans, Mermen	Cavalryman, Horseman, Spearman, Fencer, Heavy Infantryman, Bowman, Mage, Merman Fighter
Northerners	Orcs, Goblins, Trolls, Nagas	Goblin Spearman, Naga Fighter, Orcish Archer, Orcish Assassin, Orcish Grunt, Troll Whelp, Wolf Rider
Rebels	Elves, Humans, Mermen, Woses	Elvish Archer, Elvish Fighter, Elvish Scout, Elvish Shaman, Mage, Merman Hunter, Wose
Undead	Undead, Humans, Bats	Dark Adept, Ghost, Ghoul, Skeleton, Skeleton Archer, Walking Corpse, Vampire Bat

Table 3.1: The table shows the various races and the recruitable units associated with one of the six factions of the Defualt Era.

eras.

Maps, Scenarios, Campaigns. *Maps* are drawings of the game-board layout. They are fields where battles take place. Any match is played on a specific map. Some maps might show a lot of hills and very little villages or castles, other might show plenty of forests, castles and rivers. Some maps can be very large, so players need many turns to move their units from side to side in the map whereas some maps can be very small. However, the *scenario* 'determines' what players should and could do in a specific map. Very simply, a scenario is a map associated to the rules for playing the map. As hinted before, maps and scenarios design is important from the point of view of the strategic gameplay to be performed on those artefacts. A map with many forests could[9] favour certain kind of factions, while, on the other hand, a very large one could favour factions with many fast units.

Maps can be selected from the game menu, along with the process of setting up an MP match. If the map lacks specific rules for playing it, the match will follow the standard design of multiplayer games: one team facing the other. If players select a specific *scenario* during the MP match setup, then there will be additional rules next in the game.

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[9] I use here a conditional form, because as I already explained, the variables which relate to the strategic dimension of the game are many and much also depends on players' skills and way to play. Therefore, mine is an extreme simplification done for explanatory reasons.

As already mentioned, excluded multiplayer mode, scenarios connected by a coherent storyline make a campaign.

Add-ons.   The add-on distribution and installation system is highly integrated in the video game. The starting game interface allows to connect to servers where it is possible to download add-ons from, or upload new ones into. The installation of new add-ons seamlessly happens after the download of each add-on from the server.

The content of the server is a great resource for making the game last longer, for extending and blurring its core design. Table 3.2 shows the different typologies of add-ons which are stored in the server, and which are slowly but steadily updated, added or removed by their respective add-on developers/maintainers. By selecting and downloading add-ons they are automatically installed in proper folders and game is seamlessly upgraded. Therefore, once a 'campaign' add-on is installed, it will be possible to select it from the same interface shown in Figure 3.3. Multiplayer add-ons, too, are integrated and displayed in the standard procedure for setting up a multiplayer match.

Add-on type	*Description*
Campaign	A single-player campaign, which can include few scenarios to more than dozen ones
MP Campaign	A campaign designed to be played in multiplayer mode
MP Era	A complete Era designed for multiplayer use
MP Faction	A complete Faction designed for multiplayer use
MP Map-pack	A set of maps designed for multiplayer use
MP Scenario	A scenario, or set of scenarios, designed for multiplayer
Other	Experimental kind of add-on that do not fit those categories
Resources	Generic type of add-on which can include background music, authoring tools for content creators, additional soundtracks...

Table 3.2: Table shows the different types of add-ons that are currently present on the add-on server.

Since add-ons are unlikely to be compatible across different versions, there is one dedicated server for each of the major version. Due to software changes in the video game engine, in order to ensure compatibility the add-ons need to be validated and edited if needed[10]. For instance, the two add-on servers for the most recent BfW versions (v 1.8 and v 1.10) include respectively 402 and 104 add-ons.

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[10]This aspect makes the porting of add-ons from one server to another a pretty important part of add-ons development and maintenance work. For instance in the situation of abandoned and unported add-ons it is possible to observe how participants try to organize in the effort to get them back in a functioning status and retrieve playable content. See Section 5.2.1.

3.2   The development project

If we reckon FOSS collectives as software development projects, there are a few elements which set them apart from traditional development: the initial project and objectives foundations; the funding resources, the licensing, the release management, the governance and the infrastructure for development and communication purposes (Fogel, 2006). I address the part related to the infrastructure in Section 3.3. Hereby I describe the other elements.

3.2.1   A brief history of a mature project

This paragraph does not intend to provide a comprehensive historical reconstruction of the project life, but rather to highlight the main differences between its early and current days in regard to the game content and the project's infrastructure. To make this simpler, this reconstruction follows the stages of a lifecycle approach by focusing on the project initial and growth phase (2003 - 2005), then on its maturity stage (2005 - 2009); and finally to the current stage (2010 - nowadays).

Introduction and growth - 2003-2005

This first stage featured frequent releases and, at least in 2003, a very limited group of developers. All major game components (*e.g.* campaign mode, multiplayer, add-on server), the general game design (*e.g.* development of AI, game rules & mechanics), and the development infrastructure for the basic (*vanilla*) version of the game (*e.g.* support forum, developers mailing list) were implemented during these years.

The first public version of Wesnoth – v 0.1 – was announced in June 2003. It was nothing more than a 'prototype', a proof of the AI design concept and of the basic game rules. It had one playable scenario only, the graphics were considered placeholders[11] and it was the result of a single person's job done in a very limited time.

> A comment I made on 2003-06-22: "Basically this **is** a 0.1 release, and the entire game has been done by one person in two weekends." :) [...] Well, I wanted to make a fun game. However, I felt that getting good graphics for the game was unlikely, so I thought I would focus on making a game with simple, fun rules, and which could be played well by an AI. I was enjoying playing *Civilization 3* at the time, and felt its AI could be better. I had considered making a Civ-like game, but then stopped and thought, "this is huge. Why don't I make a simpler strategy game first, to show that I can actually make a game. Then I can make a civ-like game next." And as part of that, I wanted my simple game to have a powerful AI, to show it could be done.

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[11]It was clear to everyone that they should have been replaced eventually.

This version had no trace of multiplayer capabilities, included only one scenario and no 'infrastructure for collaborative development', since it started as a solitary project. However, its release was announced on two portals for FOSS development – *Freshmeat* – and FOSS games – *The Linux Game Tome* – under the terms of the GNU General Public License (GNU GPL). Since then, for a few years only, further development continued on *Freshmeat* platform.

A digital artist, Ruddry, was the first contributor to help Wesnoth founder replace the artworks for the units and improve the graphics of the game. They collaborated closely until the opening of the Internet Forum in August 2003. They managed to release many intermediate versions weekly. At that point, besides improving the artworks, Wesnoth founder's main goal turned in developing the video game engine and designing both the game mechanics and rules. Moreover, a big effort was made to support a 'storyline feature' which would later evolve in the Campaign game mode. As shown in the comparison among versions in Figure 3.5, with the release of v1.0 all initial artwork placeholders were substituted with proper figures for units and terrain graphics. Until version 0.4 (late August 2003) Ruddry and Wesnoth's founder kept working on Wesnoth as a simple hobby and a fun experiment: "we both thought we were just working on a cute game, for fun, as a simple hobby. We didn't think it would become popular with a large community"[12] and, although new collaborators approached the project, largely remained a two people work.

The v0.5 release (October 2003) was the first version supporting the multiplayer feature. A few months later it became possible to upload and access additional content created by a small, yet steadily growing, group of users. The rationale behind the *campaign server*[13] was helping people download, share and install campaigns. This was considered by Wesnoth founder as a way to extend the longevity of gameplay: at that time, the multiplayer mode had not taken-off yet and the MP gaming community had not been as large as the current one. Therefore, once finished playing a few existing scenarios in singleplayer mode, no further content to play nor many players to challenge were available.

Along with the growth of the users base, which populated the newly opened Forum, it also came the need for the developers to find a more focussed interaction space. At the end

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[12]Taken from a public interview with Wesnoth's founder. See http://shadowm.rewound.net/blog/archives/61-Wesnoth-Evolution-An-interview-with-Dave.html. (Last accessed on 28/07/2012)

[13]This would later become the actual "Add-on" server feature, and was at the time called "Campaign server" because it only included campaigns.

of 2004, right after the release of v0.8.5 the *Developers' mailing list* was opened.

> I see this mailing list as our attempt to return to some of the 'glory days' of Wesnoth when our community was a smaller, tightly-knit group. The forum has done a lot of good things for us, but it has also crushed much of Wesnoth's "community" atmosphere, instead having it degenerate into a horde of uninformed posters, and a very poor signal:noise ratio.

(Wesnoth Founder, Developers mailing list, 13/11/2004)

I make a small digression here just to highlight that BfW developers distancing from the users base is quite a pradictable and renowned dynamic to be found in collaborative and emergent collectives while they expand and which is consistent with the continuous (re-)adaptation of recursive publics. In this case, the communication infrastructure was modified in order to satisfy both developers' need for a quiet communication channel and users' desire to confront themselves with each other on a public space. Another example of BfW infrastructure adaptation, although for different circumstances, that happened in more recent times is the creation of the "Experimental Corner" (See Section 4.2.1). This is a dynamic which goes well beyond the specific case of BfW and the sole FOSS domain. It is enough to recall the early days of *LambdaMOO* [14] in early '90s. LambdaMOO was launched as an environment free-to-modify for anyone with Telnet/Internet access, but when the users base begun to expand, the 'wizards' (as the core developers are called there) institutionalized a few socio-technical policies in order to mediate users' attempts to modify the MOO environment (Mnookin, 1996).

I come back now to BfW historical account and close this small section by saying that in less than one year, after v.0.8.5, the collective released the first full major version: v. 1.0 (October 2005). This version, included in a file of 39MB, featured four campaigns, multiplayer games support, integration with the Add-on server and it was translated in 17 languages. A few dozens of developers took part in the development of this version and a few more dozens of contributors translated content and provided campaigns for the Add-on server.

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[14]LambdaMOO is considered the oldest active MOO (MUD, Object Oriented) existing today. It is a text-based online virtual reality system to which multiple users (players) are connected at the same time. It was launched in late 1990 by a Xerox PARC developer.

(a) *The Battle for Wesnoth v0.1 - Released: 18/06/2003.*

(b) *The Battle for Wesnoth v0.4.1 - Released: 26/08/2003.*

(c) *The Battle for Wesnoth v1.0 - Released: 02/10/2005.*

(d) *The Battle for Wesnoth v1.10 - Released: .*

Figure 3.5: A comparison between the early versions of the game and the most current one.

Growth and maturity - 2005-2009

This stage is characterised by slower release cycles, by an expanding collective (both at the level of the users base and of developers) and by the establishment of Wesnoth as one of the leading FOSS games[15]. In regard to the development goals, the collective focussed on the creation of playable content and on the enlargement of the collective's infrastructure, besides continuing the incremental refinement of the existing game and of project elements.

One of the main changes needed after the release of v1.0 was converging the project architecture into a more modular one[16]. The size of the source code was increasing as well as the number of developers working on its diverse aspects. However, the game was not originally designed for being a large collaborative project and the source code made collaboration difficult. The idea of a 'modular Wesnoth' started before the release of v1.0, but the main changes were progressively added between that version and v1.2. Similarly, still in 2005 project consolidated, so it could handle the increasing number of reported bugs, by opening a new page on the *GNA* bug tracking service.

Version 1.2 included[17] three new more campaigns, while v1.4 (March 2008) added seven new campaigns (14 in total). The verge of the release of this version also witnessed the collective's realisation of having reached a mature and stable level, as this report by Wesnoth founder suggests:

> So, we are about to release Wesnoth 1.4. 1.4 will be a very solid, stable release, with an impressive list of features. Some people claimed that Wesnoth wasn't really ready for a 1.0 label back when we released 1.0. Any concerns that Wesnoth is not a stable, mature game should have been removed by 1.2 though, and certainly should be crushed by 1.4. The team has done an excellent job of building a very impressive product. [...]
>
> A key part of Wesnoth's success is in keeping an open mind. No single developer, least of all me, has been able to consistently and accurately predict what is fun and what isn't. Instead, by developing a flexible platform that allows people to develop scenarios and campaigns on, users can make content which proves to be fun, or not. Our community has done an excellent job of creating fun content that I never imagined possible. [...]
>
> I must admit, that even after Wesnoth got 'off the ground', I was at times concerned about its chances of reaching a credible 1.0. Later I was concerned about its direction thereafter, especially with me becoming less involved with the project. I have been

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[15]Between 2006 and 2009, Wesnoth received about 17 positive reviews in specific game Internet magazines in several different languages. See: http://wiki.wesnoth.org/WesnothReviews. Furthermore, is currently one of the top ten most rated FOSS games in the *Sourceforge* platform.

[16]At the technical level this change implied a re-definition of how software store data in different folders and how this data are handled, combined and stored in the computer memory.

[17]At the level of infrastructure this version was the first to be complemented by a non-intrusive data gathering system for collecting users' statistics and for improving the balance of the game content. In later versions, it was removed due to users complaints.

> incredibly impressed by the development team and the community which has done an excellent job in developing Wesnoth. I am now very confident in Wesnoth's future.

<div align="right">(Wesnoth Founder, Documentation, "Wesnoth Philosophy II: Where Next? (2008)")</div>

The flexible platform to which the founder refers was not an easy or smooth objective to reach and maintain. Indeed, the core engine of the software and in particular the AI underwent many changes in order to better interact with the Wesnoth Markup Language (WML) and the way contributing users exploited this language to create their own content[18]. Similarly, the WML, too, was continuously refined and extended. Particularly relevant was its integration with the *Lua*[19] scripting language, which provided easier and more powerful ways to turn creators' ideas into functioning code artefacts. This feature was introduced in May 2009 with the release of v1.7.

2008 was an important year under different points of view. On one hand it was the first time that Wesnoth had participated in the Google Summer of Code[20] (GSoC) programme by mentoring four students and helping two of them complete their projects successfully. On the other hand it was the first time that a few developers had participated in the FOSDEM conference and actually had met face to face. Eleven core developers, included Wesnoth founder attended it. Moreover, about the collective's infrastructure, the first version of the *Coordinated Wesnoth UMC Development Project* (Wesnoth-UMC-Dev) was launched in the attempt to coordinate and support the efforts of content creators by providing them an online development environment. Since then, this environment has been widely adopted. In March 2009 v1.6 was released and this included *Legend of Wesmere* (LoW): a new full campaign developed and refined in the Wesnoth-UMC-Dev platform.

Finally, in 2009 two important novelties enriched the Wesnoth collective: in July, Wesnoth Inc. was officially registered in Texas, USA[21]. In November, the porting of Wesnoth for smartphone devices was basically completed and it went for sale through the Apple online Store.

However, at about this time, even if the overall number of participants kept slowly increasing, a few initial core developers started contributing less and less frequently, even

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[18]*E.g.* As the release notes for v1.5 claim: "The release includes many engine changes like the basics of formula AI which will eventually give content creators simple access even to advanced AI parameters."

[19]A known scripting language that is widely adopted by other FOSS collectives or gaming communities (such as in *World of Warcraft*).

[20]I further explained GSoC in Section 3.2.3.

[21]I further discussed Wesnoth Inc. in Section 3.2.3.

if they did not completely disappeared from the collective, as I mentioned in Section 2.2.1. Indeed, by the end of 2008, Wesnoth founder had already got involved and had followed the Forum or the developers' mailing list more rarely. Similarly, initial artists or music composers such as Ruddry had no longer contributed.

Current - 2010-Decline or revival?

Currently, most of the game content of the *vanilla* version is complete and has been revised more than once. For instance, all the default factions of Wesnoth, except one – Drakes – have now at least one official dedicated campaign; all campaigns and scenarios feature a soundtrack; and all default factions are considered well balanced[22]. During these years, the older campaigns have been polished, extended and partly rewritten to make them more similar to the most recent ones in regard to code quality and game experience. Similarly, at the time of v1.0 nearly all original artworks had been reworked and brought to higher quality standard. Thereafter less and less space is available for providing new content to the *vanilla* version, as well as for introducing changes that diverge from the current game design and style. For example, since the collective needed about six years to pass from the old artworks style to the current one (old stile dates back to v1.0), it is highly unlikely that new variations in style may be accepted and integrated.

In addition, although the development of some components is still lagging behind, the collective is finding it difficult to carry them on. For instance, there are few missing portraits that have been a bottleneck in the area of artworks for a long time. However, no one with the necessary skills has been found during these years, so developers decided to hire a digital artist to fill this gap. More than two years ago the development of the 'missing' Drakes campaign started, but there is no signal that it will be ready in the near future. Indeed, although the two developers stated that they never would abandon the campaign, their last work dates back to 16 months ago. Similarly, the work on the *MP lobby*[23] is another 'controversial' aspect. During the GSoC of 2009 a new lobby for multiplayer was developed and integrated into v1.8, but it was quickly removed due to some problems, so the MP lobby was rolled back to the old version. Afterwords developers claimed that they would continue working on fixing and improving the new lobby. However, two years passed and the new

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[22]See Section 3.3 for further discourse about balance.
[23]See Figure 3.4.

lobby has become a dormant project. It was even considered for GSoC, but nothing happened out of this intention and the idea was dropped. Finally, most of the documentation pages are outdated, except for the ones related to the content creation, which are largely kept in sync with the ongoing changes that the WML undergoes on each release.

The area of the collective which has seen new developments and innovations during the last couple of years regards UMC. Indeed, through the participation to GSoC 2010 the collective was enriched with a new authoring tool for content creation: the *UMC Development IDE*. This tool has been continuously updated since then and it has recently reached v2.0. Similarly, the Wesnoth-UMC-Dev platform launched in 2008, has been largely renewed and improved since the beginning of 2011. Furthermore all the three new latest campaigns added to the official version of Wesnoth[24] were developed within the collaborative space of the Wesnoth-UMC-Dev platform.

In addition the decision to name the current stable version with the progressive numbering of stable series – *i.e.* 1.10 – instead of considering a new major version – *i.e.* 2.0 – requested clarification by users who had hoped and partly expected a v2.0 release. However, such a release will still take time. Key elements needed for releasing a full point version regard both the software engine and the game content: (*i*) the completion of the transition to a new system for managing the creation of Graphical User Interface started in 2008; (*ii*) the transition to a new system for better handling the rendering of all animations; (*iii*) updating all artworks with the current style including portraits and animations; (*iv*) having at least one campaign for each default faction.

> As you can see, there's still a very long way to go before Wesnoth hits the next major milestone, and most of the way is being paved since years ago. Being a volunteer-driven project, it's hard to say when our plans will be finally realized, so the good old Wesnothian mantra applies: *It Is Ready When It Is Ready*.

(Baldras, Developer's blog, "On Wesnoth's version numbering scheme, and Wesnoth 2.0")

As a personal closing consideration I argue that the *current* stage began approximately with the release of the 1.8.*x* series, in early 2010 and has been lasting until today, even after the release of the current stable version 1.10.3. However even though BfW has passed the peak of its maturity stage it is not easy to estimate whether the BfW collective is heading towards decline or a revival. I provided few arguments about this aspect in Section 6.3.

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[24]Respectively one was added in v1.6, one in v1.8 and one in v1.10.

3.2.2 Design philosophy

The designing principles of core development are very few and summarized in three acronyms stated in their official documentation and also clarified by the Wesnoth's founder during an interview[25]. These principles were laid out during the early days of BfW development and are still highly appreciated amongst the collective[26]:

WIN – Wesnoth Is Not. . . something else. Although this is inspired to a couple of other strategy games of early '90s, Wesnoth is an original strategy game and it is not developed to resemble other games.

WINR – Wesnoth Is Not Realistic It was not designed to simulate wargames, neither to replicate the 'real world' into ingame mechanics.

KISS – Keep It Simple, Stupid! [27] The development of the game should be easy to understand and easy to implement by the developer responsible of such development. In other words, the rationale of this principle is "what is laughably easy for a programmer to do is going to result in high quality, bug-free software. What is 'simple' for users, or 'elegant' for designers, but not easy for programmers is not going to result in high quality software."[28]

These are not the only designing principles for game development, but they are the ones which are codified at the level of infrastructure in more than one place. Furthermore, they are often referred to when users and developers discuss potential game additions or modifications. For instance, another important designing principle not codified[29], but nonetheless largely known among developers is: *if it does not break existing code, it can go in*. In other words, developers can implement new features or editing existing code, provided that this does not adversely affect other code segments, regardless of how rigid or flexible the above mentioned principles are.

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[25]For instance, see: https://archive.fosdem.org/2008/interview/david+white.html (Last visited: 21/07/2012)

[26]For instance, they are replicated in other parts of the collective's infrastructure, such as the *Frequently Proposed Ideas* (FPI) thread in the Forum.

[27]The *KISS principle* is well-known in software development in general. See http://en.wikipedia.org/wiki/KISS_principle (Last visited: 21/07/2012)

[28]From Wesnoth documentation page: *The Wesnoth Philosophy*.

[29]This principle was explicitly acknowledged in the interview with a core developer, Tallin, and also implicitly referred to by one contributor and an Art director during their interviews.

3.2.3 Funding

Over the years, BfW has developed an heterogeneous system for generating revenues which are used for the collective support. Currently, the sources of income are: the selling of the mobile version of the game; the *Google Summer of Code* (GSoC) programme's revenues; advertisement; and micro-donations. Approximately revenues amounted to a couple dozen of thousand dollars yearly.

Since November 2009 BfW has been running on mobile devices[30] such as the widespread Apple iPhone and iPads. The game version for these platforms is sold through the online store (*Apple Store*) at the price of $3.99 and, even if the revenues per copy are divided amongst the developer in charge of it, Wesnoth Inc. and the Apple Store, this still represents one of the major income source.

GSoC[31] is an annual programme promoted by Google Inc. to award young student developers who successfully complete a requested FOSS coding project during the summer. 'FOSS projects' can participate in GSoC[32] by acting as mentors for students and by offering potential sub-projects they could work on. GSoC awards a grant to each student who completed the proposed project and a mini-grant to the mentoring organization for each student who successfully completed the job. In the 2012 edition, $1,212$ students enrolled and Wesnoth was amongst the 180 mentoring entities which participated[33]. Other minor sources of income come from ads on the Internet and from a micro-donation system called *Flattr*[34]. This can be considered as an 'Internet tip jar'. Flattr users sign up for the service for a very low monthly fee and, during the year, they can vote for other Flattr users' projects, ideas, content. Normally the amount of money coming from the subscription fees is redistributed to the users in shares, according to the votes received in that period.

The overall income is managed by Wesnoth Inc.: a not for profit company based in the USA. This company was founded mainly for dealing with taxes duties related to the increasing amount of revenues and for funds administering. A triumvirate, including

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[30]There is a recently completed effort to port Wesnoth also to Android based devices. Currently such port is distributed for free.

[31]http://code.google.com/soc/.

[32]Although participation to GSoC is rewarding for Wesnoth is not without challenges. For instance, is not always easy to find someone to act as mentor during the summer period. Moreover, when the GSoC programme ends, if the student does not feel to continue working on the project this might get abandoned. Concerning the last edition, Wesnoth developers questioned and evaluated future participations to GSoC.

[33]See the announcement here: http://google-opensource.blogspot.it/2012/04/students-announced-for-google-summer-of.html

[34]See http://www.flattr.com

Wesnoth founder, is responsible for the company and for the administration of the funds.

Funds are used to sustain[35] costs and activities related to the project. The most fixed cost the project has to bear is paying the web server for the Internet traffic. However, over the years these funds have also been used for: setting up art scholarships to provide training courses for digital artists; funding developers' attendance to conferences such as FOSDEM; the hiring of developers to allocate on sub-projects or even the purchasing of equipment for developers. Although revenues are fluctuating every year, the general trend is positive enough to bear all necessary costs. Indeed, thanks to the growth of the revenue stream, the developers decided to stop accepting traditional money donations, which were possible from 2004 to 2008. This decision was communicated through the International Forum:

> Thank you to everyone who donated!
> Wesnoth has now reached a stage where we have enough revenue (from ads and participation in GSoC) that we don't need to ask users for money any more, so we don't need any donations.
> Thank you to everyone who has supported us though.

(Haldric, Internet Forum, "RE: Now accepting Donations", 25/10/2008)

3.2.4 License and licensing

The Battle for Wesnoth is a software released under the terms of the GNU GPL[36], while the project documentation, is released according to the GNU Free Documentation License (GFDL)[37]. As explicitly acknowledged by the project *Copyright* section, contributing by providing artefacts is an automatic acceptance to release such artefacts under the term of these licences.

> The code of *Battle For Wesnoth* is issued under the **GNU General Public License (GPL)** version 2 or later. By contributing code or content to the project, you agree for it to be distributed under GPL or whatever other open-source license the project maintainers choose in the future.
> The content of the Wesnoth wiki is under the **GNU Free Documentation License (GFDL)**. By contributing content to the wiki, you agree for the code to be distributed under GFDL or whatever other open-source documentation or content license the project maintainers choose in the future. [. . .]

(Wesnoth official wiki, "Wesnoth:Copyrights")

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[35]These information are summarised from the interview I had with one person of the triumvirate.

[36]This is one of the widest adopted FOSS license. The specific version adopted by BfW is "version 2 or later". the 'later' clause ensures compatibility with future versions of the license. It is endorsed both by the FSF and the OSI. The licence can be found here: http://www.gnu.org/licenses/old-licenses/gpl-2.0.html.

[37]This is another widely adopted license in FOSS. It is used for text and documentation rather than for software code. It is endorsed both by the FSF and the OSI. The license can be found here: http://www.gnu.org/licenses/fdl.html.

"Contributed code" is an artefact which is included into the source code repository, while "contributed content for documentation" is an artefact created or edited in the wiki. The distinction in licensing mechanisms applied to different artefacts is important because, technically, the published content on the Add-on server is an *extension* to the vanilla version of the game, not an *integral* part of it, nor content published on the Forum. These would not fall under the initial mechanism, unless the meaning of "contributed content" to the project is taken more widely. For this reason, the same mechanism is applied through similar disclaimers to the content published elsewhere in the infrastructure, for example in the Forum, in the platform for the UMC, and in the Add-on server. For instance, by publishing a piece of artwork[38] on the Forum for discussing its improvements, artists implicitly release that specific artefact under the terms of the GPL. The same rule is valid, too, for a participants who start developing additional content by using the UMC platform, or who upload content onto the add-on server.

In this way, all differently-developed content is available in the infrastructure to everyone, in line with the four basic freedom principles, typical of FOSS. Indeed, the licenses used by Wesnoth are traditional FOSS ones so they embed the 'four freedoms' principles[39]

3.2.5 Trunk, branches and release management

BfW provides the public with two different packaged and ready-for-use versions, plus one 'raw' version. The first two versions are technically called *branches*. One is the *stable branch* and the other is the *development branch*, while the raw one is referred to as *trunk* (or *SVN*) version. This version, on which all core developers work on, gives birth to all branches and contains all updated code editing, but lacks of testing and stabilization activity, as well as source code packaging. Basically, accessing the trunk version equals accessing the raw source code of the software. This version cannot be used *as it is*: it is not enough to download it and run it, but it must be *compiled*, so it can be run on a computer. Therefore, non-technical users may find this version particularly daunting, but there is not such a big need for it, because the other two branches provide alternative solutions with a compromise of stability and innovation. The trunk version is designed for developers, or for people interested in becoming one, even if nothing prevents users from accessing that version.

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[38]Provided that this artwork is intended as a contribution to the game and not as an example or other explanatory reasons.

[39]Freedom to use, study and change, share, and distribute modified versions.

As described in the "Download" section of the website, releases belonging to the Stable branch are considered pretty balanced game versions recommended for most players, since the online multiplayer community is large and user-made content server has a rich content availability. The development branch features "updated graphics and new exciting features". Nevertheless bugs and performance issues might spring out, so versions belonging to this branch are recommended for developers and content makers.

The numbering scheme for BfW versions uses an `A.B.C` pattern:

A: Indicates the *major* version number. So far Wesnoth has produced only two major version numberings: 0 and 1.

B: Indicates the *branch* number. *Odd* numbers are used for the Development branch, while *even* numbers are used for the Stable one.

C: Indicates the *release* number concerning the given branch.

For instance, version 1.8.5 indicates the fifth release of the 1.8 series, belonging to the Stable branch. Similarly, 1.9.11 indicates the eleventh release of the 1.9 series, which is a development branch[40]. At the moment of this writing, the current stable release is the 1.10.3.

As Figure 2.1 shows, there is no strict connection between a release in the Development branch and in the Stable one. There are no formal rules describing how many releases a series can feature before reaching the next series or by when this should be done[41].

Release management – the process of deciding when releasing a new version and pursuing the technical procedures for the release – is handled by one person only, the release manager, who checks the work on the SVN trunk and follows both the developers' mailing list and the developers' IRC channel. When new material is enough to make a new development release, the release manager communicates his intentions to issue a new release to the mailing lists. Generally, a 7-day *freeze* period follows the release and no features can be added. For stability reasons only bug fixing is allowed during this period. Afterwards, he prepares all files in the SVN repository and get them ready for being released. Once completed, he announces the release of the new version both in the Forum and on the project

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[40]Sometimes the "x" in the notation 1.9.*x* is used to refer to all possible releases produced in that series.
[41]However, by observing the older releases and confronting the gathered data, BfW has been producing a release in the Development series every two months, while versions in Stable series have been released less frequently.

website. The release of Stable version is very similar, but it happens less frequently, because this branch focuses on stability. There are no roadmaps for the release of new versions, so the release manager decides on the base of quality and the amount of the new code available in the repository, rather than on time schedules: *It is Ready When Is Ready* (IRWIIR), as the Wesnoth collective states about new versions. Approximately, one BfW *development cycle*[42] takes slightly longer than two years.

BfW approach to release management is not surprising when typical FOSS practices are taken into account. Indeed, many FOSS collectives leave a great deal [43] of liberty to release managers for deciding whether or not the status of the code allows for a new release: they evaluate every time and thanks to a sound and comprehensive knowledge of the source code base if the quality and stability of the new features are adequate to motivate the launch of the technical procedures for a new release. The *Apache Web Server* (Kogut & Metiu, 2001) and the *Debian* (Michlmayr et al., 2007) collectives are renowned for their propensity to release rare, but stable, versions to the detriment of more frequent ones. In particular, Debian is renowned for the slowness of its release cycles and, at the same time, for the high-quality of each stable release. BfW seems to favour a similar approach, although the difference between the two collectives should be acknowledged. Debian is an operating system which is also widely adopted for backbone and network servers at enterprise level and, thus, it is reasonable that developers feel pressured to provide a reliable and stable system. On the contrary, BfW is a video game whose eventual lack of stability would not undermine other software running on top of it for business purposes. Nonetheless, BfW developers are particularly meticulous in ensuring high quality for their video game, as I will try to show in the next chapters.

3.2.6 Governance in Wesnoth

In collaborative and volunteer driven projects, the issue of governance is crucial[44]. The BfW project provides little official explanations of how the overall governance works inside the project[45]. That is the reason why I focused on those aspects usually indicated relevant in

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[42]Refers to the process of going from one series of the same branch to the next one (*e.g.* from 1.8/1.9 to 1.10/1.11).

[43]Although it should be noted that different practices exist. For instance, there is an emergent trend to try stabilizing schedules for new releases in some FOSS collectives. In the case of *Ubuntu* operating system, the collective follows as closely as possible a six-month release cycle.

[44]See Section 1.1.1 for further details.

[45]Since very little information is provided in the official website, this part is largely built on the interviews I had with privileged informants and in minor part, on my observations conducted in development oriented spaces.

literature for FOSS governance:[46]: (*i*) who has the leadership of the project and how exerts it; (*ii*) who and how can get writing privileges to the source code; (*iii*) who and how can be officially credited for the project; (*iv*) how volunteers 'are managed' and valued. The underlying logic of such elements relates to the social recognition granted to the participants and, at the same time, the duties they should be responsible for.

In BfW the founder of the project is still considered the leader of the development project, although he no longer actively contributes to coding. He is still following the development team by attending the developers' mailing list and the Forum, but he is no longer responsible for key development activities or decision-making processes. From time to time, he has been participating in Forum threads which concern the overall situation of the BfW project, or in mailing list discussions regarding pervasive and non-trivial changes and project management issues[47]. His current direct involvement is in Wesnoth Inc. organization (See Section 3.2.3), where he is co-managing the revenues of the project with other two associates[48]. Important aspects such as release management and the promotion of new contributors to the role of developers are no longer his responsibilities or domains of activity[49], as they were during the introductory and growth stage of the project.

About 'becoming a new developer', I need to clarify that, in BfW, anyone who has writing access to the source code repository[50] is considered a developer. However, whoever contributes with artworks, musics, campaigns, or translations can get writing access to the repository, not just the *software* contributors. Therefore, the 'role' of developers relates to an heterogeneous set of people who work on projects in different areas and with different skills. In other words within the developers group, *coders* are the ones who work on the code at the level of programming.

About *becoming* a developer, this is what the official documentation for coders states:

> Before you can join the development team, your work needs to be reviewed by a current developer. It works like this: you first get the latest source code and then submit your modified source code as patches to GNA!. Eventually, you may be given SVN access.

(Development documentation page)

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[46]For an overview see Weber (2005); Shah (2006).

[47]During my whole fieldwork he intervened only with 10 e-mails in the developers' mailing list and provided about 15 posts on the Forum.

[48]As already mentioned, the organization does not directly intervene in development related matters.

[49]Technically, he still maintains this 'powers' but no longer uses them, given that they have also been delegated to other core developers.

[50]Accessing the source code (being able to read it) is open to anyone by means of SVN access. However, in order to edit directly source code, one needs 'writing access' to the SVN system.

The above-mentioned word "eventually" refers to the fact that such a process is highly informal. The two main points to stick to are: (*i*) you can become a developer only if invited, and (*ii*) invitation must come from core developers only after positive work reviews.

The rule of thumb adopted by developers is referred to as *the two patches rule*: anyone who successfully submitted two non-trivial patches into the source code[51] is eligible for such invitation. Becoming a developer when working on non-code game areas is very similar: by invitation and only after more than one successful contribution. So far today, this right has been granted to 65 people and revoked only to two developers.

Being credited for helpful contributions to the project is somehow easier. Indeed, non-developers can be credited too. The informal policy tends to crediting anyone who provides valuable help to improve the game, regardless of having already provided a patch, artwork component or any other artefact. For instance, proper bug-reports for complex problems or sound and sustained feedback to the campaigns are usually considered enough for being credited. Usually this privilege is granted by developers who add new names in the list of credited people, but participants can also make request to be added, if they are convinced they have already provided valuable help.

About the 'volunteers management', the BfW project does not have an explicit and self-aware mechanism for it. The common claim of FOSS as a *do-ocracy* seems to apply here. If, on one hand, the most evident meaning of "do-ocracy" implies that "decisions are made by the developers who more actively contribute to the project" (Capra et al., 2008), on the other hand, it also implies that other people have very little influence on what 'the doers' carry on their own. More simply, as a long standing developer explained to me, in Wesnoth "you can have all authority you want as long as this doesn't bother anybody else[52] and you're doing the job". Therefore, most volunteers work on the projects on which they have plenty of control. The ones who willingly help others, or work on issues 'commissioned by others', decide to do that on their account and do not feel compelled to.

The motto of the *Wesnoth-UMC-Dev* platform depict this situation quite clearly:

> Take responsibility for your own projects and never expect other people to do your work
> for you. If they do help out take it as a bonus and be grateful.

(Wesnoth-UMC-Dev Website)

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[51]For facilitating new coders to become developers, the collective maintains a list of coding problems ordered by their level of complexity and amount of work necessary to address them.

[52]This is strictly related to one of the principles of Wesnoth designing philosophy. See Section 3.2.2.

For what concerns the attempt of subsidizing participants' efforts in the collective, one simple, but apparently efficient (See Section 5.3), socio-techincal mechanism is the awarding of coloured nicknames to Forum registered members. All new Forum members receive a light-brown coloured nickname when registering to the medium, but if they engage substantially into one (or more) activity, such a colour may be changed in order to signal their 'promotion' into a specific group[53]. Relevant conttributions may happen at the Forum level (such as helping to keep discussions on topic, or suporting other members) or at the software artefact level (such as coding, translating, maintaining content). For instance, the colour for the "developer" group is dark red, for the "forum moderator" is green, and the "Music & Art Contributors" group has it blue. Only the "Forum administrators" (orange) or moderators can award such a colour change and, thus, make the recognition for members' involvement visible to the collective.

Granted that not every participant contributes with the unique purpose of becoming a developer, being credited or receiving a coloured nickname[54], in the next section I show how they can practically contribute and what infrastructural resources they have at their disposal.

3.3 The participatory platform

In this closing section I describe the contributory system of *The Battle for Wesnoth* and I try being clear enough for readers without trivializing the complexity of the software design, the game elements and their relation.

Broadly speaking, there are two ways to engage in the collective's activities: one is participating in the 'development of the project', another is engaging in the creation of game modifications (*mods*, for short) or, in the natives' terminology: user-made content (UMC)[55].

The two following sections partly correspond and directly refer to the two pages of BfW website "Project" and "Create" (see Fig. 3.6). These two can be considered the top-level pages, from which participants can get acquainted with the mechanisms of contribution if they are newcomers, or deepen their knowledge about such mechanisms, if they are expert. However,

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[53] There are 11 possible groups each of which is associated to one colour: Administrators, Code & WML Contributors, Developers, Forum Moderators, Forum Regulars, Moderators Emeriti, Multiplayer Moderators, Music & Art Contributors, Summer of Code, Translators, UMC Pioneers.

[54] See Section 5.3 for an analysis of participants' motivations.

[55] For the purpose of this thesis both areas are relevant to the ongoing life of the collective, although from the collective's perspective, creating UMC is considered a rather distinct and independent activity from the development of software.

these top-level pages unfold into several sub-pages and often overlap or cross-reference each other. Therefore, the clear-cut distinction of these two contributory areas is not trivial. The brief description of the 'Contributory infrastructure" I provide in the third part of this section, should help clarify this aspect.
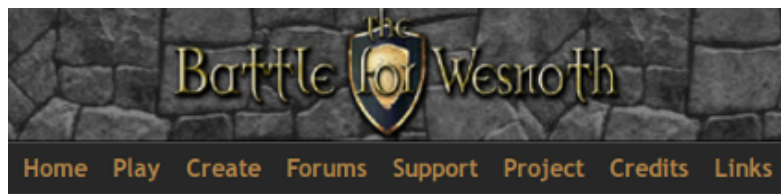
Figure 3.6: The home page of *Battle for Wesnoth*'s website provides direct access to several sub-pages. "Create" and "Project" include general information, technical resources and detailed documentation, respectively for: creating Add-ons; or helping the official development.

3.3.1   Contributing to the 'official project'

With "contributing to the official project" I am referring to those activities aiming at modifying, improving and maintaining *The Battle for Wesnoth* in its vanilla version. In a quite simplified scheme, the vanilla Wesnoth is composed of: the engine (the core elements of the software); the mainline content; and interface.

The engine includes a set of elements such as the Artificial Intelligence (AI), the Random Number Generator (RNG), the Wesnoth Markup Language (WML) and other various components which embed the software core design as a turn-based strategy game and handle the behaviour of the game content.

The interface simply speaking, includes the Graphical User Interface (GUI), the in-game documentation, the elements for accessing and handling Add-ons, and all translations.

The mainline content includes all elements players come in contact with during the game (campaigns, factions, soundtracks, stories...) and which makes the fantasy world[56] of Wesnoth.

About the programming language, nearly all engine elements and most parts of the GUI are written in modern versions of the C++ language. The mainline content is primarily handled through the WML.

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[56]See Fig. C.2 for a geographical representation of *Irdya*: the part of the world where the reign of Wesnoth is located and where all the campaign take place.

All these elements are stored in the source code repository. Only developers can edit these elements directly. If someone wished to contribute directly and wanted to become a developer, they would find information for beginning in the "Project" page: from coding guidelines to development standards, from reference to developers' best practices to the most common tools to use. This documentation page also provides a list of 'simple tasks' which aspiring developers can deal with at the beginning of their learning process.

Nonetheless, people can contribute to the Vanilla Wesnoth improvement and maintenance in many different ways without becoming developers. For instance they can report bugs when they find them, provide their own evaluation of played content, they can provide translated texts for game content, and they can also attempt providing content for mainline inclusion.

Reporting bugs

Players can report bugs to developers either through specific threads on the Forum or in the bug tracker[57]. Bugs are relatively easy to detect, because they cause software to stop functioning unexpectedly, return error messages, or crash it. Bugs can be encountered while playing but also while installing and starting the video game. In Section 2.4.2 I reported a few related examples.

Exactly as in any FOSS software, the practice of bug reporting is considered pretty important in BfW too. For instance, along with the announcement of every new release, developers include a general call for bug reports and a reference to proper documentation to advise other users. Of course bug reporting should be done so that reports are useful to the developers to ease their job. For this reason, when providing bug reports players should clarify which game version and operating system they are using, whether and how they can reproduce the bug. Moreover, problem description should be as more detailed as possible.

Providing feedback for mainline content

Despite no longer actively developed, large part of mainline content is subject to constant and active maintenance, in particular Campaigns, Factions and Eras, Scenarios and Maps. To be included in a major and stable version of the game, content should be fully playable,

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[57]I noticed that often developers use the bug tracker for their bug reports, while non-developers tend to start bug-related discussions in the Forum.

completed in all of its aspect, possibly bug-free, and stable. However, minor refinements are gradually introduced by content maintainers. Therefore, every mainline Campaign, Faction, and Map has a dedicated maintainer.

Players' feedback is useful to improve playable content from a design point of view. For instance, maintainers can realize how fun, difficult, engaging, boring or clear a specific campaign is considered.

About the campaign feedback the process is standard and codified. Each scenario has a specific feedback thread in the Internet Forum. In there players can provide their own opinion about the scenarios they played by answering a set of standard questions, in the form of a small survey[58]. The feedback for other kind of content are similarly reported, although the threads are not so standard and players provide free comments, instead of replying to survey-like sets of questions.

Maintainers use these feedback to evaluate whether they need to tweak something in a specific kind of content.

Providing translations

Another way to contribute to the vanilla Wesnoth without being a developer is provide translations, either for the GUI or for the content, from English in a different one.

All source code files which include textual elements to display on the screen, embed such textual elements in, so called, "strings". People who want to provide translation can download the game source code locate the files including the strings they want to translate and create new files with translated strings. Afterwards, they can forward the translated files to the Translation Managers who will include them in the proper source code location.

The tool[59] used in BfW for handling and coordinating translations allow to display what different localized versions exist for the game, how much content has already been translated, what percentage has fallen in an outdated status, and what percentage is completely missing. For all these percentages, users can easily trace the source files which need translations.

Currently, there are 53 versions localized in as many different languages. Fifteen[60] localized versions were translated for more than the 90%.

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[58]See Section 2.4.2 for a sample of my feedback to a campaign scenario.
[59]They use a widely adopted tool which is also adopted in many FOSS projects: *gettext*.
[60]Largely these correspond to Western countries languages and few Asian ones.

Content for mainline inclusion

It should be clear by now that the game content is made of an heterogeneous set of artefacts. Thus, contributing content to mainline could involve the creation of a campaign, a new faction, a new soundtrack or another kind of artefact to be added in the vanilla Wesnoth. However, with the current standards for the vanilla version, creating a new Faction or Campaign with that specific goal is a pretty daunting and ambitious endeavour[61]. Indeed, all current Factions, Scenarios and Campaigns content were Add-ons in the past, and only at a certain point they were refined and improved for bringing them into mainline.

Nonetheless, there are a few contribution types such as Graphic and Music Artworks which are explicitly sought by the developers. This kind of content lags behind the general availability of other kind of content. For this reason, developers explicitly call for submissions in this area by announcing it both in the "Project" and the "Create" web pages[62].

For content to become mainline at least one developer who is responsible for that content area should evaluate and accept it. The developers' evaluation aim to ensure that it conforms to the general style and quality of other content, and that it fits within the lore of the world of Wesnoth.

I briefly present here what it means to create artworks, while I discuss the other type of content as part of the *user made content* area.

Graphic Artworks   refers to all those works aiming at proving game element drawings. These are: units, terrains, and portraits. Practically this means producing an image file[63] which visually depicts these elements. Such image files are included in BfW source code[64] related to specific elements they should represent. For instance, units' image files are inserted in the source code of the Faction which also includes the definition of those units through the WML.

On one hand artworks for units and terrains are very small images and they refer to pixel art. These images have a maximum size of $72x72$ pixels (the size of a map hexagon) and artists use different pixel art techniques to give form to their drawings. On the other hand,

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[61]For instance, before being 'promoted', the newest Campaign added to mainline needed a three-year-long work by an expert contributor. During this time it was developed and distributed as an Add-on.

[62]Moreover, they also maintain a list of 'needed submissions' and they maintain a detailed set of documentation pages that tackle specific aspects for the creation of graphics and music composition.

[63]BfW uses Portable Network Graphics (PNG) file format. However, the program or techniques adopted to produce such files are up to the artist to decide.

[64]Or in the Add-on source code, in case of an Add-on.

portraits are larger images, so they try depicting the Campaign characters in a more 'realistic' way[65].

In recent versions of BfW, units are depicted in a dynamic way. They are animated when they stand still, when attacking, when defending or when simply moving across the map. This means that, besides providing one static picture – a base frame – of a unit, several different baseframes are requested to build up the animated representation of that unit. Figure 3.7 shows the base frames for the Elf Champion unit that are needed to build up an

(a) *Main base frame for the Elf Champion unit.*

(b) *Attack animation for the Elf Champion unit.*

(c) *Individual frames for the Elf Champion attack animation.*
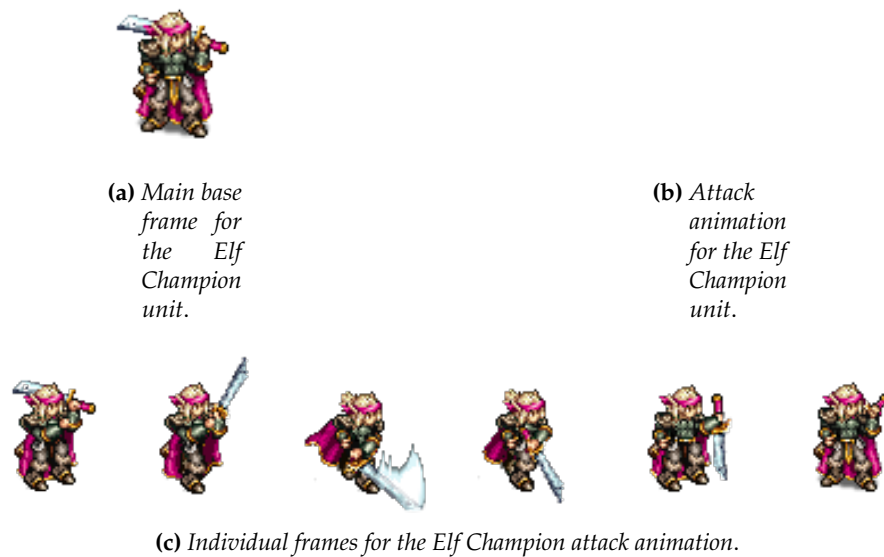
Figure 3.7: An example of the base frames for the Elf Champion unit. The main base frame together with the individual frames for building up the attack animation are provided.

animation[66].

Graphic artists can submit the artwork files to the Art Directors via the Internet Forum.

Music Artworks   refer to melodies playing as background soundtracks during the game. Music composed for Wesnoth should be orchestral with realistic sounding samples, from three to six minutes in length.

Digital music composition is based on sound samples recorded from real instruments and turned into digital sounds. These sounds can be assembled through specific software: Digital audio/MIDI workstations. The quality of the sound samples is very important for the final music. Musicians, besides being able to master software for music composition, should

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[65]In Section 5.1, I provide an example of how artists draft and develop portraits with the collective's help.

[66]Figure 3.7 (b) is an animated object. To be able to visualize the rendered animation, you need a modern PDF reader which supports animated objects.

also have high quality sound sample libraries.

Musicians can submit their compositions files to the Lord of Music (LoM) through the Internet Forum.

3.3.2   Contributing by modding: User-Made Content and Add-ons

Modding refers to the practice of designing and implementing software packages which integrate into existing software products and which can affect them at any level. In the domain of video games, modding has become pretty popular and a consolidated practice for many gamers communities. Here some players engage in modding activities to produce *mods*, short for "modification", to enrich or alter the game product at different levels (*i.e.* software design, game mechanics, game content, software interface) (Sotamaa, 2007). Therefore mods can refer to a wide range of artefacts which can, for instance, affect the physics of the video game virtual world, modify the game play, introduce new story lines and game types. Specific types of mods can regard maps (or levels) and skins (or units/characters). 'Mappers' (map-mods makers) specialize in the creation of new maps or complete levels for the game. This implies that the game play and the game characters remain the usual ones of the official game, but the game play takes place in a completely or partly different scenario than usual. 'Skinners' (skin-mod makers) focus on the creation of new types of characters or additional equipments for such characters. In this case, the scenarios and the game play remain the original ones, but via these mods players can control completely new characters or can equip traditional ones with new objects (Postigo, 2007, p.301).

Modding is often framed as an expression of contemporary *participatory culture* where passionate fans and users get active and participate to the appropriation, reconfiguration and enrichment of their 'object of fun' through the creation of mods (Jenkins, 2006). From a more practical perspective, modding has been recognized as an important resource for video game development and maintenance, because modders' efforts and their resulting mods represent a form of outsourced and commodified work which can benefit game companies and gamers' communities alike (Sotamaa, 2007). Modding is a valuable source of innovation, since modders are often more free to experiment with original game elements than software companies are (Postigo, 2007, p.311). Modding allows for easy scouting of skilled game designers and developers in the gamers communities: it is not rare that capable modders are hired or integrated in different ways into the core development teams (Kücklich, 2005).

Furthermore, modding unburden the game developers team from some of their work duties, because often mods are the answers to game shortcomings[67] experienced by gamers. Finally, modding is a valuable practice for the gamers too, as it provides new and original content to be used and played, which extends the longevity of the video game itself (Arvidsson & Sandvik, 2007).

Despite modding is a practice heavily rooted in the domain of video games, it is not confined only into that realm. More importantly, it has recently become a valuable practice in FOSS too (Scacchi, 2011). Therefore, it shall not surprise that the BfW collective makes of this practice a valuable source of self-sustainment both from the point of view of game content improvement and of participatory affordances to preserve (and encourage) participants engagement with the collective.

As I will argue in the following chapters, thanks to a supportive and welcoming environment (in terms of a friendly and experienced community of peers with whom confronting and relying for help) and an adequate work-oriented infrastructure (in terms of documentation, authoring tools and collaborative platform such as a map-editor, a markup language validator, or a platform for add-ons revision control), BfW made of modding an active and valuable area of the collective able to attract and mobilize users participation. Although not without problems.

Hereby I describe a little further the mechanism for modding and the main types of mods which can be found in BfW, but first I need to clarify the terms "User-Made Content" (UMC) and "Add-on". Despite the name, in BfW the former term refers to a series of artefacts which are not necessarily created *by users* only[68], nor they are exclusively *playable content*. The latter refers to the UMC artefacts packaged and prepared for their distribution through the add-on server. An Add-on is an easily-accessible and easy-to-install UMC, made available through the add-on server. Table 3.2 provides a summary of the different types of available Add-ons.

Including an Add-on in the server is relatively easy. UMC authors create and include a small configuration file[69] in the folder of the UMC artefact. Afterwards, when starting the game, the UMC author would find an option to "publish the Add-on" in the same interface

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[67] For instance, in *World of Warcraft* (WoW), by Blizzard Entertainment, a few popular mods have been developed to provide alternative and improved interface components in order to solve a few game shortcomings which players perceived as concrete interface design flaws (Nardi, 2010, p.145-147)

[68] Developers do engage in UMC creation too.

[69] A simple plain text document, which should include instructions and information for the server (Such as title, author, description, and type of UMC).

for the add-ons download. After the upload is completed, that artefact will be available, in form of an add-on, to all players connecting through the server.

Nearly all UMC artefacts (except basic maps and resources UMC) are written and codified in the Wesnoth Markup Language (WML).

> The Wesnoth Markup Language (WML) is used to code almost everything in Wesnoth, including scenarios, units, savefiles, and the user interface layout. WML files are simple, human-readable text files, usually with the .cfg extension [...]
>
> (Documentation page, "Wesnoth Markup Language")

In other words, a UMC artefact consists of a few files and folder, which include at least a .cfg (*configuration*) type. From a certain point of view, this file *is* the programme of the UMC.

UMC creators use the WML syntax to encode the 'objects' they want to create for the game, so the game engine interprets (by processing the .cfg files) and settles these objects into the game. However, the kind of work involved in each content type differ significantly. Below I tried highlighting the main differences existing among the creation of maps, scenarios, units, factions, eras and campaigns.

Maps & Scenarios

Maps are drawings of the game-board layout. They are the fields where battles take place. Any match is played on a specific map. Technically, even though a map is just a plain text file filled with 'coordinates codes' and 'object identifiers', in the newest versions of BfW people can rely on the help of the Map Editor for drawing them. This is a built-in graphical interface allowing people to draw a map in a pretty intuitive and simple way (See Figure C.5 in Appendix).

Maps can have different sizes which span from a minimum of 40X40 hexagons to a maximum of 100X100. With the Map editor participants can draw map by placing different terrain types (such as forests, waters, mountains) and specific objects (such as villages, signposts, castles) on each hexagon. During the game these objects allow units to perform some additional actions or receive some benefits. For instance, units heal inside castles, and new units can only be recruited when the 'leader' is in a specific place: usually a castle or a fort.

Once prepared for publishing as an Add-on and uploaded to the server, the map becomes available to players and can be selected from the map list during the creation of a Multiplayer match. If no additional instructions are associated to the map file, then such maps permit a

pretty standard type of gameplay, because they follow the standard settings parameters for common to MP matches.

When participants wanted to create something different and wished additional or different behaviours in-game, then they create a scenario. Thus, they associate a series of additional instructions and events to a map. Such additional instructions get encoded in a .cfg file by using specific WML tags[70] dedicated to scenario construction. Scenarios can feature different goals on each map, besides the standard 'defeat the enemy leader'. For instance, the goal of a scenario could be the collaborative survival of the players against incoming enemies.

Factions & Eras

The battle units are the most basic elements which can be moved within the game. Units differentiate in relation to a series of characteristics – the units' traits. A unit 'look' depends on artworks (See Fig. 3.7), while the units' characteristics are encoded in the units' .cfg files.

For the creation of units the WML provides a whole set of tags to define everything related to them: type, cost, health points, experience points, type of attacks and damages, their description and so on. Moreover, WML is used to generate units' animation by associating image files with units' behaviour (*e.g.* attack base frames for attacking actions/tags). Appendix D includes large portion of the WML unit code: the *Elf Champion.cfg*.

As I mentioned in Section 3.1.2, units in game can be chosen and recruited according to specific Factions. Also for content creation, participants get involved in the creation of Factions, rather than single units[71]. To create a Faction it is enough to define (in an additional .cfg file) the relationship among all the units making up that Faction. In particular, this file defines the *units' tree*, the possible leaders, and the general recruitment rules. Defining the units tree (See an example in Fig. C.1) means defining: which are the basic units along with their progressive evolution into higher level units[72], and which units can act as Faction leaders. Leaders are the only ones which can recruit new units.

Finally, a further level of aggregation for this kind of game elements can be found in an

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[70]The technical name for the most important syntax unit in a markup language.

[71]It is technically possible to embed a single unit in the game, but this is reasonable if done for learning or testing purposes, not for sharing and playing new content.

[72]All recruitable units start from level 0 or level 1. When they gather enough experience points they can advance to an higher level which grants the same units more health, attack damage or abilities.

Era: a collection of Factions[73]. Creating an Era is quite easy. It is enough to define which Factions constitute the Era and their relationship in another .cfg file. The more difficult aspect in the development of Eras is balance its Factions. Balancing Eras and Factions means avoiding that certain elements, for instance single battle units or single Factions, are clearly stronger than other units or other Factions[74].

Campaigns

Participants can create additional campaigns to play. However, creating this kind of UMC is slightly more complex than the previous ones, because a campaign should keep several different game elements and bind them in an engaging way. Technical challenges regard designing and implementing it. For this reasons the clearest advice that Documentation provides for this endeavour are: (*i*) beginning with 'something manageable' such as a campaign with a few scenarios (typically 4 or 5) and a relatively linear storyline. (*ii*) sharing the campaign as soon as possible, even if in a form of prototype, to get feedback. (*iii*) Reflecting upon the importance of a coherent and original story from the very beginning of the work. (*iv*) Copying and reusing code from existing elements as much as possible to build upon them whenever is possible.

Making a campaign means: planning a story to tell and encoding the places (the scenarios) where tale takes places and actors (the Factions) participate in and enact this story. This requires both game writing and game designing work.

Campaign Writing refers to designing and writing a general story plot[75]; the characterization of the main story characters; the narratives and the dialogues.

Campaign writers design a story plot which helps them properly writing the narrative and the structure of scenarios. A scenario is usually thought as a small story chapter. Campaign start with introductory scenes which set the atmosphere for the beginning of the story and which usually introduce the main characters. At the end of each scenario is a transition scene which further unfold the story introducing new elements or turning points. Moreover in

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[73]Table 3.1 lists all the Factions of the *Default Era* and their related units.

[74]Similarly, the same is valid for balance in scenarios and campaigns. For instance, if many expert and long standing players find it very difficult to win a scenario played at the "easy" level, then there is probably a balance problem in that scenario. In Section 5.3.2 I provided some information about the process of balancing game content.

[75]The plot is not a screenplay that players have to follow as if they were actors, on the contrary it is the general context in which matches and campaigns take place.

each scenario you can regularly find small vignettes appearing at the bottom of the screen to display interaction amongst the characters. Story writing requests planning of narrative and dialogues as well as a proper wording.

In order to facilitate this work, Documentation provides a collection of texts dealing with the lore of the fantasy world of Wesnoth and resumes the main plots of other popular campaigns. Moreover, documentation also provides direct references and excerpts of well-written dialogues and narratives. However, about the writing UMC authors have been trying to detach themselves from the standard lore in the attempt to be original, therefore these samples can only work as marginal guidelines.

Campaign Designing and Implementation along with the campaign writing there are many other aspects to decide for campaign designing: the designing of each single scenario and of how they bind together.

Campaign authors should decide which Factions will play campaigns and which units are recruitable in those. They should encoded this aspect for each scenario and for both players (the human one and the computer-controlled one). Authors, too should decide how aggressive the enemy should be, how many resources both computer-controlled and human-controlled players should have. Basically, authors should also consider the difficulty level of the campaign.

Once the above-mentioned elements are clear, and the story plot has been drafted, authors can start developing the Campaign. This means they can start implementing each single scenario (See details above for the scenarios) and encoding texts for dialogues and transition scenes.

3.3.3 Contributory infrastructure

The Battle for Wesnoth is a project hosted in two different FOSS hosting services. *Freshmeat* and *Sourceforge*. While the former was heavily used during the early years of the project's life, the latter prominently increased in the last few years. However, not all the services provided by the hosting services are used as part of the BfW project. Indeed, the collective makes large use of ad-hoc components to replace the ones in the hosting services. For instance, the Internet Forum, the IRC channels and the whole Wesnoth-UMC-Dev platform are managed and maintained by the BfW collective and not by the hosting services.

Over the years BfW has grown a capillary and fragmented technical infrastructure. In order to introduce it, I used a classical framing divided into *documentation*, *communication* and *development* infrastructure[76] (Fogel, 2006). Broadly speaking, the infrastructure described here represented for the large part the fieldsite of my work.

Documentation

BfW project provides extensive documentation for players, content creators and developers. Large part of this documentation is kept on the *wiki* pages of the website.

There are many introductory documentation pages for game mechanics and rules addressed to players. There is also a limited collection of pages for advanced playing, which focus on players' strategy improvement. About the multiplayer game mode, documentation keeps more on 'code of conducts' and good practices to establish a friendly and respectful environment in the multiplayer lobby.

There are also many detailed pages that introduce content creators to the basics of creating different types of content. Here the largest part of the documentation relates to the description of the WML syntax and the definition of thousands of WML tags. For each WML area (*e.g.* Terrain WML, Units WML, Scenario WML) all related tags functions are introduced and widely described. Moreover, there are many examples of code excerpts to clarify their usage. Unfortunately, large part of this documentation is "outdated" and only a few ones are up-to-date in the current state of the WML and engine development.

Finally. you can find the technical documentation used by developers, which relates to coding conventions, styles and procedures.

Communication

The part of the infrastructure dedicated to communication, support and coordination includes: several IRC channels, an Internet Forum, and a few mailing-lists.

The IRC channels allow for synchronous interactions amongst participants and enable them to rapidly and publicly send messages to other people in that channel. There are 17 public IRC channels: five have been created for general purpose and include one channel for development, one for users'support and one for UMC creation's support[77]. The remaining

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[76]I should warn that this separation is an artefactual one. For instance, the Internet Forum is much more than a component of the infrastructure used only for communication purposes.

[77]In each of these channels, I always found a presence of about 45 people, at different times of the day. The

12 channels have been setup for general conversations among people of same language (*e.g.* an Italian channel, a German one...).

There are also three mailing lists: one for developers, one for translators and one for notification of automatic archiving of each code review (code editing in SVN). Registration to these mailing lists is open to anyone.

Finally, the Internet Forum is the most populated medium of the infrastructure. Technically an Internet Forum is a website with a hierarchical structure for people which converse: members' replies to discussions are displayed in chronological order and organised in threads. One thread equals one discussion and each thread can include an endless numbers of replies, provided that they follow the forum rules, otherwise users' threads can be closed or deleted by the forum moderators. Threads fit into thematic sub-boards and one forum can have as many boards and sub-boards as the forum administrators wish or as resources allow. A member who opens a new thread is generally called the *Original Poster* (OP) of that thread.

By April 2012 the BfW Forum included more than 21000 registered members (with a daily presence of about 35 members throughout the whole day[78]), 29980 unique threads, and 435930 posts. The Forum is divided into six boards: *General*, *Content feedback*, *Development (open)*, *Development (restricted)*[79], *Unofficial development*, and *Miscellaneous*. Each of them features its own sub-boards. In particular, the development board includes sub-boards for each type of contribution, such as artworks, music, story plots, units and factions, WML macros and translations.

Development

About the core development of the vanilla Wesnoth, the elements used in BfW are typical in a FOSS project: a version control system, a bug tracker and a system for managing translations.

The version control system used in BfW is very popular: *Subversion* (SVN). All software source code is hosted on the *Sourceforge* service and handled through SVN. Participants often refer to the "SVN version" to indicate the version of the software which developers work upon and which can be accessed by using the SVN system. As I mentioned everyone can access the source code through the SVN archive (also called *repository*) and read it. However,

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other ones are much less populated: the italian one never had more than 14 people and only during 'busy afternoons'.

[78]I monitored this presence during a period of about one month.

[79]This is a small board which non-developer members have no access to.

only who has *writing* permissions to it – the developers – is allowed for editing. BfW uses the popular *Bugzilla* as bug tracking software, which is hosted on an alternative FOSS hosting service to Sourceforge named *GNA!*. To submit a bug report in the bug tracker users need to create an account, but everyone is free (and welcome) to sign up to the tracker and submit a bug report. Moreover, the bug tracker is also used for handling features requests.

About translations, official translators use *gettext* which is largely integrated in the BfW website. In this way, translations and their ongoing progresses can be directly displayed and monitored on a specific page.

Finally, even though the *Wesnoth-UMC-Dev* platform is not considered an official part of the BfW project, it is progressively becoming adopted by developers too. This platform provides hosting service for the add-on and a version control system for handling the source code of each artefact. Basically, it replicates (on a smaller scale) the development infrastructure of the vanilla Wesnoth, adapting it for the development of UMC. Anyone can develop their own UMC through the Wesnoth-UMC-Dev by simply asking administrators to open an account for them.

CHAPTER 4

DEVELOPED BY DEVELOPERS FOR DEVELOPERS?

I was at the beginning of my fieldwork and getting acquainted with the collective's infrastructure, when I dwelt on the official documents available for participants. In particular, the ones about the game content creation. At the bottom of the page "Create" is a link to the *Frequently Asked Questions* (FAQ) page, which I thought it would be interesting to read[1] and it was. My attention was drawn to FAQ 1.15, which regards user's proposed ideas.

> **Why doesn't Wesnoth have my favorite feature?**
>
> Because *we are building this game for ourselves, to suit our own preferences. We're not building the game for you, in large part because this is our hobby, not our job; whether you like it or not is immaterial to us.* You may wonder, then, what the point is of soliciting ideas, as we do on the forum. We, the developers, have certainly come up with many good ideas on our own, but our players often do as well, and generally ones we don't think of ourselves. If a player comes up with an idea we like, we might implement it. Not because they asked for it, but because of its own merits as an addition to our game.
>
> The beautiful thing about the license our game is distributed under, as compared to closed-source, commercial games, is that if you want that feature badly enough, you can take the code and art of our game and modify it yourself; you are free to re-use any work in Wesnoth, as long as you follow the rules of the GPL. From this, *you can build a game exactly the way that you like. Just don't expect us to build that game for you.* Building this game is our hobby, not our profession, and you did not pay us to make it; rather, we are the ones who have paid for it, in time and labour.
>
> (Official Website, Frequently Asked Question page, emphasis added.)

At first the taking of distance from users' proposed ideas seemed awkward to me, as well as the explicit indifference to their potential desires, which are 'immaterial to developers' and

---

[1]FAQ pages are widely used in Internet websites. These are lists of answers to the most recurring questions which website users pose to the administrators. For a simple definition of a FAQ: http://en.wikipedia.org/wiki/FAQ.

even more, when these are confronted with the openness towards contributions which is displayed in the official website and in another FAQ:

Do you want help making this game? How can I help?

Yes, *we want your help*. Whether you're a programmer, artist, musician, writer, translator, level designer, playtester, or *just have some great suggestions, you're welcome to contribute*. How? You can:

- join the project
- *share your opinions at the Forum*
- talk with us on IRC
- report bugs you find with Wesnoth and its mainline content

...

<div align="right">(Official Website, Frequently Asked Question page, emphasis added.)</div>

Since the two partially opposed positions are emphasized pretty clearly and firmly, supposing a plain misphrasing of intents from the collective's side seemed pretty unlikely even if I still was at early stages of my fieldwork. Moreover, in spite of being strongly introduced, these are just answers to frequently asked questions. They should not be interpreted as rules in a strict sense. Anyway, this situation reminded me of the work "*Systems Design For, With, and By the Users*" (Ciborra et al., 1983), where the authors proposed a nowadays popular classification to associate users and information systems design. In Ciborra's work the degree and form users enter the designing of the system would classify it as designed *for* users, *with* users, *by* users. However, since FOSS developers are usually considered the 'most passionate software users' (Lerner & Tirole, 2002), I wondered whether the Wesnoth collective represented a form of designing *by developers for developers*. Similarly, could it be that claiming FOSS is a form of *pushed by users design* (Barcellini et al., 2008a) is a problematic statement?

On one hand I wanted to better understand developers' rationale on this position and how this related with the collective's daily work. On the other hand I wanted to know participant and non-participant users' position too. Do the developers really aim at taking advantage of users' help without granting them the right to be heard? Are users' suggested ideas so unpopular and treated so carelessly? How? More importantly, if this is the case, how do non-developers coexist with a such explicit position?

In Wesnoth, as in most FOSS collectives, participants are free to decide which activities attending and to self-assess the extent of their own work. This is valid for all volunteers,

developers included. However, when new features are suggested, these get taken in charge by one or more volunteer developers working on that related area. If the collective demands that developers must carefully evaluate software changes proposed by users, the idea of voluntary contribution would definitely lose value. Moreover it often happens that Wesnoth developers run out of the available free time they can allocate for the collective, regardless of the will to accomplish users' ideas.

Rakshas' case is exemplary in showing the several commitments developers may have in and besides BfW. He has been a developer for a long time with the role of Art Director[2] his role, as he recounted me, consists of:

Creating and improving artwork: He has already drawn many portraits for the characters of mainline campaigns and worked on animating units' sprites. Sprites animation is an area where he still has a lot to learn, but in which he has been actively involved. Therefore, this area takes him considerably more time than artworks drawing;

Helping art contributors and managing contributed artworks: An heterogeneous activity from simply committing a completed and high quality artwork into the core of the game to working together with artists, in order to make sure their work meets both the technical guidelines and the quality standards;

Interacting with the collective: It involves being present in IRC channels or in the Forum to bridge and keep the art development team in sync with the other art contributors.

A role, the one of Art Director, that he was not explicitly aiming at becoming.

> I'd been a Developer (that is to say, someone with commit privileges - someone who can add material to the game's central repository, to the official version, as it were) for almost a year by that point, and I woke up one morning to discover I'd been unexpectedly promoted. It was a very nice surprise, but didn't entail much change in how I operated from day to day.

> (Rakshas, Developer, Interview, 20/04/2011)

However, Rakshas is also one of the Forum Moderators. This implies that he monitors forum members' behaviour and tries to 'enforce' the forum guidelines by closing and moving inappropriate threads and by warning or banning members who do not stick to the rules. Moreover, Rakshas is slowly trying to bring forward the development of a MP Era for the Add-on server: a personal project he has been working on for one year. Finally, 'outside' the cyberspace of the Wesnoth collective, Rakshas is a volunteer in an international non-governmental organization for human rights, and he is also currently looking for a job.

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[2]Wesnoth has more than one Art Director. Currently, there are at least three, plus a couple ones who, due to very limited available time, intervene very rarely.

Rakshas' (or other Art Directors') agenda would be full of new proposed features such as inserting 3D graphics into the game or adding animation to all terrain graphics, if developers were expected to be responsible for any suggested feature. As long as developers try improving the game they do not want to give the impression that anyone can 'request' anything to them. They wish deciding what developing and how, since they spend their time and energy doing that.

> In general, we are constantly trying to improve the game, but much, if not most, of our efforts are on our own accounts. Comparatively little of it is from user suggestions, because we've always got more than enough on our plates from our own ideas, and the ideas of other devs. Like I said last time, ideas are cheap. Ideas are also basically useless unless you can act on them. Users are welcome to work on their ideas, devs usually have plenty of their own.
> It sounds arrogant, perhaps, and elitist. But in the end, if we tried to satisfy everyone, we'd be locked in place, unable to do anything, because everybody has different ideas, and different opinions of each others' ideas. You can't please everyone, so you work to please yourself, and if everyone else likes it. that's good too.

> (Rakshas, Developer, Interview, 20/04/2011)

This position is commonly shared amongst the developers and largely established across the collective. Indeed, when I first asked to a non-developer about this, I was surprised that she justified and explicitly supported that..

> Personally, I'm a supporter of the FAQ you quoted. Being a FOSS project, Wesnoth can be easily modified, all the way to the core. If you don't like something about the game and the developers aren't willing to change it, do it yourself. It's quite possible, as long as you have the necessary skills. Furthermore, if the Wesnoth developers accepted all ideas and tried to implement them, what you'd end up with would be a bloated, overly complex and aimless game that just wouldn't be that much fun to play. It's only by carefully picking and choosing what ideas they want to implement that the developers can keep the project centralized and clean

> (Cylanna, art contributor, Interview, 01/06/2011)

I also progressively discovered that such a support is widely shared amongst the participants, regardless of their involvement or their attempts to get new ideas into the game.

> As for the developers' position as stated in the FAQ, it sounds rather harsh at first, but I certainly don't disagree with it. The developers have every right to say that and handle ideas in that manner if they wish. In fact, the developers don't have to accept any ideas if they don't want to. They could just completely shut out and ignore the community, and they'd be doing nothing wrong. But they're nice enough to allow the community to suggest reasonable ideas, and occasionally they even take ideas from the community. I think it's a good way of handling things.

> (Kai Krellis, campaign creator, Interview, 31/05/2011)

> Actually, developers' statement seems authoritative; however I think they are justified; the community is wide, there are always new people getting closer to the game, surely a part of them fall into the temptation, after few days, to ask variations more or less feasible;

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therefore it is understandable that who has the responsibility for the project feel the need to "defend himself". (after all, if BfW still resists after all these years, if it remains stable and coherent, if maintains its popularity, it is because its evolution remained coherent with the original idea). Moreover, sound things are taken in considerations: who develops the game may do so as an hobby, but he cares to make a good job, and to have the community's gratitude.

(Dacyn, non participant user, Interview, 05/04/2011)

Beside the explicit support to the FAQ itself, there is also a widespread support to the fact that developers have strongly taken distance from these proposals based on their own preferences. Moreover, even in practice, regular participants seem much less interested in submitting new feature requests than how non-participants would. Of course, this may largely have something in common with what already mentioned: participants are aware of developers' stance on users' proposed ideas, they understand this stance and respect it. However, this does not imply they would not propose new features. On the contrary, since they are acquainted with the collective, this may favour tailored proposals to overcome specific game limitations or to nicely enrich BfW without asking the developers to spend time on complex implementations. Nonetheless, all informants I interviewed reported that either they had never made any feature requests (although they had thought to), or they had never made more than one or two proposals.

I've never tried proposing a new idea to the developers, simply because the majority of plausible ideas have already been proposed in the Ideas forum, and the vast majority of those have been rejected for some reason or another. In fact, I don't believe I've ever posted in the Ideas forum at all.

(Cylanna, art contributor, Interview, 01/06/2011)

Somewhat surprisingly, there's only one time I can remember wanting a change in Wesnoth. And it wasn't a major feature request or anything of that sort. Just a little tweak that I thought would be an improvement.

(Kai Krellis, campaign creator, Interview, 31/05/2011)

Only two developers acknowledged that, during their early days in the collective, they regularly had tried submitting new ideas to developers, until they slowly started contributing themselves and became developers.

On the contrary, non participant users and newcomers tend to start discussions on potential new features more frequently until pretty soon they clash against the culture of the collective. During my fieldwork period the Forum recorded about 8,000 new registered users[3] and, even though not all of them needed or felt like proposing their ideas, some did.

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[3]I do not imply that a new registered member in the forum is necessarily a 'newcomer' in regards to the whole collective, but he or she is a newcomer in regards to the peculiarities of the Forum. For instance, one of my informants recounted he played for a few years the game and also attempted to create a new campaign by looking at the code of other campaigns, before discovering the existence of a support forum.

Therefore Dacyn might have been right, when he claimed that developers need to find a way to fend-off risks that software design and development may be potentially "altered" by new users' requests.

So far, I discussed statements and 'declaration of intents', but how are they enacted in daily collective's work? How do they translate in practice? Below I showed that despite an institutionalized mechanism exist for proposing new features this is largely ignored by developers. However the analysis also highlighted that filtering out proposals is tightly connected with developers' need to deal with an high load of 'noise' at the level of infrastructure. Indeed several mechanisms emerged in the infrastructure in the attempt to filter such noise. Sources of noise and tentative solutions are discussed in these sections.

4.1   Ignoring proposed ideas

The most established procedure the collective follows for discussing and evaluating new features is to use the "Ideas" board of the Forum[4]. Here, anyone is allowed to start a new thread for proposing and discussing a feature. At the top of this board a couple of announcements instruct people about how to lead a discussion and 'effectively' propose a new feature[5]. Proposals discussed there can relate to different areas of the collective, they are not addressed to software only.

During my fieldwork[6] I noticed the opening of many threads for suggesting changes in Wesnoth, but none of them was picked up and taken in charge by developers. In particular, I followed the evolution of 23 most recent proposed ideas relating to different aspects of Wesnoth development, as shown in Table 4.1. All of these received answers, by developers such as Rakshas too, to clarify and better refine the intended request, but none of them was adopted by any developer. Actually, only one of these proposals evolved into a more work-oriented discussion[7] which is currently going on: this is the one where the original poster, a new forum member[8], decided to pursue it by himself. The moderators locked a

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[4]Actually, also the Bug tracker is supposedly used for collecting and evaluating features requests, but it is nearly exclusively used by developers who use it for their own features ideas.

[5]Which can be briefly summarised with: discuss politely; try to write as clearly as possible; do preliminary searches on the forum; be patient in waiting for answers; respect the moderators and their work; avoid suggesting features which belong to the Frequently Proposed Ideas (FPI) list.

[6]Between May and July 2011, I specifically spent some of my fieldwork time on the "Development" board of the Forum, which includes the "Ideas" section, to observe how threads developed in specific boards.

[7]Indeed, it was moved by a moderator into the board dedicated to art development.

[8]This forum member registered himself to the Forum just the day before opening the discussion.

Category of Feature	N° of threads
Art	1
Engine	4
Interface	6
Mainline	4
Translation	1
UMC	1
Unsorted	6

Table 4.1: Summary of threads opened within the "Ideas" board, grouped in relation to the category assigned by the original posters for each given idea. Observed during between May and Jul 2011.

couple of these discussions, while most of the others turned out no concrete outcome, despite a few replies.

One of these discussions is particularly interesting, because it includes in the same thread most of the usually-adopted elements to devalue or outright reject proposed features. A new forum member[9] suggested an apparently simple and reasonable idea: making a specific unit (the Orc Assassin) immune to the effects of a specific type of attack (poison) in case the attacking unit was weaker (lower level) than the attacked Orc Assassin. Here, a few excerpts from that discussion:

"IDEA ON ORC ASSASSIN AND POISON ATTACK"

[20/06/11] Newcomer: This idea has some confrontation with p.29 from the list of FPI:

29. There should be an ability that cancels out Poison/Magic/etc.
Result: The developers feel that this would lead to an 'arms race' where e.g.. "Immunity to Poison" would result in the creation of "Super Poison that even effects the Immune", "Immunity to even Super-Poison" etc. resulting in 'levels' of abilities.
The developers feel that this would add an unwanted complexity to the game.

But, if we look closer, it is a very good idea. Why do I think so? Well, I love to read, and from historical and even fantasy books I learned that most ninjas and assassins **DO NOT use the poison if they do not have the antidote!** (if needed, I can explain why) (we are not talking about ninjas/assassins who were noobs)

Wesnoth example:
Imagine that two players are both Northerns, and playing versus each other. They have assassins of the same level (level 1, for example)
Because their assassins have the same level:
1) they know the same information about poisons;
2) they have the same poisons for a throwing knives;
3) they have the antidotes for curing the poisons
Then they can't poison each other! If the assassin was suddenly poisoned by an enemy assassin of <u>the same or lower level</u>, he can identify the kind of poison and use the

---

[9]Who just registered 30 minutes before opening the thread.

antidote.

So, the core of my idea is:
Orc ninja can not be poisoned by a lower/same lvl ninja.

Let's discuss it!

(Internet Forum, original emphasis)

Formally, this proposal stick to most of the posting guidelines: the title is clear, a preliminary search on the Frequently Proposed Ideas (FPI) list was carried out, the proposal rationale is explained, and a simplified example of how things would work with the potentially implemented idea is provided. However, the two first replies to this idea, which came from long term contributors, are pretty firm about why and how this feature would not be implemented.

> **[20/06/11] Kai Krellis:** Congratulations, you did check the FPI list... but I'm afraid you've made a different mistake. Gameplay-changing suggestions based solely on the argument that they will add realism to the game are generally not well-received. There is an acronym commonly quoted in this forum: WINR. In addition, perhaps you don't see that this could also offset the balance in default MP... have you thought about the effects this change would have on balance?
> IMHO, this would unnecessarily complicate the game, as well as potentially upsetting balance, and I don't see any positive effects or benefits this would have on the game.
> **[20/06/11] Sisal:** Also, it's un-KISS and CABDIWML. I don't really see this happening. At least, I'm against.

(Internet Forum)

The interesting aspects of this example are the four arguments mobilized in opposition to the proposed idea: (*i*) the rationale of the feature is solely based on the expectation that the in-game world would correspond to the 'real world', but this goes into a conflict with the designing philosophy of the game (see Section 3.2.2); (*ii*) the proposed change would heavily affect other components in the Default Era, in particular the aspect of balance amongst the units; (*iii*) implementing such a feature is technically challenging: it is not a KISS feature to be implemented into the Wesnoth source code; moreover (*iv*) this feature Can Already Be Done in/with WML (CABDIWML) by creating an Add-on, so there would be no need for entering it into the source code.

The thread received other four comments on the example provided by the original poster and on the potential challenge for making this change happen, but no clear decision was taken: none of the developers explicitly rejected the proposed idea, nor the original poster said he would try to implement it himself, nor he withdrew the feature request. The

discussion, as for most of the other threads, simply died out. A retired developer once tried to explain me this pattern with the following streamlined account:

> This means that ideas that developers think are good will likely be adopted. Those that they don't, won't. Let me see if I can break it down a little bit more with a walkthrough of a stereotypical idea posted on the forum:
>
> 1. Idea gets posted
>
> 2. Forum members (FM) read it. If it is an idea in the frequently proposed list, people jump all over it. It dies a miserable death. Otherwise...
>
> 3. FM debate the pros/cons of the idea. Usually any given FM will be either strongly for it or against it. Variations on the idea may be suggested.
>
> 4. Developers (who are also forum members, but usually aren't able to respond as fast as the undead horde of forum members) get around to reading it. At this point several things can happen:
>
>   - It can be rejected out of hand. This usually means it dies a miserable death.
>   - Different developers (like the FMs) start debating the pros and cons. This generally means that the idea is going to effect existing functionality or would be complicated to implement. Usually means a miserable, if lingering death.
>   - The idea is liked, but viewed as too complicated. probably dies a miserable death, usually preceded by someone posting a "we look forward to seeing your patch that implements this"
>   - The originator of the idea decides to implement it himself... may die a miserable death or actually get submitted as a patch
>   - The idea is liked enough by some Developer and is fairly simple to do, so it gets implemented pretty quickly
>   - Same as above but it gets added to the list of "simple coding tasks" for people who want to contribute but don't know where to start
>   - Everybody 'loves' the idea. Nobody 'loves' it enough to implement it. It dies a miserable death
>
> So, in summary, there are many ways for ideas to die a miserable death. The only way this is avoided is if someone likes it enough to implement it. If it is a developer that likes it, it will likely get included in the game fairly quickly. If it is not a developer that likes it enough to implement it, then the implementer may find himself becoming a developer.
>
> (Tallin, retired developer, Interview, 08/04/2011)

Anyway, despite my initial surprise for having discovered the developers' harsh stance against users' proposed ideas, I should clarify that BfW developers' attitude towards other people's suggestions is not a unique trait of this FOSS collective. For instance *Debian*[10] collective is well renowned for it gave birth to the idea of do-ocracies in FOSS. Indeed, Debian's Constitution[11] implies that 'anybody can decide how to do their job' and 'nobody can impose to others what to do' (Zacchiroli, 2011). Similarly, such an attitude where 'suggesting others what to do' is discouraged can be found in many peer-production

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[10]One of the oldest and most renowned FOSS operating systems.

[11]See Debian Constitution http://www.debian.org/devel/constitution.

processes. For instance in Wikipedia, the collaboratively written encyclopedia, there exists a template answer[12] called "Sofixit" template which is often used to reply to the many suggestions coming from newcomers and to encourage them taking action, instead of suggesting what others could do (Halfaker et al., 2013).

As a form of do-ocracy where developers invest their own time and skills to further their interests it shall not surprise that for BfW players it is particularly hard to convince developers to implement their suggestions.

It is interesting, nonetheless, to discover that at the verge of the collective growth phase, when BfW experienced the most lively participation period, developers faced the need to make explicit their position on a matter which was obvious among themselves, but was not to the end-users.

> In my opinion, that FAQ entry is both misleading and honest and I'd bet it's a historical artifact from stricter times – that is, the time around Wesnoth 1.0, when the developers team was an apparently far more restricted bunch with more specific goals. Not being a good writer of user-level documentation myself, I didn't touch it when I revised the FAQ last year; after all, it is honest in a way.

(Baldras, Developer, Interview, 22/06/2011)

4.2   Filtering noise

> **[17:10] OP:** sometimes i cannot even hit one heavy plate soldier once by two turns. what can i do to make it a better?
>
> **[17:15] OP:** nobody knows this? Is this an international forum so always have people online to answer questions?
>
> **[17:45] R2:** [. . .] While this is an international forum, the chances are high that you have to wait more than 4 minutes for an answer.
>
> **[18:02] R3:** [. . .] Yeah, that's the thing; it's an international forum, not a customer support hotline.

(International Forum, 24/06/2012)

Developers' attitude towards proposed ideas, as discussed above, seems to relate to their general need for 'filtering the noise' the collective generates in the Forum. In the Wesnoth collective, the Forum is a communication and collaborative medium which, even though is considered "very development oriented"[13] by its regulars, it is also considered to have a

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[12]See http://en.wikipedia.org/wiki/Template:Sofixit

[13]In an occasional discussion with one of the Forum Moderators, he explicitly acknowledged this aspect.

"poor signal:noise ratio"[14] by the developers. The problem of ratio between the quality and the number of feedback was already perceived soon after the Forum launch, when an "horde of uninformed posters" started populating it (See Section 3.2.1, for more context). Cyclic or recurrent discussions, feedback overload and unfocussed feedback is the general context in which developers have to disentangle, when trying improving a game.

Feedback overload and unfocused feedback

On one hand there are cases where developers have to deal with great amount of feedback focusing on specific elements or game areas. Here, they not only face the amount of suggestions, but also the fact that such suggestions often contradict each other.

> [. . .] 20:14:14
> **<Eryssa>**: deoran: *I'm not sure what the changes will be yet*, are you looking for something specific?
> **<Eryssa>**: (in terms of balance)
> **<Deoran>**: nope, just that you havn't commented on the ideas flying around, so I was wondering what your thought were. . .
> **<Eryssa>**: there are several bugs that were fixed in trunk but not in 1.8 addon, also some OOS errors remain, so that stuff
> **<Eryssa>**: I haven't watched the replays yet, and *there is much being talked about right now*
> **<Eryssa>**: *unfortunately, forum has so much noise and so many ideas (many of which contradict or would counteract each other) that I can't keep up with responding to everything*. I want to watch the replays, plays some more games (that is the big hold-up) and then talk it over a bit on IRC before deciding what to change
> **<Eryssa>**: I do want to post a response at least but hasn't happened yet.
> **<Deoran>**: ok
> **<Eryssa>**: I have responded to several of the ideas on the server, some of them come up in games. *There is also an unfortunate tendency for loud voiced to dogpile on any 'official' forum post on balance* and it means I am careful and slow in my responses
> **<Eryssa>**: s/voiced/voices/
> **<Landar>**: eryssa: want me to deal with it?
> **<Eryssa>**: Landar: I think not at this point
> [. . .]

<div align="right">(IRC, #development, emphasis added, 11/05/2011)</div>

Here two developers are working on the *Khalifate* faction[15] and, in particular, on balancing the Faction units. They confront with each other on how to proceed, but unfortunately have

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Moreover, there are only two minor sub-boards that are dedicated to general and socialising discussions, all the other ones are dedicated either to the development of official content or to user-made content. Moderators themselves try to keep development oriented discussions as clean from off-topic replies as they can.

[14]This was explicated to me by more than one developer and it basically involves the fact that in relation to the amount of messages and feedback provided through the Forum, only a minority is clearly formulated, easily understandable and addressing specific elements/aspects that can be acted upon by developers.

[15]A new faction which was supposed to be officially included within the v1.10. However, its inclusion was put on halt just due to 'lack of balance'.

the problem of interpreting the large amount of feedback in the Forum and deciding how to modify the faction. The thread Eryssa is referring to is specifically used for discussing improvements to the Khalifate faction and, when they chatted it included nine pages of discussion[16] carried on by a few dozens of different forum members.

On the other hand developers also face the opposite problem: lack of feedback *where* and *when* needed. For instance, I recalled my participatory efforts and my habit of providing feedback for the scenarios[17] I completed. Anyway I didn't completely succeed in ending up full campaigns: I often stopped playing a campaign before completing it. Therefore, my feedback polarised on the initial scenarios and I left the last ones uncovered. A pretty common pattern. As the difficulty level raise with the progression of the scenarios, also the number of players who quit increase. They drop the campaign or put it on hold in the hope to be able to win it 'one day'. It is pretty common to notice long feedback threads about the initial scenarios of a given campaign, while the last ones feature relatively fewer feedback[18].

An analogue case of missing feedback regards the development branch of the game. The 'failure' of the Multiplayer Lobby is a pretty enlightening case, which is mentioned at the end of the next section. However, this idiosyncrasy can also be illustrated through the cases of balance issues. Due to reasons of backward compatibility, balance changes are never implemented in the stable branch[19], but actually only in the development one. However, the majority of users adopts the stable branch, while the rest heads for the development one. Therefore, developers receive large amount of feedback from the stable versions, but once they implement changes (into the development version), they have comparatively very little feedback on how good (or bad) those changes are[20]. The few and timid developers' attempts to bring more users on the development branch are usually not well received. For instance, here within a discussion related to balancing, the need for testers on the development branch emerged, so a developer implicitly hinted that it would be good if more players used that version. Eryssa explicitly supported that position which, anyway, caused a quite

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[16]Approximately they amount to 100 different replies.

[17]See Section 2.4.2.

[18]For instance, the first two scenarios of *Dead Water* campaign have respectively 28 and 33 feedback reviews. The two ending ones have 2 and 7 feedback reviews.

[19]Different versions of the same stable series are supposed to be compatible with each other, so , for instance savegames for v1.8.3 should be working on v1.8.6. Similarly, MP games should be possible among players with different stable versions. Introducing balance changes in the stable version could potentially break such compatibility.

[20]According to current pace of release cycles, there might pass more than one year before the new stable series is release and such changes reach the broader users' base. At that time however, the new stable series will also include many and many more other changes.

disappointed reaction by a gamer.

"Balancing Ideas"

[17/04/11] Non participant user: Well, no. Eryssa, you still got it wrong, sorry. At some point in Wesnoth's history, the community composition shifted from "mostly developers, able to cope with dev version" to "typical (and demanding) online players". Expecting the latter to take the pain of running unstable versions means you don't understand your target audience at all. [...]
If you want feedback on the footie change, or the upcoming cav. balancing, then cater to the needs of your community and provide an add-on for the stable version. Forcing people into using unstable software is simply not nice, regardless of how you slice it.

[17/04/11] Eryssa: I am saying that I appreciate Eloh's suggestion and that Wesnoth will be better if folks are testing the development branch. If I implied otherwise then I misspoke. Think about the transition to 1.8.x - there were bugs and problems and craziness, largely because lots and lots of changes were added in the development side and bugs weren't squashed before the stable release. If there are more players on the development server reporting bugs (even saying "I also get that bug" is valuable) then we're going to have a better game. So when Eloh offered to invite ladder users over naturally I am supportive.

(Internet Forum)

Cyclic discussions

Another issue that 'produces noise' from developers' perspective is about cyclic discussions. These are discussions which come up regularly in the Forum and can relate to different aspects in the collective. They are not necessarily feature proposals started in the "Ideas" board, even though this may be a case, but they can also be criticisms about some aspects of the game content or its basic design. There is no need to replicate a discussion exactly and repeatedly to make it recurrent, it is enough that the bottom line of the argument or criticism is the same one.

For instance, the Artificial Intelligence (AI) and the Random Number Generator (RNG) are often at the centre of a few recurrent and related discussions. On one hand there are discussions regularly reporting that (somehow) the 'AI cheats', implying that the AI team has access to more resources than how it is supposed to have, or that the AI team can control the RNG and bring the ratio of hit/miss attacks in its favour. On the other hand they hear the claim the 'RNG is broken' or that, put it differently, 'the luck component is too strong'. Therefore, something should be done to improve their behaviour.

However, from the collective's perspective these are just complaints stemming from inexperienced users who expect to find 'excuses' to justify their inabilities to play the game.

When identified as such these complaints are largely ignored or closed as soon as possible by the moderators.

> That the AI is cheating? Yeah, that comes too a lot, that the AI is cheating and we should fix it, it's not fair too...yes basically our AI does not cheat, but is very good with the numbers. When there is a weakness in your line, the AI will find a weakness whit its maths and bump it and bump it and bump it.

<div align="right">(Deoran, Public talk, FOSDEM 2012)</div>

> The luck component is a common argument. It was a common argument when I started, and it's never stopped being a common argument. These days, it doesn't run long, someone will lock it quickly with links to previous arguments, luck-reducing mods, and Haldric's posts on the topic. It's such old ground these days that it just frustrates. What it boils down to is that yes, we understand that some people don't like that component. We do. It's not going to change. [...] It often results from simple psychology. People assume the RNG is broken because they remember far more easily the relatively rare occasions where their mage missed all four attacks and wrecked their strategy, but tend to forget the vast majority of cases where it worked fine, or where their nearly-dead unit on poor defence was missed by all the attacks thrown at it in a turn, or had a 90% chance to die, but a 10% chance to level, and levelled instead of dying.

<div align="right">(Rakshas, Developer, Interview, 20/04/2011)</div>

In these two quotes the irony and the partial intolerance for such recurring discussions is evident. Moreover, the two guys highlighted some of the strategies that are usually mobilized to avoid these recurrent complaints to gain momentum: the direct locking of the thread by moderators; the linking to previous similar argumentations; the redirection to specific add-ons or mods; the quoting of an explanatory post published by Haldric[21]. The other problem with recurrent discussions is that they potentially hide real problems. Indeed, after Wesnoth founder stopped actively contributing code, two developers replaced him and started working on the AI. Somehow one of the two made a few changes which compromised the desired functioning of the AI. It took time to developers to become aware of the problem so they could fix it. Thus, in the collective history there was a moment in which the supposed broken AI had a problem to be somehow "fixed", but, ironically, none of the users seemed to notice this and never submitted this as a bug.

> **<Eryssa>**: he is not involved much these days, and there was a period a few years back where another developer started tinkering with the AI
> **<Eryssa>**: and broke it!
> **<Eryssa>**: and it wasn't realized for some time, so the AI got worse and worse
> **<BfWEthnographer>**: auch
> **<Eryssa>**: many players didn't even notice of course, but it was easy to see and test
> **<BfWEthnographer>**: Did this problem have an influence on balancing units/scenarios? as far as you can tell?
> **<Eryssa>**: much work was done to undo those mistakes and some progress has been

---

[21]This post is often referenced from AI/RNG cyclic discussions and it became a sort of official position statement on the matter.

made with some new improvements to customize the AI (and allow scenario writers to have more control over AI play)

<Eryssa>: it's hard to say what impact it had, because it was corrected eventually - so things WERE out of balance for a while but might have corrected themselves to some extent [...]

(Eryssa, Developer, Interview, 08/04/2011)

4.2.1 Infrastructural machinations to deal with noise

In the attempt to cope with such an uneven distribution of feedback, but also to take distance from users' proposed ideas, developers try taking advantage of different 'machinations' that are visible in the infrastructure. I am metaphorically referring to *noise sinks*[22] and *earplugs* as infrastructural machinations used to funnel what developers consider 'noise' into more localised spaces and to smooth part of such noise. I am referring to the *open source argument* as a rhetorical device to contrast unwanted feature suggestions.

The "open source argument"

About rhetoric used by participants to contrast unwanted feature suggestions and to avoid developers being enrolled in those endeavours, we find the *Open Source Argument* (OSA): any statement or position that draws upon widely known FOSS principles in order to defend (or justify) BfW developers' way to do things. Often associated with the FOSS paradigm are the following statements:

- FOSS is about developers' scratching their own itches (Raymond, 1999)

- In FOSS anyone can become a developer and anyone can modify the software (Nakakoji et al., 2002)

- The code can always be 'forked' (Fogel, 2006)

These statements are implicitly or explicitly appropriated in, what I call, the Open Source Argument. A rhetorical device that is both codified in the infrastructure (as the closing part of FAQ 1.15 and the guidelines for posting in the Forum show) and mobilized by participants. Here two examples:

"POSTING GUIDELINES"

The fastest way – with the highest success rate – to see your idea in the game is to *just code it yourself*. The wiki is full of resources to help programmers get acquainted with Wesnoth.

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[22]The ideas of "Noise sinks" and "open source argument" sprung from natives' terminology.

> The overall attitude of the development philosophy is 'we make this game for ourselves, it works how we like it to work. If other people also like it, great. If not, well, they don't have to play. *If they want it to work how they want it to work, they can do the work to make it that way*'. [...]
> Open source is about scratching your own itches, as it were. Scratching other peoples' is less appealing.

(Rakshas, Developer, Interview, emphasis added, 20/04/2011)

For instance, in this partial answer Rakshas explained me the rationale behind the FAQ, by using what I call an OSA. Basically on one hand since players neither paid nor worked on the software, they are not compelled to use it and should do so only if they like it. On the other hand since this is technically and legally possible, if someone did not like the software and wanted it changed, they should edit it themselves. Of course, this argument is mostly based on rhetoric, rather than on concrete possibilities, because users often do not have the required skills to enact these changes. This kind of awareness is also pretty clear to users:

> Yes, to motivate their "closure" regarding features request, developers introduce the argument of "open source"; as we already discussed this is more a theorical discourse than a practical one for what concerns the "core" of the programme.

(Dacyn, non participant user, Interview, 05/04/2011)

In ANT terminology, I can claim that OSA is often *mobilized* to create and maintain an actor-network where software designing and development is largely based on developers' preferences. Or, arguing the opposite point of view, OSA is often mobilized to disrupt, hinder or weaken the establishment of those actor-networks which do not carry the interests of developers' preferences. However, such an argument is, at best, enough to easily downplay the single requests, but is not sufficient to put out 'the noise'. New requests will always be submitted and the argument may often[23] be mobilized again. This dynamic can be easily misunderstood for plain rudeness or disrespect by touchy people and, to some extent, even by some developers.

A noise sink

The "Experimental Corner" is an area of the Forum where ideas rejection is not based on "developers' preference". It is an area where participants can propose all the tweaks and modifications they desire in game. This forum board was specifically pushed by a few of

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[23]I am not implying that to every feature requests an OSA is used to downplay it, only that this is often the case for requests that are considered 'unreasonable' by developers, or which are included in the FPI list, as I will explain.

developers who considered the abuse of the OSA a lack of respect for users. This area was added in early 2010.

> That's why people regularly get told: "Well, it's open source. If you want it done, do it yourself and leave me alone!" [. . .]
> What I really disliked was the way that people were treated so badly. It's one thing to tell a user that his idea is not going to be implemented. It's a completely different though to call him an idiot who doesn't know what he is talking about. Especially if there is clear evidence that he might have a point. And even if not - this is simply not a way to treat people in my opinion.
> This disrespect really bothered me and it finally was the trigger to open up the Experimental Corner: A forum that doesn't have an FPI, that accepts every idea, honestly discusses it and tries to make the most out of it.
>
> **Q: Was persuading other developers difficult?**
>
> Well, yes and no :)
> Yes, because actually, nobody really wanted it (except two other developers). All the trolls would go there, I was told, it would be a source of rebels breeding their destructive ideas, spreading chaos over the whole community. Ok, I am exaggerating a bit here, but thoughts similar to this really came up.
> But in the end there was no true reason to speak against it. Nobody would take an additional load, because I offered to moderate it myself. If things get out of control (which I was sure they wouldn't), we can shut it down any time.
> So there was nothing to lose and a lot to win: Keep rebels in the project and make use of their enthusiasm and also keep away all those unwanted discussions from the "regular" forums.
>
> (Gweddry, Developer, Interview, 04/12/2011)

As Gweddry explained me the creation of this board was pretty smooth. In the end, he proposed himself as a responsible moderator in this area and he also acknowledged the possibility to close it down, in case it became troublesome.

The ideas proposed in the "Experimental Corner" are however not intended to be integrated in the official version of the game, but rather in *WesnothXP* (also known as *Wesnoth Experimental*): an 'unofficial' game version which includes some of the features that would never be implemented in the official one (*e.g.* the modifications for the behaviour of the RNG.). Nevertheless, contrary to the fear by some opponents to find the board populated by trolls spreading chaos all over the Forum, the "Experimental Corner" is a 'quiet' place[24]: the developers willing to work on such an experimental version have limited time to dedicate and only a few participants seem to be interested in proposing features for WesnothXP. However, from developers' point of view the Experimental Corner acts as a useful noise sink even if it did not attract widespread interest. Indeed, even though some recurrent discussions

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[24]In more than two years less than 80 discussions were opened. Approximately, the same amount of discussions is generated in 6/8 months in the "Ideas" board.

get started in the "Ideas" board, now the harshness of the OSA is mitigated by the possibility to redirect them into a localised discussion space, where they can be openly discussed.

> It wasn't as hard as you might think to get it going. Even people who are against it, see its value as a "noise sink". They like that it gives a place that's "out of the way" to send those developer preference ideas.

> (Li'sar, Forum Moderator, Interview, 08/06/2011)

An earplug

The already-mentioned *Frequently Proposed Ideas* (FPI) list is basically a list of all ideas already proposed more than once and already rejected. The FPI list is both maintained in the documentation page and also replicated in the posting guidelines of the "Ideas" board. The features requests in this list are a taboo. Developers neither want to read nor discuss them further. Therefore, these taboo discussions are either closed by moderators due to the violation of the guidelines, or moved to the "Experimental Corner".

Currently, the list includes 35 ideas and the list ends with an invitation addressed to the collective to report new recurrent proposals, if identified. For each idea is provided a brief explanation of the potential change and a short reason for rejection are provided. Here below is an example from FPI n.1:

> **1. There should be a 'deterministic', 'non random' mode**
>
> *Background*: some people, apparently frustrated at losing their units in random battles, feel that there should be a non-random way of playing the game.
> *Result*: the developers feel that randomness is a large part of the game, and that taking the randomness out of the game would be somewhat akin to taking the randomness out of most card games. [Link to further explanation provided]

> (Documentation, "Frequently Proposed Ideas")

Table 4.2 summarises the reasons for rejecting proposed ideas and it seems clear that developers strive for preserving key design principles and their designing preferences.

4.3   Developed by developers for and with participants

In the first part of this chapter I portrayed the BfW collective as largely resilient to receive users' features requests and needy to face a poor 'signal:noise' ratio. In this section I clarify the rationale behind the question mark in this chapter's title: is Wesnoth *really* developed by developers for developers? Is it developed to fit developers' preferences only? Or, as

N° of proposals	Rationale for rejection
8	It is against developers' preferences
8	It would betray underlying design principles
7	It would betray already implemented core design principles
3	It would be too complex to implement
3	It can already be achieved by means of Add-on
3	It is already known and possibly wanted, but it is not a top priority
2	It already exists in a similar form
1	It would conflict with elements external to the project (*e.g.* licensing issue)

Table 4.2: The table shows the number of FPI grouped according their rationales for rejection.

it appeared with a thorough look at the collective, does it also fit participants' needs and preferences?

I noticed that single feature requests are largely unattended, but the more I spent time in the collective, the more I also noticed that users' concerns were actually addressed (or attempted to be addressed) by the developers. The three following examples regard different areas of BfW development, but they all highlight these two elements: (*i*) changes relate to requests which emerged as shared across the collective; and (*ii*) developers are willing to take up additional workload, give-up useful tools or revert and trash considerable amount of work carried out, if reasonable concerns by participant-users are identified.

Overall, these streamlined examples are taken to show that, regardless of their indifference to users' direct requests, developers do care and try developing an artefact that is well received by the users' base. In particular the examples show how developers addressed software intrusiveness, software usability and software accessibility concerns.

Intrusiveness and respect of users' privacy

I mentioned that a data gathering tool was introduced in the software 1.2 version[25].

> Version 1.2 includes a gameplay feedback mechanism. Players can allow the program to send anonymous statistics of their performance in single-player campaigns to our server - this gives campaign authors the information they need to balance the difficulty of their campaigns.
>
> (The Battle for Wesnoth Release Notes v1.2)

By the time of my entrance into the field, this tool had already been removed for a long time and, in my opinion, forsaken by most of the collective. Indeed, I had never noticed

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[25]See Section 3.2.1.

any implicit or explicit reference[26] to such a tool anywhere in any corner of the collective infrastructure. I heard about it for the first time when I attended FOSDEM. There I realised that, without this tool, developers have lost a 'reliable' source to improve some game aspects, balance, in particular.

> So we did this in Wesnoth at some points. Information was individualized, but anonymous. We could look at everything that the single-player did but we could not [know] who that player was. We had things like number of units when you enter the scenario. How much you had lost, how much gold you have kept. How are you at the end of the game. How you did. How many retry you had on any single map, and... that's the best tool you have for balance! It's reliable... it's enough data to do stats. It's not a single complain. You can know that 80% of the players that dropped the campaign dropped it on the same scenario. That's the sort of things you can, see. It's pretty reactive when you release a new version you have your stats who would restart. So you can see if a balance change has any effect by comparing the previous version to the new one, but we had problems because it's spying on our users. [...]
> It is the best tool we have to know what's going on, but yes the problem is that we are gathering data about our users, and even in an open source software where we are actually not interested in selling any information and anybody can check what we are actually sending. It's still a social problem to have this sort of tool. So, if you can it's good. If you can't, you can't!

> (Deoran, Public talk, FOSDEM 2012)

To developers this used to be a consistent and stable tool for detecting balance issues, for correcting them and for monitoring the consequences of potential changes. However, from users' point of view this was perceived as an intrusive and unwanted tool, even though developers used it for balancing only.

During the period this tool was included in the software, continuous complaints came up in the Forum until it was removed, approximately at the end of 2008.

> The whole thing was controversial, because anything that gathers data about users is controversial in an open-source community. There wasn't really a turning point or a strong debate, but the subject came back regularly on the forum. It [was] never used for anything but balance, it didn't collect any data that we could have used for anything else.

> (Deoran, Developer, Interview, 16/06/2012)

Balancing game content is one of the key activity the collective is involved in, but although developers found a great tool to improve their job, they preferred renouncing to it to satisfy users' requests.

Accessibility and disentanglement of blurred waters

In the series v1.9.*x*, along with the ongoing process of artworks refinement, water terrains were one more time renewed. However, according to a few participants these new terrains

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[26]On the contrary, I witnessed references to most of the other aspects, which I mentioned in the historical Sections of this thesis, regularly during my fieldwork.

also embedded some accessibility[27] issues. Visual transitions among different types of waters were no longer easy to distinguish. See Figure C.3 in Appendix for water graphics differences.

As hinted in Section 3.1, managing to distinguish different terrain types is not a minor component of the strategy game: terrain types affect defence modifiers. For instance, while "Flat Water" provides a 40% defence (for most units), "Shallow Water" only provides 20%. Deciding the position of units when considering an attack or defence strategy also implies which units users can put in which type of water.

This issue met some disagreement, because according to a few long standing participants, to avoid the problem was enough to: (*i*) hoover the pointer with the mouse over the map to retrieve all the information about the terrain type; (*ii*) wait a bit to see if players get used to the new terrain graphics and refine their ability to distinguish them. Therefore, according to these few opponents, this was not an issue requesting another round of revisions for water terrains. However, on one hand, it was true that by hoovering the pointer over the terrain hex users could really visualize all the information needed to make strategy-wise decisions (the right-column of the game interface provides such information). But on the other hand, this additional step for retrieving information about the terrain types was not necessary in the previous versions. Indeed, with the older terrains the difference could have been caught at a glance. Thus from this point of view the issue seemed a regression in game usability. Moreover, it is true that with some training and the use of these graphics, players could get used to them and manage to distinguish different terrain types immediately. However, that would be neither easy nor possible for colour-blind players. So, besides usability an aspect concerning game accessibility was mobilized. Together these elements caught on developers' attention.

The chance to solve this issue by creating a specific add-on was at first discussed, but later turned down due to technical difficulties to produce it and the burden for users[28]. Thus, Relana, one of the Art Directors, decided to work on some of these water terrain graphics and, in a short time, provided a solution, which was released in BfW v1.9.7.

"RELANA'S ARTWORK TERRAIN"

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[27] Accessibility is a general term used to describe the degree to which a product, device, service, or a software is available to as many people as possible and it is often related to the accessibility for people with any sort of impairment.

[28] Who should first discover that such an add-on existed, before being able to install it for solving the problem, but this sounded counter-intuitive: Add-ons are mostly used to provide additional playable content, rather than to solve usability or accessibility issues.

> **[21/05/11] Relana:** OK, i've heard the comments that the ocean and shallow water are too hard to distinguish. It's apparently a problem for a significant number of people, so i'll get on making some sort of adjustment, at least as a stop gap.
>
> **[28/05/11] Relana:** New ocean in SVN: darker and more strongly textured:
> —
> `[Explanatory screenshot provided]`
>
> **[28/05/11] Pirk:** Looks good. Hopefully that'll stymie the complaints.

<div align="right">(Internet Forum)</div>

Following this solution, no more complaints in this regard have been raised.

Usability and reversion of a new lobby

As a result of the participation in GSoC 2009 and following the development and testing since Wesnoth v1.7.3, a completely renewed Multiplayer Lobby (see Section 3.1.2 and Figure 3.4) was introduced in the stable release of Wesnoth v1.8. The Release Notes of that version states: "The multiplayer lobby has been completely redesigned for improved ease of play and better appearance." This new interface was mainly developed to provide MP users with a better overview on the ongoing MP games and with an improved system for messaging with each other. It also aimed at providing moderators with better functionalities to monitor and intervene, in case of tentative cheating or disrespectful behaviours.

However, a few days after the release of v1.8, a few complaints about the new lobby were reported to the Forum and 10 bugs were officially filed in the first month[29]. This caused developers frustration, as you can notice from a few messages exchanged both in their mailing-list and 'more publicly' on the Forum:

> "THE 1.8 MP LOBBY"
>
> **[08/04/10] Landar:** As some of you may be aware our Multiplayer Lobby has some problems. Its buggy and its UI has some issues. What happened was that the lobby wasn't tested fully by developers and the product was pushed out of the door a little early. Its got some great functionality, like multiplayer rooms, filters and the like. *Its just not that usable right now...thats all. I'd like to apologize for that.*
> What I can tell you is that *we're trying to be proactive and deal with these issues as soon as possible. We've established a special working group and we're trying to draw in as many developers as possible to fix it.* Our hope is that within a month we will have dealt with most of the main bugs, and by mid summer smoothed out some of the GUI issues.

<div align="right">(Internet Forum, emphasis added)</div>

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[29] Currently the bug tracker has 35 bugs associated to the MP lobby, nearly half of them have already been fixed.

Here Landar, one of the main developers, started a thread in the Forum to inform the rest of the collective about the current situation related to the Lobby and, more interesting to publicly apologize and reassure about further developments. At the same time, in the developers' mailing list this issue was faced more concretely.

> As some of you may know there have been some issues surrounding the MP- Lobby, as was shipped with 1.9. [...]
> *Its a serious problem which merits immediate attention; the mp community is one of core attractions and the changes have drawn significant complaints. If we don't address with these issues with haste we will lose alot of goodwill that we've built up over the past few years.* [...]
> Hopefully we can get these issues fixed within the next few months so that the disruption is minimal.
> As for the future, I think we're going to try to have a more effective testing regime for the dev version. One of the causes of this situation was that the mp developers were not engaged as we should have been in testing these changes. *We'll try to do better in the future.* [...]
>
> (Landar, Developers' mailing list, emphasis added, 06/04/2010)

> I think that the multiplayer lobby in 1.8 has seen insufficient testing to be used in a product as mature as Wesnoth. It seems like it's going to take a while to fix it up and make it production-ready.
> When such a thing happens, my view is that the change should be rolled back, until the feature is ready, and then it can be re-introduced. As such, I suggest that we apply the patch Pelias prepared which rolls the lobby changes back. Then, after sufficient testing and re-work, the new lobby can be re-introduced.
> Are there any thoughts, concerns, or objections to this approach?
>
> (Wesnoth founder, Developers' mailing list, 06/04/2010)

By reporting that to the other developers, Landar drew their attention on the matter and on the need of solving it as soon as possible, due to the importance that multiplayer game mode has for BfW. Furthermore he strived for a better attention to avoid such mistakes in future.

Finally, they rushed to find a solution which, eventually consisted in bringing back the older MP lobby into the default game version and make the new one into an experimental option, which users can enable if they want. Here below Baldras explained me some key problems that led the new MP lobby to reach a stable release without meeting the standards for quality and stability valuable to Wesnoth:

> The new lobby UI suffered from limited and subjective testing mainly by people who were involved in its development (Hidel as mentor, and his GSoC student) and no MP developers. Adding to that, the more "hardcore" players who were going to use this lobby in Wesnoth 1.8 mostly avoid development releases because they are not as keen on filing bug reports as they are on having a worthwhile and bug-free experience. [...] In other words, the main target audience didn't test it enough when it was the time to do so.
>
> (Baldras, Developer, Interview, 22/06/2011)

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On one hand as a project brought forward in relation to GSoC the MP Lobby escaped the usual overview that the other developers provide for such changes. On the other hand, the main target audience (the 'MP gamers community') did not test the MP lobby enough. Indeed, MP gamers wish to play on a stable version of the game, so most of them did not use the development branch (where the MP Lobby was tested).

Concluding remark

In this brief chapter I focused on a situation which I found puzzling when entering the field: the little importance developers give to users' suggested ideas and the related harsh tone through which they manifest such indifference. A puzzle I could not ignore in my investigation about how users participation and collective development relate to each other.

By analysing official artefacts such as the website and documentation, by interacting with developers and other participants and by reflecting on my fieldwork experiences, I tried unfolding what lags behind such a situation. On one hand users' proposed ideas get hardly considered. On the other hand developers seem willing to deal with the collective needs which emerge as relevant in the infrastructure.

Wesnoth end-users and, in particular, the non-participants have a hard time in translating their own feature requests into something appealing enough for developers to mobilize their 'workforce' and turn those requests into concrete changes in the game. To non-participants and to newcomers are largely unknown elements such as: the game designing principles; the 'history' of previous proposals and implementations; the technical complexity behind apparently simple ideas; and the possibility to achieve similar results by means of add-ons. Such elements are often mobilized by developers to dismiss or ignore users' proposed ideas. Or, differently, they are often mobilized by the collective to allow developers to keep working on their own projects and ideas. Basically, in BfW the form of do-ocracy which is often found internally to FOSS developers teams and even in other peer-production process (such as Wikipedia), clearly manifests itself at the level of end-users and developers relationship.

However, at the same time it emerged that developers do care for improving the video game in ways that also satisfy the users base. In this regard, even though users' feedback is unevenly distributed and difficult to interpret it is an element which is not ignored and which can put developers under pressure.

In light of these insights, I come back now to the opening of this chapter where I questioned the extent to which BfW video game can be considered a form of pushed by users design. As I tried showing during the chapter the answer to this puzzle is neither easy nor clear, but if I am to make one consideration then I certainly claim that the distinctive trait rests on the distinction between participants to the collective and non-participants rather than between (end-)users and developers: *BfW as a pushed by participants design*.

CHAPTER 5

WOBBLING PARTICIPATION IN THE COLLECTIVE

In the previous Chapter I started from a harsh public stance by developers towards users' proposed ideas, in order to highlight a complex relationship between users and developers in regards to designing issues: if, on one hand developers seem really and overtly uninterested in users' proposals, on the other hand they also show interest in some of the users base needs. Indeed, in the past, core developers made further efforts or even reverted already-implemented artefacts in order to address some of the problems emerged from the collective.

With that previous analysis I also highlighted that this complex relationship is based on a tension between participants in the collective and outsiders, rather than on a dichotomy between users and developers. Indeed, the stance 'against' proposed ideas seems much more related to socio-technical reasons, than to an ideological or project-oriented position against users. These socio-technical 'barriers' are easier to 'break' if people are acquainted with the collective's peculiarities. If changes in the collective truly relate to rising issues established among participants and not to individual requests from outsiders, it is extremely important to understand which dynamics are involved in such a participation.

The first part of this chapter is dedicated to the analysis of contributory efforts as both individual endeavours and, at the same time, collective ones. In the second part, I focus on what the natives call *wesbreaks*: a not-so-short interruption of contributory efforts, and the implications that such widespread interruptions have for the development of the collective. In the third part I discuss about the individual motivations which ease participation and about the importance to maintain a positive and welcoming atmosphere in the collective.

Finally, with a concrete attempt to introduce a new official element into the game, I show the rising of collective endeavours as a basis for understanding BfW collective designing.

5.1 Participating Alone & Together

I argue for the involvement in content creation as an activity that is necessarily both individual and collaborative. This aspect emerged from my fieldwork and features collaborative dynamics which resembles the ones of players in 'virtual worlds' such as *The World of Warcraft*[1] (WoW): a famous Massive Multiplayer Online Role-Playing Game (MMORPG). Simply speaking, in order to step up in level with their avatars, players engage in combat quests of various difficult levels. Very often, avatars controlled by users do not feature the variety of skills that is necessary to win the quests, regardless of players ability in controlling them. Therefore, players tend to team up in collaborative quests, because this helps them gain a broader set of expertises and resources[2] to overcome higher-level challenges (Ducheneaut et al., 2006). Together, players can develop and advance their own personal avatars by overcoming the challenges which they could have not met by engaging them alone. Similarly, as I explain below, successfully designing, implementing and revising an artefact in Wesnoth it requires the individual commitment of the authors and the mobilization of their skills, but it also requires that the skills, the perspectives and work force of other participants converge and team up with the authors' ones.

Just to be more explicit, the parallel I am drawing here is between the difficulty to create artefacts in the collective and the difficulty of winning a quest in an RPG such as WoW, both of which calls for individual and collaborative commitments. In the following pages I describe three grouping patterns relating to the creation of artefacts which I label[3] *collaboratorium*, *casual partnering* and *intentional partnering*.

Collaboratorium. This is the most common form of grouping and it mostly relates to the creation of simple artefacts. It is a spontaneous way to collaborate, in which members announces their current (or planned) work on an artefact and problematize them. Many participants intervene

---

[1]The World of Warcraft is an MMORPG developed and distributed by *Blizzard Entertainment*. For an in-depth anthropological account of WoW see the work by Nardi (2010).

[2]Indeed each avatar belongs to a specific character's class (*e.g.* wizard, warrior, hunter. . .) and each of these classes develops a wide variety of specific skills and techniques to fight and act around the virtual world. Similarly also the enemies have their own characteristics, strengths and weapons. Therefore, to win a quest against an high-level dragon, players need a combination of wizards' skills and warriors' ones.

[3]Although my terms might recall "design collaboratorium" (Buur & Bødker, 2000) and "pair programming" (Flor, 2006) they only have a far and loose resemblance with the phenomenon I am describing here.

by proposing their ideas on heterogeneous aspects related to that specific artefact. Official feedback threads or personal working threads usually involve the dynamic of a collaboratorium.

Casual Partnering. This often emerges from the collaboratorium when an artefact is complex (such as a Campaign, or an Era). A member can be highly motivated, skilled or creative in a specific area of that artefact development, so the initial author starts a closer collaboration with that participant. Usually, the underlying collaboratorium continues, but the core activity happens in the partnership.

Intentional Partnering. This features all characteristics of casual partnering except for the fact that partner search is conscious and intentional from the beginning. This requests to know what kind of person and skills are needed. For this reason there is a selection process before starting such a partnership.

Below I report three detailed examples to show how these grouping patterns unfold in practice and, at the same time, how participants co-design their artefacts through public discourse: (*i*) the development of an official portrait by a developer artist; (*ii*) the implementation of a campaign between two participants collaborating; (*iii*) the tentative establishment of a partnership to design a campaign.

5.1.1 Collaboratorium

According to participants, the Internet Forum[4] is a very development oriented space. They start threads to report and support the development of their own projects. They try gaining participants' interest and enrol their skills for their own purposes.

This case is unusual, it is about the development of some missing portraits for the mainline campaigns commissioned[5] by an Art Director to Lionel: an artist who contributed with some portraits and artworks in the past. Fourteen portraits were assigned to Lionel: half of them were generic ones (*i.e.* they appear in more than one campaign and refer to generic characters), the other half related to main characters for official campaigns.

In this case the participant is a paid expert artist and not a newcomer volunteering his time. Moreover, the portraits are intended to become mainline contributions, so they need to be approved by an Art Director, before they are considered acceptable and ready.

---

[4]As I mentioned in Section 3.3, it is the most populated and active part of the infrastructure. In comparison, other areas of the infrastructure such as the IRC channels or mailing lists are relatively silent.

[5]Funds from the collective's income were used to assign him this task. During my whole fieldwork, this is the only time it happened that the collective publicly hired a contributor. Anyway, in the past, this has happened more than once.

In the next pages is what is considered a 'working thread' in the collective. It includes arguments about the evolution of the artefact and evidences about its progress. In such threads off-topic replies are barely tolerated.

Lionel discussed all portraits he was working on in the same thread[6]. Here is a part of this thread regarding the development of two Ogres portraits[7]:

"LIONEL'S ARTWORK"

[17/05/12] Lionel: [. . .] In the meantime, here's an anatomy study for the ogres:
[ATTACHMENT: FIGURE 5.1 **(a)**]

[17/05/12] Participant A: In the description of the ogre, it says that they look like humans, but are 'large and misshappen.' I'm not an artist myself, but those ogres seem a litle too symettrical.

[18/05/12] Participant B: Ogres are one of the races I had a hard time characterizing when I wrote the race lore. Part of me wants to say "twisted monsters, as ugly and savage as you can make them", but another part thinks they should still be pretty humanoid and relatable since they seem to interact with humans fairly often. They're feared because they're giant brutes who eat people, but if anything I think the best characterization I've come up with so far is that of a giant hominid.
The picture in my mind is maybe something like an overgrown, overweight, and probably inbred homo erectus – sloped forehead, jutting brow, robust jaw, animal pelts (or striped pants for the more progressive), one eye lower than the other, crooked teeth, etc. This also serves to contrast them with the "noble savage" air of the trolls.
Reference for basic facial structure: [Link]

[18/05/12] Participant C: The first paragraph would match the current sketches, which (=the sketches) I like more than the second paragraph which sounds like ogres should look worse than orcs (sorry if that was not what you meant). If you look in the mirror carefully enough you will probably see some food, therefore ogres could be rather civilized if such quality meals are part of their culture (well, not dead serious while saying it, just one way to differentiate between ogres and orcs a bit).
All the sketches seem to have some character, what is it exactly what we should be commenting on, the pose or the attitude? I like A best. B seems to have a slight fat-and-graceful twist which I also like, but the impression is grumpy. C (and somewhat B) looks like he believes in being cruel and is making an effort at that. Is it correct that the left arm of C is so much curved outwards so high towards the wrist?

[19/05/12] Participant B: The same thought crossed my mind, but I stopped just short of suggesting it. :) It definitely makes sense for the ogres that are raised in captivity as soldiers/slaves to look different from the ones that are out in the sticks setting traps.
[WITH REFERENCE TO PARTICIPANT C]
I do think ogres should be uglier than orcs, if that's what you mean. Orcs are scary

---

[6]This is one of the usual way to work for artists: they tend to use one thread to discuss more than one contribution. On the contrary, campaign or scenario creators tend to deconstruct specific aspects of their projects into several different threads.

[7]At this time, he had already concluded two portraits and nearly finished a third one. Here, I reported the discussion in the chronological order it unfolded. I also removed small part of the replies which specifically concerned completed portraits or forthcoming ones. Due to space reasons, I included all images in one page, and I referenced to them every time they appeared in the discussion.

because of what they do, but I think ogres should additionally be a little unsettling to
look at. [. . .]
Regarding the sketches, I like A the best. The body proportions are perfect for how I
picture an ogre to be built. To me, sketch C looks a little bit too much like the ogre is
posing.

(Internet Forum)

In the first part of the thread Lionel focuses the discussion on the ogres' portraits by
introducing three sketched prototypes (See Figure 5.1 (a)). One about the Young Ogre
and two about adult Ogres[8]. He does not express his opinion about the three sketches, and
lets the discussion to freely unfold (exactly as he did for the prior portraits).

The official ogre race description is immediately mobilized to question the general shape
of the three figures which, according to Participant A, should have been more 'misshapen'and
less symmetrical. Criticism is reinforced and supported by one of the authors of this
description: Participant B. In addition the body shape of the trolls is brought into the
discussion and compared to the ogres' one. This comparison is useful to confirm that the
sketched shape of the ogres is not as misshapen as imagined it should be.

In particular, *prototype C* got criticized for being 'too cool' or 'too relaxed', while we can
notice a of preference of *prototype A* over *B*.

Here below discussion continues:

[19/05/12] Developer A: Ogres are dumber than trolls. They are not evil because they
don't have enough intelligence to scheme evil. Wild ogres attack because they are
hungry and think you are food. In Eastern Invasion they can be captured and trained
like animals. While they can speak, they can't form complete sentences. While they can
wear clothes, they have a horrible sense of fashion. With that in mind, I think A looks
about right. B may be too malicious and C may be too smart.

[19/05/12] Participant D: I like B best, it makes me think of a really scary school bully
(which is pretty much how I imagine ogres - not actually evil as such, but certainly not
very nice) A is also very good but, to me, doesn't do enough no suggest the 'nastiness' of
the creature - though I think this is just the face, as the pose looks fine. As somebody
already said, C looks like he's doing a photoshoot for Giant Cannibal Weekly, it seems like
a pretty un-natural pose for such a creature. So my vote would be for B's head on A's body.

[19/05/12] Developer B: I too think A is best.

[19/05/12] Rakshas: A also.

[19/05/12] Nym: Another vote for A.

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[8]Lionel's task involved the production of two portraits for ogres. I stop this recount at the completion of the
first one (the young Ogre), but I do not cut out the arguments which relate to the second one because they are
closely related.

[19/05/12] Arne: A

[20/05/12] Participant F: A.

[20/05/12] Developer C: So much going on here :D
Congrats on the finished Shaman! I love his expression-less face! This new version of your style incorporates very few lines, take care that the portraits fit with the rest of our work ;)
[…]
Ogre sketches: Hmm, I wouldn't go with C due to his elegance. A or B are both Ogre-like to me. I'm curious how you'd crop (the obviously generally favored) A – both hands below the waist[9] always seem to be a problem to me in Wesnoth-context.

(Internet Forum)

In this part of the discussion the two prior statements are consolidated. The Ogres' behaviour in a specific campaign is mobilized to make clear again that they should look 'dumber' than they were in the prototypes. This also regards the pose of *prototype C*. Except for that, *prototype A* clearly manages to enrol more supporters than *B*.

The discussion continues:

[24/05/12] Lionel: Updated ogre concept: this one's mostly meant to block skin hues. You'll likely note the tanned complexion: I was under the feeling that ogres were an outdoors people rather than cave-dwellers, and being half-naked all the time probably implies that they benefit of a relatively temperate climate. In the end they won't be your jovial farmer neighbour, but it seems to me that if they can grow so big and regularly bake under the sun, some amount of healthiness is in order :)
Now of course, if the lore (or campaign background) implies that wesnothians rather meet them in northern areas and such, I'll drop the tanning lotion altogether.
[ATTACHMENT: FIGURE 5.1 **(b)**]

[24/05/12] Participant G: Ogre: I think even a Nordic ogre should be tanned. Scandinavians are not known to the paleness of their skin. The sun is there, is more horizontal than at the tropics. One can imagine an ogre can withstand the cold without clothes. Anyway, there on the outside and almost naked most of the time. So logically it is tanned. Not too much, since probably more resistant to sunburn too.

[24/05/12] Lionel: Point taken. Tanned it be, then.
Further study for the young ogre. The revised face and finger-in-the-nose attitude hopefully remove any notion of grace. :P
[ATTACHMENT: FIGURE 5.1 **(c)**]

(Internet Forum)

In a relatively short time Lionel provided two refined versions of the artefact, keeping in mind the criticism he had received. In particular, he added a skin colour layer to *prototype*

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[9]In the game the portraits appear nearly always from the chest upwards. Thus if hands were below the waist they would not be visible and neither the hand-held weapon.

A and *prototype C*. This last was also improved, because, according to criticism, it was "too cool". Nonetheless Lionel himself posed the doubt about whether ogres may look tanned.

> **[24/05/12] Nym:** I almost never use smilies. I save them for special occasions. This is one. :D

> **[24/05/12] Participant D:** I literally howled with laughter when I saw the young ogre - I've missed a few posts here recently, I clicked on 'last post' expecting to see a troll with a saucepan on his head, and found this instead :D
> *Please* don't change the pose!!!

> (Internet Forum)

The new look of the ogre in *portrait C* met the tastes of participants. However, the ogres' skin colour became a matter of debate, as the next replies show:

> **[24/05/12] Participant H:** For the ogres, I'd preferably stick to the fairness of their skin with decent layers of dirt rather than tan. I'd like to think that their skin resemble more of an elephant's (not the color). Rough, and thick. After all, in my honest opinion, if they were to look slightly tanned (reddish even), they would resemble fat people with a sunburn on the beach. (no offense ;D) Love your work bob. Always enjoyed your portrayals :)

> **[27/05/12] Participant C:** [WITH REFERENCE TO PARTICIPANT G]
> Now, I would like to ask: which nation in the world is more 'known to the paleness of their skin' than the Norwegians? The Japanese perhaps?
> Are the Scandinavians known for being tanned?

> **[27/05/12] Participant G:** Scandinavians are reputed to be typically European and non-mixed race (it is a belief, I'm not saying they are "pure race"). They are typically perceived as white people, as opposed to Arabs and Blacks. But in Europe, at least in my country (France), they are supposed to have a golden skin. Certainly not dark but more tan that a medium Parisian or Berliner.

> **[27/05/12] Developer A:** Looking at the sprite and the previous portrait, they are quite yellow. This color may help differentiate them from the other races, but does it look good?
> The skin coloration of a mythical race is surely wide open to various interpretations. I doubt it has to be one way or the other based on any realism arguments– just the rule of cool, and whatever the art/portrait directors decide looks best. So these realism arguments, while interesting, are kinda pointless critiques in my opinion.

> **[27/05/12] Participant C:** The more people write about "tanned Norwegians" the more I feel like wishing for more pale ogres. As for the yellow color, that is often the darkest they will get when they spend 25 hours a day tanning in Spain.

> **[28/05/12] Participant A:** Well, being rather ogre-ish in appearance and living in Alaska, I feel rather qualified on the subject of ogre skin colour. :D
> Anyway, in the summer, I've noticed that people with very white skin get tan/sunburned, (20 hours of sunlight! Whoop!) and in the winter they get very pale– this seems to be the consensus here. Maybe we should have 2 ogre portraits, a pale one and a tan one, as
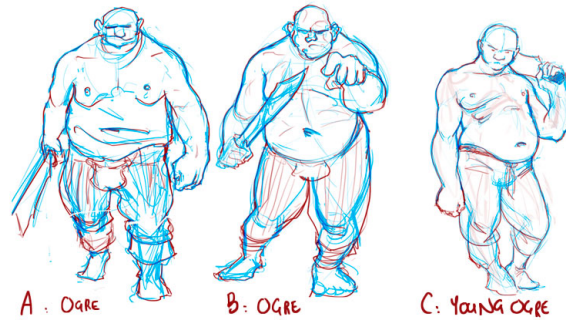
(a) Sketched prototypes

(b) Ogre prototype with coloured skin layer
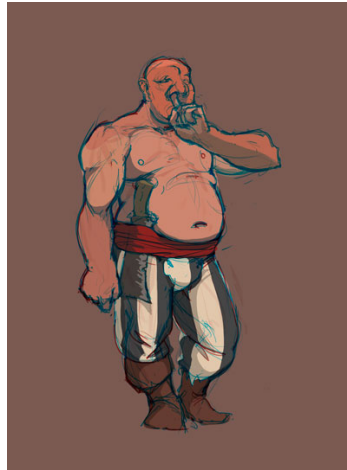
(c) Revised Young Ogre prototype with coloured skin layer

(d) Semi-final Youn Ogre portrait

(e) Young Ogre final portrait

Figure 5.1: Evolution of Ogres' portraits: from the three prototypes sketch: Fig. (a). To the final Young Ogre portrait. Fig (e).

ogres seem to live in many different environments.

[28/05/12] Participant E: Two portraits each, for minor units that doesn't appear in the game that often?! Brilliant idea! :-/
I still don't get one thing - why is his skin pale on the stomach/chest area? That would imply ogres wear shirts occasionally, but as far as I get they only seem to ever wear human-made pants (possibly traded).

In this discussion phase, several arguments are mobilized against the current style of tanned skin. Some of them preferred a dirty skin to tanned, others debated on the ogre's geographical position in the world of Wesnoth and compared it with Scandinavians. A developer brings into the debate the colour of ogres' deprecated portraits as an attempt to mediate the debate about skin colour and tanned shading. Finally, somebody also suggested to produce two different sets of ogres portraits, but this was turned down, since those would have been used very little.

Lionel intervened and expressed his opinion on this matter:

> **[29/05/12] Lionel:** So much discussion over a single unit, and no two of you seem to agree. :D
> Maybe it's time we settled down to write a proper background to our ogres. . .
> Here's how things will be art-wise, on account of the rule of I'm-doing-the-work:
> - *Hair/fur*: my take on ogres will be more pig than boar, i.e thick pale skin with scarce bristles. When it comes to withstanding the cold, they rely on bodily fat rather than fur, [. . .])
> - *Skin tone*: I see many references to Scandinavians and how pale our ogres should look, but it seems to me that nordic people are famous for not living naked outdoors on account of harsh cold winters and them being only humans. Unlike our ogres. Whose skin I will therefore try to render as a tanned-yet-not-sunburnt temperate-climate-rather-nordic-kind-of-skin.
> - *Tone variations*: the difference between head, shoulders, and arms, is meant to account for different angles of exposure. [. . .]

> [. . .]

> **[31/05/12] Lionel:** He ended paler than initially intended, but I think this is for the best. Only thing I might change is a couple of shadows and his right hand, which currently isn't quite in character (I feel it should hang more loosely if it's to convey efficiently the "idle simpleton" trait).
> [ATTACHMENT: FIGURE 5.1 **(d)**]

> **[31/05/12] Participant E:** I'm not sure, but I think with realistic skin shading and cartoony face he kinda hits Uncanny Valley, IMO. Though this is not necessarily bad - ogres are supposed to look repulsive.

No position emerged as more supported over the other ones, thus Lionel clarified how he interpreted the ogres' race critical points and how he would proceed. In a few days he managed to provide a refined version of the portrait which looked like a nearly-finished version (See Figure 5.1 (d)).

However, a participant mentioned the 'Uncanny Valley'[10] to highlight that there is still something difficult to parse in relation to the ogre's skin tone and look.

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[10]Participant E provided the following hyperlink to reference the concept of Uncanny Valley: `http://tvtropes.org/pmwiki/pmwiki.php/Main/UncannyValley` (Last visited 22/09/2012).

[31/05/12] Participant I: If you look at the old ogre portrait, it has these huge fangs and spiky ears which differentiate him from a human. Also, it is more muscular than fat. This young ogre looks much more like an old man to me. I, at least, would not have recognized it as an ogre (if it did not have those pants :P).

[. . .]

[01/06/12] Developer D: I have to say you keep improving, LordBob! I really like the young ogre (all quibbling about the meaning of young aside), but I think there are a few things about the face that lend to other people's feeling of uncanny valley. The biggest is the nose. Either one nostril is *much* wider than the other, or the nose isn't. . . twisting (?) right as he's picking/pulling at the enlarged nostril, so it looks in a way like the act of the hand in the nose and the nose itself are not reacting to each other. The other thing is really minor, and it's that the beautiful shading and strokes seem at odds with the line-art, and the proximity of the very crisp lines of the arm across his face (and to some extent his ear) to this painterly shading is very pronounced around the face area.

(Internet Forum)

The idea of that portrait in an 'uncanny valley' is also supported by other participants[11].

After nearly a week, Lionel replied with the following statement:

[01/06/12] Lionel: On the matter of ogres eating other races, I'm curious to hear where this comes from (cheesy dialog ? :p). I myself haven't played campaigns where the player meets ogres so I don't know how they behave ingame, but their background doesn't really mention who or what they actually eat. Either way it would really be about time that we fleshed out the background of wesnothian ogres, if only to cut short the discussion on how they look
I've noted a list of corrections on the young ogre based on various comments[12]:
- remove grey patch on the head
- nose should twist from the picking
- remove/lighten lines in the face region
- lighten the forehead for a better skull shape
- remove belly wrinkles
- check arm cast shadow/skin tones/reflected light
- warp crotch region to match belly
- add a belt buckle
- add dirt to the trousers/blood on the cleaver's sheath/maybe a trinket
Once these are done, I'll consider him final.

[01/06/12] Nym: In TSG, an ogre says that elves are good meat, and in UtBS ogres are said to "prey" on anyone who is weak. Apparently they do eat people. They are also very stupid, but I think you've got that covered!

(Internet Forum)

Lionel summarized the elements that he considered necessary to address the comments about

the uncanny valley and to complete the Young Ogre's portrait. He also raised a question

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[11]Due to space limitation I did not include all the replies. These included five replies where each participant (one of them was an art developer) tried to explain why, for them, the portrait was in the 'uncanny valley'.

[12]As I have already noted, due to space reasons I did not include the whole discussion and all comments in their entirety. Lionel's list also take into account a few facets which emerged in the omitted part of the discussion.

about the ogres' background, because he admitted he had never played a campaign against ogres, so he was puzzled by ogres' eating habits.

Finally, Lionel provides a final version for the portrait (see Figure 5.1 (e)) which tackles the previous list of aspects that needed to be improved. This version received two more comments, although they were considered not important by debaters:

> **[06/06/12] Lionel:** Setting aside troll matters for a second, here comes the finished young ogre. Next will be either the older ogre or the troll hero. Stay tuned!
> [ATTACHMENT: FIGURE 5.1 **(e)**]
>
> **[. . .]**
>
> **[17/06/12] Pirk:** I've committed the young ogre portrait, and as we'd discussed, the "great troll" is going in as a hero alternate.

<div align="right">(Internet Forum)</div>

After a couple of days Pirk included the portrait into the source code repository, so the Young Ogre's portrait was completed[13].

I want to stress that the development of the artefact was brought forward in collaborative dynamics even though it concerned the production of a single portrait and despite the fact that the person in charge was a paid developer artist. On one hand Lionel was the only one who directly worked on the drawing during the whole process. However, on the other hand fifteen more participants took part in the discussion and helped him shape an image embedding the idea of an ogre, as it is conceived by the rest of the collective. Or, more precisely, as conceived by the 16 people who participated in the discussion.

Despite his skills as a digital artist, Lionel greatly benefited from participants' knowledge and opinions. For instance, he lacked a consistent knowledge of real usage contexts for the portraits (he had not played campaigns with ogres by that time), and his understanding of the ogres' race lore had been minimal by the beginning of the discussion. Participants provided their feedback during the whole process: they co-constructed and co-designed the portrait final shape. After all Lionel integrated the feedback he received into the evolving artefact, the best he could.

These feedback represent – a posteriori – the rationale of the portrait design, which did not exist before work had been completed: a co-designing effort led through discussion. In that thread participants brought some elements in such as: the official description of the ogres' race; the skin colour of older ogres' portrait; the comparison with the trolls' body type;

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[13]A week later the work on the Adult Ogre's portrait would be completed too.

campaigns where ogres are present and where portraits would be used; the skin colour of the Scandinavian population. They used these element to construct collaboratively design how a Young Ogre's portrait should look like. Of course, they also left out other elements. For instance no one mentioned how J.R.R. Tolkien described ogres in his fantasy novels nor someone speculated about ogres' flesh properties in biological terms. Indeed I am not arguing that the Young Ogre's final rationale is 'the best' and 'most accurate' possible. Instead I argue that it is the one resulting from the somewhat serendipitous alignment of elements which each participant brought in.

The practice of making contributions *while* discussing them in a thread is pretty common in the collective. The so-called "working threads" populate[14] the whole *Development* board of the Forum and, in some cases, also snap into other boards. In addition this practice is used to create many different artefacts useful to the collective, not only for making official game elements and add-ons. Indeed, tools or infrastructural artefacts are developed by participants with the same way.

Hereby I briefly mentioned[15] the *Bestiary* project. Malifor, a long term participant, decided to create an alternative website[16], in order to "browse game and unit information for The Battle for Wesnoth". This project did not aim at creating an official video game component: the *Bestiary* is not integrated into the video game interface. It is not accessible from the game, it is neither a video game component nor a playable element. It can be considered a dynamic documentation resource. When completed, this can be useful to both players and content creators. The former would in fact find out weaknesses and strengths of units, races, terrains, etc., while the latter could have an overview of races' lore and units description to make add-ons. Last, but not least, this can also be useful to developers, since they can monitor the units development status and sprites animations.

As for Lionel's case, Malifor too started a "working thread" related to the Bestiary and provided an initial mock-up[17] of the website, as he initially conceived it. More than 30 people

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[14]At the moment of this writing (sept 2012), there are nearly 17000 threads spread across the sub-boards of the Development board. A small minority might concern non-working threads: some threads can be opened in the wrong section by mistake, for instance. However, moderators are pretty alert that the development oriented area of the Forum is kept free from off-topic discussions (which are usually moved into more general boards or, in some cases, simply locked down).

[15]To avoid lengthening the Section with an example which is very similar to the prior one, except for the fact that it relates to an infrastructural component and not to a game element, I only report a summarised account of the thread. I included artefactual elements of the *Bestiary* in the Section C in the Appendix, where it is possible to notice the changes from the initial prototype to the nearly final one.

[16]The current official one is accessible here: http://units.wesnoth.org/. (Last accessed 22/09/2012)

[17]A non-functional and sketched layout of the website.

(7 developers in-between) participated in the thread over a period of 11 months.

In that project Malifor was the only one to work directly on the Bestiary website and basically, in the same way described in Lionel's case: one participant embarked in a personal project and showed the collective its evolution through a working thread. As a consequence this 'lonely' endeavour blurred into a much more collaborative approach. Large part of Malifor's work consisted in implementing the website structure with the HTML code and designing the overall layout. Moreover, he collected, sorted and prepared most units information from official pages. Along with the development of this work, he also provided snapshots of the progresses of the website interface. As for Lionel's case, the discussion which unfolded in the working thread greatly contributed to give shape to different aspects of the Bestiary: (*i*) helping reveal the mechanism of the official units' pages; (*ii*) highlighting the limitations of the official pages, so they could be replaced[18]; (*iii*) helping improve the layout design of the website interface; (*iv*) finding out the aspects to balance performance and efficiency.

5.1.2 Casual and Intentional Partnering

The characteristic of individual and collaborative contribution becomes more evident when dealing with complex artefacts[19]. In fact, in this case participants team up and share tasks to bring forward the development of such artefacts. Within these collaborative projects each participant in the 'team' exploits his or her area of expertise and is responsible for that: they join together for working on separated elements of the same artefact, they team up to work on separate fields of the same artefact, not to deal with the same one.

Looking for a campaign writer - I

The add-on I mention in this section was an idea grown by Rotharik among difficulties and partial failure during the development of another add-on. In relation to this new project, he only had a few design pillars and was aware of which skills he needed. On one hand he

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[18]Indeed, along the process, Malifor affirmed that as things were turning out he hoped for the Bestiary to become the official replacement for these pages. As of today, this did not happen yet.

[19]I refer to those artefacts made of several components which (in case of 'simpler artefacts') can usually be developed separately. For instance, a campaign includes a story plot and its narrative, the scenarios (maps and WML code), and the units' factions. Multiplayer Eras are another example since they include several different Factions. See Section 3.3 for a more detailed overview of these elements.

wished designing this campaign as a non-linear[20] and long journey[21] story, since he was both willing and capable to implement that idea by writing the WML code. On the other hand he knew his story writing skills were pretty limited. As other participants would do he started a working thread on that idea. In his opening post[22], after a brief description of the campaign concept, he admitted he lacked skills in story writing and explicitly asked for help on that matter:

"STORY WRITING FOR CAMPAIGN"

[05/03/11] **Rotharik:** *Campaign concept*: [. . .]
The fun from this campaign will come from great unit variability, differing scenario objectives, some interesting gameplay concepts, exploring (not the map only, but also history of the characters), interesting story arc and high replay value (you can choose different set of characters and also different path every time).
I'm looking for people who can help with:

- Names for places, factions, people etc.
- Creating/completing factions, places, artefacts lore
- Feedback on already proposed ideas
- Story - (joint effort)
- Characters background
- Mono/dialogues writing

(Internet Forum)

At first, a couple of members commented on the general campaign concept and also provided concrete hints on the points listed by Rotharik. However, after a very brief phase of incomplete and fragmented suggestions on these elements, Owaec intervened to help.

[29/03/11] **Owaec:** Have you and [Participant A] started working on this together, or are you still working alone on this? I'd be interested in helping if you still need it, but this topic hasn't been commented on in a few weeks, so I don't know if you're still looking for help.

[02/04/11] **Rotharik:** Still alone. Still haven't figured out the whole story. Without story there cannot be complete scenarios, character dialogues, etc. so the whole project is at dead point. But I thought about something like this:
[Long description of plot draft] [. . .].
But I doubt this will be interesting for the player.

---

[20]Non-linear campaigns are those campaigns where specific scenarios have alternative endings and thus can bring players to different path along the story. In BfW, these campaigns are considered interesting because they add great replay value and longevity to the add-on.

[21]This means that the scenarios of the campaigns would portray very different geographic areas of the fantasy world of Wesnoth and the campaign characters would travel along these maps.

[22]One of participants' habit is to edit and update the first post which opens a thread, in order to provide the reader with the current status of the discussion and avoiding them the burden to read it all for finding specific information. However, this implies that the first original post often disappears or mesh-up with its consequent revisions. In this case, I took notes about most of these revision changes (if I could), but I lack the exact phrasing of the original opening post.

Anyway, everyone can contribute without knowledge of the story: names for places and organizations, characters pasts, and so on.

[02/04/11] Owaec: Funny, I'd come up with a few ideas on the plot, and my favorite idea was going to end with the protagonist being a villain, possibly having Tess lead the mercenaries against him in the end.
Another idea I had involved the protagonist being the true emperor, having been body swapped by the villain. In this case he would be on a quest to return to his true form. [...]
Another idea involves the protagonist secretly being a necromancer, traveling to the north castle to raise the greatest army this land has ever known. This campaign could easily end with him being a villain (using the army to wipe out the alliance) or anti-hero (using unscrupulous methods to defeat the dark elves/empire with minimal casualties among the alliance.) [...]
Anyway, I'll write up some profiles for the mercenaries and post them later.

[02/04/11] Rotharik: I dont know about this. Personally I grew tired of stories where you end up saving the kingdom/world/universe. I like the portal idea more - your decisions still determine the course of the story, but not on global, only local level. And regarding my previous stated idea about eradicating the dark elves with your group: now I dont like it. On the other hand, the anti-hero necromancer sounds interesting [...]

[...]

[03/04/11] Owaec: [...] I've almost finished writing quick blurbs about each of the characters' backgrounds and personalities. As I said, a lot of this will likely get rejected, but it's probably better to present stuff that might spark other ideas than to prod you with questions until I understand what you're going for. I just like to have some idea of where a character comes from because it can lead to interesting ideas for their personalities.
`[List of 11 characters' descriptions]`

[03/04/11] Rotharik: Owaec, these are vibrant, variated, realistic characters. Exactly what I have been looking for. Thank you. [...]

(Internet Forum)

It emerged that Owaec had original and interesting ideas in story writing and characters creation so that Rotharik liked his concept much more than the other suggested ideas. It is interesting to notice that Owaec was the only one who supported his own suggestions with a hint to his working methodology: "I've almost finished writing quick blurbs [...] a lot of this will likely get rejected, but it's probably better to present stuff that might spark other ideas than to prod you with questions".

Since then, Rotharik dealt with the general design and implementation of the scenarios, while Owaec took care of the plot writing, the dialogues and the characters' design. For both aspects, other participants kept providing comments, criticisms and suggestions in the same ongoing thread. Indeed during the project, they provided comments on: story

details concerning both the general plot and the turning points in each scenario; characters background and personality; mechanics and goals of scenarios.

However, as the two authors explained to me, large part of their coordination and work happened behind that public discussion: they kept on publishing and publicly discussing ideas with big impacts on the campaign, but the team's 'daily work' often happened through private and internal messages.

> The way he sends things to me is by uploading the campaign in its current form on the Wesnoth server for download. The way I send dialogue may change as we get more used to working together, but for now I just attach text files with my work to private messages. For now, I code my work so that he can just copy it into his scenario files, but he may decide it's better for me to send it without the coding and leave that part to him.

> (Owaec, Interview, 21/06/2011)

Similarly to Lionel's case, the large bulk of the work was carried out by single participants away from the thread. Occasionally they provided artefactual evidences of their ongoing work put up for discussion.

The two participants were pretty satisfied with this collaboration, which allowed them to almost complete the campaign[23].

> I'm exceedingly satisfied with the collaboration. Collaboration makes the difference between good and great. Without Owaec's help this add-on would never be what it is now.

> (Rotharik, Interview, 27/05/2011)

At the same time this collaboration helped them grow in mutual reliance. On one hand Owaec had to wait for Malifor to include the updated version of the story in the scenario before he was able to see the outcome of his own work. On the other hand Malifor had to fit Owaec's working pace, so this caused delays in his envisioned conclusion of the work.

> I'm working on [`Mercenary`] since March. I thought the whole thing would be completed in three months if Owaec was faster in mono/dialogues writing. Time it takes to 1.0 release? It depends on how many features we want to have in final release and how many people will participate. With current speed of Owaec's writing I guess it will last more than half a year.

> (Rotharik, Interview, 27/05/2011)

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[23]The whole working thread I referred to, spanned over a period of five months and included 60 replies coming from 11 different participants and it is currently considered deprecated. After this period, Rotharik decided to open a new working thread which is the direct follow-up of this one and which discusses refinements of the campaign in its pre-final stage.

Looking for a campaign writer - II

In the previous case the collaboration between the two contributors was pretty spontaneous: Malifor asked general help on specific aspects related to story writing, only later, this turned into a sound and stable collaboration. In the current case the need for searching a collaborator to share the development of a campaign was explicit and conscious.

Kai Krellis is an expert content creator who wished starting a new campaign project in light of his forthcoming summer holidays. His wish consisted of creating an interesting campaign with a good setting and plot. For this reason he started a thread to look for a partner. In his opening post he described pretty explicitly what kind of skills and efforts he would have put on that project and what he would have wanted from his work partner:

> **"LOOKING FOR A CAMPAIGN WRITER ON THE KHALIFATE"**
>
> **[16/06/11] Kai Krellis:** Y'know those threads that pop up where someone says "I have an idea for a campaign, can someone do the coding for me?" Well, this thread is basically one of those, but reversed. I'm currently one of four users working on the [Forum Era], but since it's summer now, I'm finding that I have a lot of time on my hands and I'd like to start another project.
> I am a capable WML coder, however I'm awful at plot design, writing dialogue, etc. So I'm interested in partnering with a writer who has a good idea for a campaign. Let this thread not be mistaken as "Tell me your dumb campaign idea and I'll make it for you and do all the coding!" I'm looking for someone with a really good idea that's worth my time and effort. And I'm not just looking for idea donations; I would like to have someone who's willing to be the writer for all the dialog, story sections, and all plot-related stuff. And I'll do all the coding.
> So, in the past, the Wesnoth community has never been short on ideas... I hope there are some good ones out there now.
>
> Disclaimer: And I'm sure that the Wesnoth community is mature enough that I don't need to say this, but I'll say it anyway, just as a disclaimer: please don't be offended if I don't pick your idea...
>
> (Internet Forum)

He made clear that he would have soon had time to dedicate to campaign development; he was willing to deal with the WML coding for scenarios; he was a capable WML coder. At the same time he was looking for a person fully responsible for story and dialogues writing, and not just for 'donating ideas'. Besides looking for a writer, he was also searching for an original and interesting story.

> **[17/06/11] Participant A:** For a while now I've been kicking around the idea of the Lich-Lords, and the war they lost before they sailed for the Green Isle. It must have been a pretty big war.
> Here's my idea - the Lich-Lords have convinced the saurians that the merfolk and human races ought to be wiped out and so a long war has been going on for many decades. [...]

171

It would be an epic, but it can be a short epic since you'll want to be done before you head back to school. :)

[17/06/11] Kai Krellis: Intriguing. So you would be playing as dwarves and trolls allied together against the liches? Quite an interesting protagonist combination.
I'll keep that one in mind, but I'd like to wait a little longer and see if any other good ideas pop up before I decide. :)

[17/06/11] Elurin: You might be interested in the [FF Campaign (`link provided`)]. Only one scenario was ever coded, though there's a whole lot more written. Read through the topic to see what I mean.

[18/06/11] Participant C: I like the idea of dwarves and trolls fighting along side one another, but doesn't it say somewhere that the first trolls the orcs met were on the great continent? maybe saurians and dwarves? naga and mermen? just a suggestion...

[18/06/11] Participant E: I am not sure that somebody has already started or not, but how about creating a Khalifate campaign?
According to Rakshas, it originally lives far from Wesnoth, so a story that a number of Khalifate moves to Wesnoth will be an effective campaign. My imagination of a basic story in general is: - an encounter/happening – a small climax – a big climax – a happy ending. So I guess that creating a storyline about it is not too difficult.

[19/06/11] Kai Krellis: *@Participant E*:
Ooohh, that's interesting. I don't know of any other Khalifate campaigns, so it's probably an area pretty open to ideas and new stuff.
The thing is... when did Khalifate first appear in Wesnoth, and how do they tie in to the rest of Wesnoth's lore? I'd have to research that a bit, to make sure a campaign about Khalifate is compatible with mainline canon.
Wow, I'm getting a lot of good ideas. It's going to be difficult to choose one. :)

So... I'm seriously considering making a Khalifate campaign now.
If I were to do so... are there any writers who would be interested in collaborating on it with me?
I would do all the coding, you (the writer) would control all plot, story, and dialog. (And anything else that's translatable. :P) Any volunteers? :D

<div align="right">(Internet Forum)</div>

The first two members gave a couple of ideas on potential settings and the plot draft. One of these was about the figure of Lich-Lords[24], the other one concerned the revival of an abandoned campaign. However, none of them managed to draw Kai Krellis' interest enough, who still preferred waiting. Finally, Participant E suggested to base the campaign around the *Khalifate* faction[25]. Since no content regarding this faction had not been created yet, it was

---

[24]A recurring figure within the area of evil creatures in the BfW world, but which is rarely at the 'centre of the stage' in the campaigns.
[25]At the time of this discussion (June 2011), this Faction was just introduced in the Development branch in the attempt to complete and polish its development before the release of the new major version (1.10.0).

easy to create an original artefact. Therefore Kai Krellis decided to base his campaign on that Faction, but the campaign writer was still missing.

The search for collaboration lasted about one week. A couple of people showed interested in that matter, but no one were actually available for the whole work. For this reason Kai Krellis started a first campaign draft without any story writer, although he claimed he would still need that figure:

> **[23/06/11] Kai Krellis:** I've decided to go on ahead and start the campaign, and then I'll hopefully get some writing help later. I'm ready to start coding, but... I still don't even have a storyline. Even if I'm not going for perfect, complete writing right now, I at least need some idea of what my plot's going to be.
> C'mon guys, I need some help. I don't care whether or not you want to be the official writing-person, I just need some ideas to get me started. :)
>
> <div align="right">(Internet Forum)</div>

This renewed call for a collaborator had some effects. Indeed the day after *Participant F* suggested the following idea as a base for the Khalifate campaign:

> **[24/06/11] Participant F:** I have an idea taken straight out of the history books.
> The assumption this story lays in the fact that the biggest difficult for any empire is that of succession. Countless wars have been fought over who should ascend to the throne after said monarch's death. In particular I am thinking of the story of Xenophone. For those of you who don't know the story it goes like this.
> Xenophone was an officer in the Greek military and after the death of the Persian ruler his two son's fought over who should be the next ruler. [...] My suggestion is to have the story as a similar tale. [...]
>
> **[24/06/11] Kai Krellis:** That's exactly what I've been looking for! `Participant F`, if I were to use that idea for the campaign, would you be interested in being the story and dialog writer?
>
> **[...]**
>
> **[24/06/11] Participant F:** As for doing the dialog and story for this campaign yes sure I would love to. I have commitments with work and university at the moment but I am sure I can find the free time to do this. Though word of warning, whilst I am confident I can create a good story and good dialog my spelling and grammar is terrible so you may want to proof read it!
> How many scenarios were you thinking? I was thinking we could tell a good story in 10-12 scenarios.
>
> <div align="right">(Internet Forum)</div>

Despite the commitments *Participant F* was sure he could help, so he confirmed his availability.

They continued discussing on the thread for refining the story plot and getting suggestions. At that point Kai Krellis realized that the key objective of the thread has

been achieved[26]. For this reason coordination between Kai Krellis and *Participant F* continued via private messages:

> **[24/06/11] Kai Krellis:** I think this thread has basically served its purpose now. We'll move the discussion to PMs[27] for now, and once we have a playable version with a couple of scenarios, I'll make a thread for the campaign in Scenario and Campaign Development. There's no need for further posting in this thread, and I don't want it to drift off-topic and end up getting locked, so please refrain from posting here unless you really have something you need to say.
> Thanks, everyone! :)

<div align="right">(Internet Forum)</div>

However, one month after his last message, Krellis communicated the following piece of news (without any prior warning):

> **[24/07/11] Kai Krellis:** Unfortunately, it seems that [Participant F] has disappeared from the forums. So until he returns, (if he does) I suppose this project is going to be put on hold. In the meantime, I'm planning on reviving another old project of mine that I never completed.
> If [Participant F] reappears, I'll resume work on this. Until then, farewell.

<div align="right">(Internet Forum)</div>

After nearly two months spent to identify a person who would take responsibility for story writing, *Participant F* disappeared, so project stopped before even reaching the status of minimal prototype. The project idea for the campaign remained unfinished, awaiting for possible recovery. No one, probably except for me, seemed surprised (or bothered) by those events. Kai Krellis' statement was almost unnoticed and provoked no disappointment.

In this Section I explained how participants join together when they try to (co-)create specific artefacts. Such a phenomenon should not surprise since it had already been described elsewhere. For instance, Weber claimed that FOSS is characterized by the "formation of *episodic communities on demand*, so called virtual organizations that come together frictionlessly for a particular task and then redistribute to the next task just as smoothly." (Weber, 2004, p.171). Furthermore, through three fine-grained examples, I showed how such aggregations give birth to what Scacchi defined as the software informalisms[28] of FOSS.

Two interrelated aspects emerged as crucial in this part: (*i*) the relationship between individual and collaborative contribution and (*ii*) the public co-construction of the artefacts design.

---

[26]*i.e.* finding a collaborator and defining the setting for the campaign.
[27]Private Messages.
[28]See Section 1.1.2.

Single participants team up to give shape, refine and improve their project ideas. However, these individuals are responsible for pursuing such projects. If they disappeared or stopped being involved in those projects, these would die or would be interrupted. Similarly, in cases of complex artefacts, this collaboration gets more self-aware because single participants cannot carry on such projects on their own. The design and implementation of a campaign, for instance, is an effort which cannot be brought forward individually, or at least not, if such a campaign aims at becoming known and used in the collective. However, even in the case of complex artefacts, the contribution and the commitment of the single individuals remain crucial. Furthermore, these collaborative moments – these 'episodic communities' – leave traces narrating the evolution of the artefacts and, at the same time, define an a posteriori rationale for such artefacts. For instance, the Young Ogre's look like is discussed in the working thread, but this discussion also defines the rationale used to draw the Young Ogre itself. Finally these traces – the threads – are only a partial part of the work. Indeed, large part of participants' work remains out of these threads and only appears in artefactual forms (*e.g.* a new portrait draft, a revised campaign plot).

5.2   Coping with uncertainty, coexisting with 'real life'

I first met the term *wesbreak* in relation to my wish of interviewing Cylanna. I noticed her due to her involvement in a peculiar Add-on project[29]. She is one of the two authors of a Faction designed to reproduce some of the participants in the collective as battle units for the video game. I wanted to know more about the origins of such an interesting[30] Faction. However, when I was about to approach her for recruiting her, I noticed the following disclaimer in her signature[31]:

> Mainline: [Link to project]
> UMC: [Links to projects]
> I'm having Internet problems, so I'm on a forced Wesbreak until I get things resolved.

> (Cylanna's Forum account signature)

---

[29] At the time of my entrance into the field, this project was already started and Cylanna was no longer leading it. However, there was still considerable activity on it.

[30] I found it particularly interesting as a collective's reflexivity effort. Beside the most general implication of bringing participants *within* the game, the project also called for each participant to consider which personal skill to embed in the battle units which would portray themselves in the Faction.

[31] For this reason, the planning and conduction of this interview took a little more patience than the other ones. See Section 2.3.2 for more details on this aspect.

Later I began noticing the jargon much more often in other participants' signatures and in ongoing discussions. Approximately in the same period I was conducting an interview with a Forum Moderator, Li'Sar, and asked him to make clear what that jargon meant[32] and how common it was. Soon, it became evident that the phenomenon was indeed a common one:

> Sorry this is such a boring answer. Wesbreaks just aren't anything special. LOL[33] :)

<div align="right">(Li'Sar, Interview, 06/08/2011)</div>

and whose meaning was clear:

> I'm not sure where the term came from, but it has really caught on and it just means "a break from Wesnoth". It's our way of letting each other know that we won't be around for a little while for whatever reason.
> And, Yes I have taken a "wesbreak" before, and I am on one right now I guess. Sometimes they happen due to vacations. Other times it's because people have other obligations. Mine tend to be caused by school. This particular one though is just so I can break my IRC addiction.

<div align="right">(Li'Sar, Interview, 06/08/2011)</div>

In regard to the origin of this term, even though a long-time member such as Li'Sar could not recall it, it is relatively safe to assume it was inspired by similar collaborative and participatory phenomena. For instance, in the cases of addicted gaming in World of Warcraft (WoW) (Nardi, 2010) or intensive participatory commitment in Wikipedia it is common to witness people announcing their intention to interrupt the involvement in such activities. It is well renowned the case of Wikipedia where participants leave a note on their personal pages to announce they are on a 'wikibreak' (a break from Wikipedia) and thus will not be around to contribute (Reagle Jr, 2010).

However, despite the predictability of finding this phenomenon in Wesnoth, what I progressively discovered as interesting was the relevance that it has for the collective. In this Section, I clarify why the phenomenon of widespread wesbreaks is not entirely neglectable if we are interested in the evolution of the software and of the collective.

The general meaning of the term is properly understood across the whole collectivity, but there is no homogeneity in its use[34] with regards to the aspects mentioned by Li'sar: the duration of the break, the reasons for such interruption and the way to communicate it.

---

[32] The roots of the compound word are self-explanatory, as Li'Sar confirmed me. However, I was interested in understanding if there were hidden nuances or implications related either to the term or to the phenomenon itself.

[33] "LOL" is a very common acronym in Internet slang, used to convey emotional states and which stands for "Laughing out Loud".

[34] The practice of *announcing* the wesbreaks in the collective is a spontaneous one. There is no definition of or guideline for *wesbreaks* in the Forum, in the documentation or in ongoing discussions. On the contrary, the "Forum Posting guidelines" indicates how to conduct a respectful conversation and how to properly communicate issues on ongoing works.

Usually they talk about wesbreaks when contribution activities stop for a relatively long time, from a few months to years. For some participants such a break is due to lack of creativity and inspiration, for others is due to fortuitous and 'external' events. Anyway, when people announce a break, other participants expect them to come back later and resume their project or start a new one. Unfortunately, this does not always happen.

> I would say that most of the time, people do not say they are on wesbreak and then fail to come back. That is, if someone makes it clear that they are on a wesbreak or going on one, (such as by mentioning it in their signature) they usually intend to return eventually. Occasionally, I suppose, people do simply disappear and never return, but this is not usually in case where someone first says they are going on wesbreak.

> (Kai Krellis, Interview, 31/05/2011)

The challenge in assessing the duration of the breaks seems related to the reasons that called for it. Sometimes, participants have breaks to recover from a burnout.

> I'm still early into my first project, so I've never taken a wesbreak. I can definitely understand how a person could get burned out by working on these sorts of projects, though. Sitting in front of a computer for extended periods of time staring at code can be draining; eventually you just need to take a break and do something else

> (Owaec, Interview, 21/06/2011)

For instance, here below is an excerpt concerning the development of a famous Add-on for a MP Era. One of the leading contributor reacted to the comments on a pending bug in this Add-on. Basically, he made clear that he was currently not involved in the Add-on project, because of his burnout:

"Add-on development thread"

[12/08/09] Participant A: Wow, that must be an old bug. A very old bug.

[12/08/09] Participant B: So is [`Participant C`] no longer maintaining the [`Add-on`]? :(

[12/08/09] Participant C: I've been pretty burnt out lately. I'll come back sometime (not sure how soon), but til then Jarek is more than capable of removing bugs, etc.

> (Internet Forum)

In other cases reasons do not regard contributory efforts. Cylanna's Internet connection problem is a fitting example. The approaching of university exams, a new employment, changes of work shifts, or family reasons are additional examples. Here Kai Krellis explained to me how the end of the school year and more personal activities prevent him from contributing, so he was to take a break from Wesnoth:

> [Another] significant wesbreak began about two months ago, and only recently (within the last two weeks or so) have I recovered from it. This one was due to an extremely busy schedule at the end of the school year. I found myself overloaded with school work and extracurricular activities, giving me little time for wesnoth.
>
> <div align="right">(Kai Krellis, Interview, 30/05/2011)</div>

As I said, both breaks due to burnout or different reasons cannot be easily predicted. For instance, Cylanna's Internet connection problem lasted about eleven months, without her having the possibility to understand whether a solution could be found[35]

> At this time I can't say for sure when I'll be back more regularly. Unless I suddenly get broadband or DSL in my area (unlikely, to say the least), my internet connection will remain infrequent, at best, and completely dead, at worst. Had I the opportunity, I'd be back on the forums full-time, but unfortunately that's just not plausible right now. Despite that, I'll probably be able to check up on the forums slightly more often now that summer's here and my academic workload is slightly lessened (although I'm still taking summer courses).
>
> <div align="right">(Cylanna, Interview, 01/06/2011)</div>

Similarly, the draining of creativity, which usually comes from intense activity periods, is a question mark in relation to *when* the interest for contributing will come back.

> The first [break] lasted for about four months. This wesbreak was largely due to loss of interest and creativity for Wesnoth, because I had attempted to begin writing a campaign, but had found myself overwhelmed and given it up. That was followed by a time in which I played wesnoth very little, and did not check the forums at all. I'm not sure what exactly it was that brought me back, but after some time, I gradually began once again becoming more involved in the community.
>
> <div align="right">(Kai Krellis, Interview, 30/05/2011)</div>

More importantly I noticed that participants are often wrong, when trying to forecast[36] how long their break may last.

About communicating breaks, participants customize their own signatures in their Forum accounts for that. Although not everyone does it. In fact, some participants take a break without letting it know and the only thing they post is about the *end* of such breaks, when they resume activities. The following contributor, for example, came back to his project after a break and noticed that other users had reported a couple of bugs in the Add-on he had been developing. He only acknowledged the break when he came back[37].

---

[35]During this period, Cylanna attempted to do some artwork for Wesnoth, either by connecting from other places or by using the shaky connection available in her living area. However, this condition allowed no working continuity to her attempts.

[36]I am referring here to miscalculations in terms of a month or more, not just of a few days or a week. I directly witnessed more than once participants who delayed of about two months their real comeback from their declared wesbreak. For instance, in his opening post of the portraits' working thread, Lionel stated that he intended to finish all the work by beginning of June. However, as of September there were still a couple of portraits missing.

[37]He did not include a notice in his signature and neither announced it in any of his recent messages.

> Sorry everyone, I had a little wesbreak.
> I'll be fixing the issues today and upload a fix.

Finally, I should point out that these breaks occur more than once during members' participatory life. Except for one[38], all my interviewees acknowledged they had taken more than one break during their whole participation[39] to the collective.

> For as long as I have been playing and contributing to Wesnoth, I have had an unusual work schedule. I have about three months off during the winter, but work 12 to 14-hour days the rest of the year. I have never 'decided' to go on wesbreak, but when I am working long hours, it is hard, or impossible, to contribute to the project.

> (Nym, Interview, 03/03/2012)

> Yes, i've been on several "wesbreaks". For instance at one point I was starting a business with a friend, and needed to simplify my life. At another point we'd essentially reached the limit on the number of terrains that could be added (with the then current system), so there wasn't much i could do. I've been on a lot of wesbreaks counting large and small.

> (Relana, Interview, 11/06/2011)

Here is a key two-fold aspect. On one hand participants are volunteers, so it comes with no surprise that contributions might be unexpectedly interrupted. On the other hand each participant enacts differently such interruptions, so it becomes quite difficult to evaluate whether developments will be resumed. For those reasons, sooner or later, the leading contributors of a given Add-on might stop contributing, come back in a distant future or not at all (in case they are already in a wesbreak).

One may also affirm that, since each contributor is usually the only responsible for their own project, such breaks may represent a problem only for both the contributor and the artefact, but given that artefacts are highly interrelated[40], interruptions may also affect other participants. Similarly one could affirm that, since there are no formally defined 'roadmaps' or deadlines to attend to, then this phenomenon only requires a little more patience in waiting for further developments. Somebody claims: It Is Ready When Is Ready (IIRWIR), but this "wait-and-see" approach is not without implications, as I argued in the next paragraph.

---

[38]Owaec was the only one among my informants who had not yet undertook a wesbreak at the time of my interview with him, as reported above in his quote.

[39]I have no sound data to make the following statement as a research finding. However, to help the reader getting a better picture, I argue that participants who are actively involved in the collective for longer than a year are likely to have already taken one or more wesbreak. I base such idea on what expressed by my informants and on the characteristics of the interviewed sample: see Section 2.3.2 for more details.

[40]As I hinted in Section 3.3 and 5.1.

5.2.1   Unpredictable participation

The uncertainty about the actual presence of participants or about the development of some artefacts becomes particularly evident in two cases: the wish to take over other users' work and the upgrade to a new major Wesnoth release.

Here below is the opening part of Lionel's thread I discussed in the previous pages. Some of the portraits he had been hired to develop were missing, while some had already been produced by other participants. However, the existing ones lagged behind in meeting the actual artworks' quality standards.

> **"LIONEL'S ARTWORK"**
>
> **[07/05/12] Lionel:** Hi crew!
> For some time now, there have been talks with Pirk about commissioning my next series of portraits; I am glad to announce that this project begins today! The aim is to give our portrait roadmap a boost and get closer to the completion of the revamping work that began over 3 years ago. To that effect I will tackle a large assignment of 14 portraits, which I will endeavour to produce over a relatively short duration since I'll be doing this full time in my working hours.
> *Overall planning*: Accounting for my other professional duties, the current completion date would be early in June, with an average pace of 3-4 portraits per week.
> *Assignment list*: Some of these are brand new portraits ; others will replace existing artwork that has fallen below Wesnoth's current standards. [. . .]
> —
>
> `[List of Portraits]`
>
> **[07/05/12] Participant B:** Looking forward to it! But isn't Eastern Invasion already taken? I guess it's been a long while since the last update, so it's dead?
>
> **[07/05/12] Lionel:** About Eastern Invasion, `[participant c]` produced a single finished portrait over a year ago before vanishing. We discussed it with Pirk, but as much as we hate stepping on other artists' toes, in the end our conclusion was that we can't wait forever.
> Back to the assignment now. [. . .]
>
> (Internet Forum)

A participant claimed that a campaign portraits had already been taken in charge by another artist. This matter had already been discussed by Lionel and Pirk, one of the Art Directors. Although they affirmed that they would not like the taking over other artists' work, they mentioned that waiting forever would have also been impossible. In addition, the only complete artefact produced by the prior author was one of those which had already fallen below the current art quality standards. For that reason it was considered outdated too.

Similarly, in case of a major version upgrade, changes to the Wesnoth Markup Language (WML) affect most of the available add-ons. As a consequence, when a new version is

released, all previous add-ons need to be proofed to be compatible with this last one[41].
Technically, they need to be *ported* to the new major stable version. Of course, this necessity
to port the add-ons from one version to another is a recurrent one: it arises again every time
a new major version is released. For this reason the collective uses specific tools for Add-on
maintenance. Amongst these, `wmllint` is particularly interesting:

> **Wmllint** is a tool for migrating your WML to the current version. It handles two
> problems:
>
> - Resource files and macro names may change between versions of the game. wmllint
>   knows about these changes and will tweak your WML to fit where it can.
> - wmllint will translate your maps for you, unless you use custom terrains in which
>   case you will have to do it by hand.
>
> wmllint also performs various sanity-checking operations [...]
>
> (Documentation, "Maintenance Tools")

Add-on creators can use wmllint to port their creations from one version to another. However,
this process is not automatic and must be done manually: participants have to set up a
working space for running wmllint on their add-on files, then they have to make sure that all
wmllint operations run successfully and manually edit the portion of the code which wmllint
could not fix. The add-on will then be compatible with the new version.

When some time passes after the release of a new major version and an add-on has not yet
been ported to that version, then the players start asking questions about them or complain
about missing ones. The doubt that those add-ons became unmaintained can come up. In
the two following examples the issue of (possibly) abandoned add-ons emerges.

A fan of Role-Play Game (RPG) could no longer find the add-ons[42] he was used to playing
with in the 1.8 game version.

> **"RPG ADD-ONS"**
>
> **[06/04/12] User A:** I'd like to know if some of you know a great multiplayer RPG Addon
> available on 1.10 ? I tried [add-on x] and [add-on y] but I don't find any other RPG.
> Does someone know when all the RPG addons (like the [add-on z]) from 1.8 will be
> available on 1.10?
>
> **[06/04/12] Participant A:** When and if whoever is currently maintaining them decides to
> update them. People enter and leave this community so some projects get abandoned.

---

[41]Another way to avoid this trouble is to design and develop the add-on for making it work on this forthcoming
version. It is possible to do so, if content developers use the development branch of the game. However, this
approach has other inconveniences. For an idea about such inconveniences see Section 2.4.2. For more information
about stable and development branches see Section 3.2.5.

[42]These kind of add-ons slightly blur the design of the game from a clear turn-based strategy game to a more
RPG oriented one. Here, the goal is no longer to defeat the enemy, but rather to enrich the skills and equipment
setting of the players' leader units.

Sometimes somebody else will take over, but often nobody bothers.

[06/04/12] User A: Well, you gave me the idea to make this, thanks :)
I'm gonna try to watch if I can take addons from 1.8 and make them work in 1.10
When there is a change in wesnoth versions, does addon from previous version follow automatically if they work or addon's maker must do it everytime ?

[06/04/12] Participant B: The add-on's creator must re-upload them to the new add-on server once a new major version of Wesnoth is out.[...] As there are some syntax changes in 1.10 compared to 1.8, and as RPG's tend to use rather complicated WML, it might be that you do not succeed in making 1.8 add-ons work out of the box. So, don't feel bad if you don't manage to make them work. ;)

<div align="right">(Internet Forum)</div>

Two other people make him notice that this is a normal situation due to the coming and going of participants. Unless someone else is available for taking add-ons maintenance in charge, these would probably be unported. Paradoxically, this situation may represent a trigger for non-participants to get involved in such projects. Indeed, *User A* signed up to the Forum to only ask the above-mentioned question, then she found out the chance to port the missing Add-on, so she decided to make a trial[43].

The issue regarding unported (and probably no longer maintained) add-ons is so renowned that sometimes participants try organizing and collaborate to prevent playable content from being lost. As I mentioned at the end of Section 3.1.2, while the add-on server for BfW v1.8 contains about 400 add-ons, the server for v1.10 only includes about 100 of them.

In the following example a participant starts a thread in the attempt of porting as many campaign add-ons as possible to the new add-on server. He manages to collecting and sorting all information about unported add-ons and called for the other collective's members to help.

"List of unported UMC"

[03/05/12] Participant A: Now that 1.10 has been out for a couple of months, it's a good time to take stock of what UMC remains to be ported. I've drawn up a list of (single-player) campaigns that have not yet been ported. And my attachment includes an HTML file that lists all unported add-ons of every type (as of mid-April), with all the standard details (descriptions, downloads, uploads, dates, etc.).
Note that this only purports to be a list of *unported*, not necessarily *abandoned*, campaigns. 1.8 developers in particular may still straggle in with their own ports (as in my own case). As always, please try to contact the original author (or last maintainer) before starting a port. [...]

---

[43]However, at the moment of this writing, this user had not yet been able to provide a ported version of the given RPG Add-ons.

—

```
[List of Unported Add-ons 1.8]
[List of Unported Add-ons 1.6]
[List of Unported Add-ons 1.4]
[List of Unported Add-ons 1.2]
[List of Unported Add-ons 1.0]
```

—

[11/05/12] Participant B: I ported [`add-on V`] made by [`participant L`] (I tried to PM him but he doesn't visit the Forums for months), and loaded it up to the 1.10 Server. Please remove it from your list.

[14/05/12] Participant B: I ported [`add-on K`] made by [`participant K`] I send him the modified files, and he loaded it up to the 1.10 Server. Please remove it from your list.

[01/07/12] Participant C: I didn't know anyone kept track of those things. :) I have been intending to port my campaign to a current version of Wesnoth, but I also want to add another piece of the storyline (for those of you who have tried it out, you know that it has an abrupt ending). If someone is intending to port it to a current version, I would greatly like to be contacted first (the chances are slim that anyone will want to port it, but just in case). I do check my PMs regularly.
P.S: This applies to all campaigns that have an author of [`Participant C`].

(Internet Forum)

The list of unported add-ons for the 1.8 version includes 68 campaigns and only eight add-ons had been ported[44] from version 1.8 to 1.10. In this example the add-ons are considered "unported", even though the author of the thread wondered whether they would be abandoned. Uncertainty is further made explicit by a request to contact the original authors before trying porting their add-ons. Indeed, when a couple of participants helped in porting a few add-ons, it emerged that some authors had no longer been reachable or interested in their add-ons.

5.2.2 Allowing wesbreaks to sustain long-term participation

According to an experienced and long term contributor such as Relana, these breaks allow participants to maintain their affiliation to the collective over the long term:

> Allowing wesbreaks large or small whenever you don't feel like working on wesnoth is IMHO the best way to get the most work out of people over a long time.

(Relana, Art Director, Interview, 11/06/2011)

Given that this is an open and volunteers-driven collective, participants are not formally obliged to accomplish their duties (which they have none, strictly speaking), neither when

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[44]At the moment of this writing (Sept. 2012).

requested by developers in higher position in the hierarchy. No one has the power either to grant participants or prevent them from taking wesbreaks. "Allowing wesbreaks", in Relana's quote, means to nurture and maintain an environment, a collective's culture, which does not stigmatize participants when they continuously start and stop contributing.

Despite the fact that these wesbreaks constitute a broader phenomenon than *burnout*, it would be useful to briefly compare the two. In particular, for this comparison I took a type of burnout which manifests in a very different setting than the Wesnoth collective. This should help highlighting important differences.

In highly competitive and business oriented IT companies such as the Tech Corporation described by Kunda (1992), burnouts do happen, and people do talk about burnouts. Employees and managers constantly work under pressure, but they know they should avoid to burnout. Indeed when and if burned out employees come back to work, they are stigmatized: they receive simpler and less rewarding tasks, people do not fully listen to them and, ultimately, they have a marginal citizenship in the employees' collective. When burned out employees come back to work, they lack of confidence and feel outcast. Furthermore, colleagues do not want to hear anything about burnouts or other personal problems from people who experienced them. Indeed, usually, there is a dedicated staff for helping and support these situations (Kunda, 1992, p.203). Most importantly, burned out employees are 'spectres' that remind all other employees that they should not become one, burned out employees are kept at Tech Corporation to serve as a warning to other employees not to burn out.

In Tech Corp. burnouts and the associated consequences of temporary absence from work are often conceived in this way:

> A person is considered burn out when they are unable to contribute. Working too hard, worrying too much, stress frustration etc. cause burnout. Many times manifestations are serious to the person involved. These person may also be called one of the "walking wounded." Burnout will damage a personal reputation as people want to be sure they can rely on each other. (Kunda, 1992, p.75)

I am convinced that such an environment in the Wesnoth collective would hardly allow wesbreaks in the way suggested by Relana. Indeed, as I claimed above, people who take wesbreaks are treated quite differently.

Announcing wesbreaks is a consolidated practice which is hardly treated with disrespect. In cases of quitting announcements, these are even greeted with 'affection' or 'empathy':

"Forum Era"

[21/03/12] Participant A: This post is coming very late, I know, but it is only bearing sad tidings (or maybe relief for some of you).
It is time for me to say farewell to Wesnoth. My (real) life is beginning to take over my life, as it should, and consequently I simply do not have the time for Wesnoth anymore. [. . .] It may seem irresponsible of me to just run off with the Era half-baked, but believe me, I would really liked to have finished this. It's just. . . not in my ability to handle this responsibly anymore.
My thanks to the developers and my friends here who made my time here a blast. PM me if you'd still like to keep in contact with me. To everyone else, *adieu*.

[21/03/12] Participant B: Farewell! It was nice to work with you. Good luck in your future life! :)

(Internet Forum)

Similarly return from breaks is quite unnoticed or, anyway, fall within what is considered 'normal'. Sometimes, if participants who were involved in producing successful add-ons come back from breaks they may be cheerfully greeted by other participant, but generally there is not such a reaction for the average contributor. More importantly, I noticed that the return to the collective happens following concrete contributions (*e.g.* an updated version of a suspended add-on; a small prototype for a new campaign), rather than just with an announcement.

"Having fun with some artwork projects"

[20/09/11] Participant A: So after a long NEEDED wesbreak. . . (It's been a while) I've managed to pick up some non-wesnoth art projects. I think they helped me quite a bit. Added another sword. Wesnoth Sprites will follow.
—
`[New artwork element attached]`
`[New artwork element attached]`

(Internet Forum)

"Various coding problems"

[25/07/11] Participant B: Hey I'm back from wesbreak and I have started work on a new campaign (that frankly will be more fun to make than [`old add-on`]. I may get back to [`old add-on`] someday though). In the first scenario there are enemies coming in pairs of two for a while every turn.
Is there an easier way to do this than making an event for each turn?

(Internet Forum)

Finally, I could not find offensive reactions to people who took wesbreaks. At most I could notice regret about abandoned artefacts or projects.

"Suggestions for next version"

[15/04/12] User: Why aren't there simply more campaigns by default? There are some highly known add-ons most people download after installing the game, such as [add-on x] or [add-on y].

[16/04/12] Baldras: Because campaigns aren't included in mainline based on their popularity. Unfortunately, the people in charge of this have also been rather inactive as of late.

(Internet Forum)

I claim that being part of a collective where people are widely accepted, even if they do not manage to complete their projects, gives chances to participate without the need for making strong 'in-or-out' decisions or the fear of being stigmatized, if they quitted. Participants can contribute *when* and *if* they feel more inspired or have more time to dedicate to BfW and, according to a few of my informants, this makes participation more sustainable over the long-term period. However, this comings and goings has its own implications. One is the uncertainty whether an artefact or project may be further developed; another regards the limited durability of the artefacts which do not keep up with the development of key software elements[45] (*e.g* the WML; the renewed quality standards). This seems true both for official components of the game, which may lag behind in meeting the quality standards, and for add-ons, which may not be compatible from one version to the following one. One last aspect relates to the uncertainty due to the taking over of projects and artefacts started by others. Indeed, there is the tendency to wait for the original authors to come back, even though this does not always pay off. In this case work done gets often lost and rarely resumed and revived by others.

Paradoxically, in the case of BfW one aspect which makes participation more sustainable is the chance to interrupt and resume contributing activities. However, in a broader perspective, this calls for the collective to be resilient to the abandonment and the perishability of artefacts.

5.3   Why participants do what they do

During my fieldwork my attention, which initially focused on development-oriented spaces, moved to environments dedicated to users participation, so I happened to deal with a quite different pace of activities and ongoing discussions: many more people were involved

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[45]The development of these elements is not exempt from issues related to wesbreaks.

in many more projects concerning different aspects of the collective. These seemed to emerge, develop, slow down or come to an halt more commonly than I could observe for the development-oriented spaces. That difference slightly confused me at first[46], but soon brought my attention on the motivations for users to contribute voluntarily.

Social recognition (in the collective) is usually considered a key motivation[47] for volunteer developers to contribute in FOSS projects (Lakhani & Wolf, 2005). How does this translate in the case where such recognition should be addressed among a multitude of participants working on smaller, relatively independent and more heterogeneous artefacts, rather than to an handful of developers working on a single artefact? In other words do non-developers voluntarily participate based on the same (or similar) motivations which drive volunteer developers?

To a large extent I was able to identify very similar motivations to the ones that are traditionally ascribed to developers, which rest on the two axes of intrinsic and extrinsic motivations. Basically, BfW users, too, participate in the collective driven by: an interest in learning or improving their skills by getting involved in a specific kind of digital work[48]; the wish to give 'something in return' to the collective which produced a video game they love; the wish to create and to test their own creativity; the ambition to be acknowledged for the work done; the amusement of being involved in the collective's activities.

For instance, the following quotes from interviews with two participants show that the active engagement with the collective can be associated with the motivations above expressed.

> I joined the community for the sole purpose of being able to contribute in some way to the game. I almost instantly decided I wanted to learn how to create unit graphics, and I began to learn how to create pixel-art. It was an uphill battle, but I've been at it pretty consistently since December 2009, and I'm proud to be able to say that, with the help of such notable Wesnoth artists as Rakshas and Delfador, I've become fairly decent at creating Wesnoth unit sprites.
> My motivation for contributing originally came from a desire to be able to create my own art for my Wesnoth mods, but eventually my principal motivation became the blue name

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[46]For instance, I often needed to review my jotted fieldnotes about potential interviewees by (re-)thinking about what kinds of contributions they could have given and how much this input may have been considered in the collective: across each contributory area (*e.g.* artworks, maps, and campaigns) new people kept appearing and declaring their intentions or progresses in contributing, but not always further actions followed intentions.

[47]For an overview on these motivations see Section 1.1.1.

[48]It is interesting to notice how this aspect influences participants' working life. For instance, in the professional website of one of the Art contributors he declares the following: "Who I am: A self-taught illustrator, I have been using the tools of the trade for over five years. This venture started as a side project to my former job as an IT business analyst, when I joined an open-source game development community. It quickly became clear that illustration was something I wanted to do in the long run, and that pursuing an engineering career wouldn't help achieve this goal. So I bid farewell to my job and set on the path to freelancing."

of an art contributor. I wasn't interested in the blue name simply because of the respect it afforded from the community, however; it was more about a personal goal for me, to see whether or not I could develop my skills enough to become an art contributor.

(Cylanna, art contributor, Interview, 01/06/2011)

The change between playing and making my own content occurred mostly because after I got bored with the mainline content I went to the add-on server, downloaded some stuff, played it and thought "Hey this is cool, I want to make stuff like this too". So i learned WML and made my first add-on. I actually really liked the logic of coding, every error that came up had a reason for it occurring and also a definitive solution, as well as the satisfaction of making something that other people would be willing to download and play. So I expanded what I tried to code as well as taking over maintenance of several add-ons. This experience is actually what led me take an Intro to Computer Science class in high school and then to declare myself a Computer Science major in college.

(Ethiliel, Interview, 22/06/2011)

A simple socio-technical device such as the possibility to award different coloured names[49] for the Forum members seems enough both to grant visible recognition across the collective and to set a challenging goal for the contributors. Similarly, a relatively easy mechanism for creating and sharing content such as combining the Wesnoth Markup Language (WML) with the add-on server can motivate more users to join in the production of game elements.

Nevertheless, these general motivations and the subject of 'contributing for fun', in particular, request further discussion. On one hand connected to such motivations there is no general commitment to the FOSS ideals. On the other hand users start participating because they are 'passionate users' and they have fun getting involved in the collective's activities, but long-term involvement puts into question both their being 'users' and their 'having fun'. In the following sections I addressed these issues.

5.3.1 Contributing without a strong ideology

Participation in the Wesnoth collective happens without a strong commitment to the fundamental Free Software principles or, at least, this is quite clear for participant users[50], who hardly contribute for ideological reasons.

For instance, discussing the BfW licensing system with them, allowed me to understand that only a few of them have a sound knowledge of the license terms.

I'm not a lawyer, so there may be some implications I am unaware of. But yes, I knew the add-ons were GPL. I had no commercial ambitions for anything included in them, and if someone else can use something from them, that's nice.

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[49]See Section 3.2.6 for further details.

[50]On the other hand, a few long term developers were pointed to me as being affiliated to the GNU GPL and the Free Software ideals. For them contributing to BfW as a Free Software artefact could have been part of their motivations. However, during my fieldwork, I had no chances to talk with them because they were already inactive and distant.

> I think I've heard somewhere before that the nature of GPL means that new developers can more easily make contributions and thus make Wesnoth develop more quickly, and that Wesnoth's codebase has been useful to projects outside of Wesnoth- but I'm no coder and honestly this is all hearsay. I do believe the GPL has had a net positive impact, though it's also changed the userbase's social interactions regarding user created content slightly.

(Delfador, Interview, 30/05/2011)

Participants only care about the practical implications that the licence has for the game distribution (as a gratuitous product) and for the possibility to reuse and share its content. Only one of my informants recognised that the GNU General Public Licence (GNU GPL) adopted by BfW is a flagship for the Free Software movement. No one mentioned nor hinted the fact that a software which is *free* is ethically better[51] than a proprietary one[52].

> Yes I know the licence, I know what it implies; honestly, if someone were to use my Era to do something else, but under the same license (because that is a requirement), I would be happy since it means they like it. :)
> I believe people enjoy this game because it is gratis, of high quality and anyone can modify it as pleased.

(Konrad, Interview, 07/05/2011)

The license is mainly conceived as a legal tool allowing users to access, use and reuse the content in the collective, but I should notice that the benefits of these practical implications are somewhat contested. No one is contrary to the distribution of their own content under the term of the GPL. Instead, most participants consider it an achievement and a reason for being proud, if others appropriate their content. However, some participants criticises[53] reusing existing content, because, in their opinion, it lowers the originality and quality of the available content. On the other hand, other participants would favour different permissive licences[54] for specific content types, as Delfador and Cleodil pointed out:

> One thing that I have sort of a strong opinion about is the obvious effects of the GPL license and the obvious effect this has on wesnoth development. Namely, it makes obvious shortcuts in terms of graphics assets and "appropriation" of such assets [...]

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[51] As supported by the Free Software Foundation (FSF) and as Free Software activists might argue. See the the Introduction for further discussion.

[52] In order to clarify, I am not arguing here that participants do not know what Free Software or Open Source are, neither that they are against "Free Software" and in favour of "Open Source". I am arguing that users participate to the collective for different reasons than ideological ones. They see the use of the GPL license as a good mechanism to allow the project to grow and to renew itself and its content.

[53] This is particularly evident for participants working on artworks or music compositions.

[54] *Creative Commons* (CC) licences are a variety of licences which are inspired by the FOSS licences, however they are designed to cover content and artefacts other than software. CC is also a non-profit organization which "develops, supports, and stewards legal and technical infrastructure that maximizes digital creativity, sharing, and innovation. The institutional website of *Creative Commons* is http://creativecommons.org/licenses/. Lawrence Lessig, one of the main theorists behind the CC explained the underlying motivations and principles which are at the basis of these licences in *Free Culture* (Lessig, 2004).

> I don't like UMC authors who use makeshift art, and I think of requesting or borrowing art from artists as slightly demeaning to the authors. What do I support in the GPL system, then? To be honest, I'm not entirely sure. I understand this makes me sound rather elitist- but then again my standard for addons has always been in terms of how good the art is, and I just have trouble seeing the point of an addon that doesn't have impressive art

> (Delfador, Interview, 30/05/2011)

> I think, that if the Wesnoth code base hadn't been released under the GPL the project could never have gotten as far as it has, but a lot of people wonder why the art and music aren't under a more restrictive license –perhaps a CC one allowing redistribution but not modification, or one requiring only noncommercial usage (which, incidentally, would have made releasing Wesnoth for the iPhone impossible, and so made impossible a substantial source of income for the project which has been fed back into creative better content)

> (Cleodil, Interview, 13/06/2011)

The porting of BfW to the iPhone platform and the necessary inclusion of the game in the Apple Store mentioned by Cleodil is consistent with the argument so far. Despite the controversial nature[55] of such inclusion, the issue was debated only within the developers' group[56]. Users (participants and non) hardly complained about the decision to sell BfW through the Apple Store. Indeed, I was able to find only few archived discussions about this issue, where participants primarily tried to understand and clarify the legal implications of such inclusion rather than arguing against it.

The fact that Wesnoth is FOSS *per se* does not seem to influence much participants' motivations and attitudes towards their involvement in the collective and video game development. Basically, there is no 'dominant culture' in the collective *as a Free Software collective*: they are not doing it for the *software freedom*, as some activists might propose. In a broader perspective participants in the *Battle for Wesnoth* collective do not seem to fall within the hacker's *moral genre* of "Free and Open Source Software", in which hacking code and artefacts represents an attempt to affirm and strengthen the 'liberal values of freedom' (Coleman & Golub, 2008). More simply and more pragmatically the collective

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[55]Indeed the *Terms of use* of the Apple Store are currently highly debated within the FOSS movement, because they put additional restrictions on the purchased software. Restrictions which are allegedly incompatible with most of the FOSS licences. See `http://www.fsf.org/blogs/licensing/more-about-the-app-store-gpl-enforcement` for a simple and brief analysis of the situation from the FSF perspective. (Last accessed 28/08/2012).

[56]There is nothing unexpected here, because only the ones who contributed to the core Wesnoth, as a *developer*, retains the rights on the source code and therefore should have expressed their opinion on the matter. It is also worth noticing that the resolution about this matter was the only one in Wesnoth history to be deliberately held privately amongst all developers. Although I was not able to access the minutes of this meeting, a developer who participated to it described it as a meeting where 'everyone freely spoke his mind' and which remained a 'civil confrontation', even if some incompatible positions emerged.

seems populated by hackers and geeks[57] who "build and configure technology at work and for fun [...] and derive and express deep pleasure and forms of value by inhabiting technology[58]" (Coleman, 2011, p.512).

It is worth mentioning that participants' detachment from a 'FOSS ideology' may be due to the relevance that modding[59] progressively acquired in BfW. Indeed I suggest that modding, as an expression of a broader participatory culture which goes beyond the realm of FOSS, took over or got intertwined with the typical FOSS oriented ideals. Participants seem to appreciate BfW more because it offers good modding capabilities rather than because it is a FOSS collective.

5.3.2 Putting the 'fun factor' in perspective

Since the publishing of the book *Just for Fun*[60] by the leader of the Linux Project (Torvalds & Diamond, 2001) the idea and the rhetoric of contributing to FOSS as a fun and enjoyable activity spread out. Such an aspect rose up in The Battle for Wesnoth too, but not without the need to be further deepened.

When discussing with informants, I asked them to recount their path from being users of the software to becoming participants in the collective's activities. All of them[61] acknowledged they were led by passion: they were either *hooked* to the game or to specific aspects of game design. Namely they all expressed their enthusiasm for *The Battle for Wesnoth*. They are not simple software users, they do not simply play it as a pastime. More deeply they are fervent supporters of that game.

> I was first exposed to Wesnoth about 4 years ago, when a friend of mine told me about this awesome fantasy game he had downloaded. When I got home, I downloaded it for myself. (if I remember correctly, I believe it was somewhere around version 1.2 or 1.3) I played the tutorial, and found myself hooked. I went on to complete Heir to the Throne and Sceptre of Fire. I have been playing/involved with Wesnoth more or less continuously ever since then.

(Kai Krellis, Interview, 31/05/2011)

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[57]The difference between the two is often minimal. However, usually geeks are considered less skilled than hackers and they are not necessarily involved in coding practices, although they are literate in computers and digital media and have more technical skills than 'the average person' (Coleman, 2011).

[58]For more context on this aspect, see Section 1.1.1.

[59]See Section 3.3.2 for a brief introduction to modding.

[60]Here, Linus Torvalds argues that the initial idea and early development of the Linux Kernel were primarily motivated by their desire to have fun while programming. He also affirms that if he had not have any fun in such project he probably had never continue working on it.

[61]In a couple of cases people who started playing on very old versions were not at all satisfied by the game. However, when they later tried again the game (usually with versions higher than 1.0) became enthusiasts about its progresses and other aspects.

> I was instantly drawn to the small download size of the game, and (of course!) the fact that it was free. I downloaded it, and was instantly sucked into simple mechanics and gameplay that led to a wealth of strategies and replay value.

> (Cylanna, Interview, 01/06/2011)

This aspect also came out in many general chats in the Forum where they introduce themselves[62], motivate their interest in contributing or simply congratulate developers for the game produced:

"Introducing yourself here!"

> **[29/05/12] New participant:** Hello everyone,
> I'm new to the forum and the game - playing 'The South Guard' as the tutorial recommends. I really applaud everyone's efforts in working on this game (especially since I've done some FOSS work myself). It's pretty addictive…and today it seems pretty professional, and the art is very nice too.

> (Internet Forum)

This passion for the game is consistent with the arguments made in Chapter 4, in which participants did not show much interest in making features requests. As such the collective seems made up by a self-selected population which mainly support 'things as they are':

> Today I am still in awe of not only how Wesnoth manages to produce such fun and at times complex gameplay and strategies using very simple mechanics and rules, but also how moddable Wesnoth is and how sophisticated the engine has become. To be honest, I really find it hard to say anything negative about Wesnoth, simply because there is very little negative about the game, in my experience.

> (Cylanna, Interview, 01/06/2011)

Participants are 'passionate users' of the software and, as I showed below, they have fun contributing in the collective, but I want to make two claims: (*i*) the fun which comes from *creating* the game (or participating to the collective) has little to do with the fun or the passion for *playing* it. (*ii*) participants enjoy contributing regardless of their role, title, action field or whether they accomplished their tasks successfully.

I ground the first claim on the fact that many participants do not have the time to keep doing both things – playing and creating – in a consistent way for a long time. At some point they find themselves dedicating more time to one activity to the detriment of the other.

Some developers acknowledged that they never really played the video game, except for testing it. Others played long time ago, when the video game was quite different from more

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[62]When the Forum had a smaller population, the habit of new registered members to introduce themselves was more significant, but with the progressive enlargement of the users' base fewer people do this. Nonetheless, it is not rare to see such discussions in the Forum.

recent versions. However, they all agreed that *fun* was an important part of their contributing

motivations:

> I should point out that not all Wesnoth developers are fuelled by the same aspects of contributing to the game, but in a "staff meeting" we had last year on IRC we all seemed to agree in the fun factor being an important part of our motivation. [...] So for some it's not that Wesnoth is fun to *play* but rather to *contribute*.
>
> (Baldras, Developer, Interview, original emphasis, 22/06/2011)

> I never really played much Wesnoth. I contribute for the sake of contributing, for the pleasure and fun of using my skills to build something, for the pleasure of seeing the artists doing some crazy stuff with the animation engine I create. so somehow not playing isn't really relevant.
>
> (Deoran, Developer, Interview, 22/06/2011)

Participant users usually feel the same issue when they have contributed, for a long time, in

activities with reduced chance to play.

> The amount of time I spend actually playing the game (aside from playtesting my own campaign) has gone down considerably since I started contributing. [...] Personally, I think contributing to something like this quite enjoyable. Not just in that I'm helping BfW, but that I'm also being able to express myself through my campaigns, and stretch myself (linguistically) with translating. It's also a nice way to pass the time. :P
>
> (Elurin, Interview, 30/06/2011)

> I'm one of those people that's more interested in creating than playing, so it doesn't really bother me if I spend more time working on this campaign than I do playing other campaigns. Granted, it does sometimes feel like I made too much work for myself, but I still enjoy actually working on the project.
>
> (Owaec, Interview, 19/08/2011)

This enjoyment for contributing also raises up from the discussions in the Forum and not

only from my interviews. Indeed, it is not difficult to find threads entitled, for example,

"Having fun with some artwork projects", "A little project for fun", or in which the original

posters describe their project ideas as a way to have fun:

> "HARPER'S FRANKENSTEIN ART"
>
> [17/08/12] Harper: Well as you can see in my signature, I've launched a new scenario which needs some unit art. Before anyone helps me with true art, I decided to try and make a frankenstein[63] army. Another reason is that making frankensprites is more fun than I thought. Feels like some kind of cruel dark magic, you know. Cutting units to pieces and build new ones... :)
>
> (Internet Forum)

---

[63]*To frankenstein something* is a term used by participants to refer to those contributions which are literally pieced together from existing content. For instance, a new faction which is framed by different units, taken as they are, from other existing factions and packed together would be a case of frankeinsteined faction.

I ground the second claim (*i.e.* enjoyment as largely independent of the contribution outcome) on the fact that completing a whole artefact is quite unpredictable[64] in terms of time required, difficulty and chances to be successful. For my purpose the meeting with Harper was pretty inspiring. He is a very passionate user who enjoys multiplayer in BfW a lot. Recently he has started being involved in different areas of the collective. However, because of his inexperience and the lack of skills in some of these areas he rarely managed to successfully complete his little-sized projects and, when he was able to, his creations were largely ignored by the collective. Nonetheless, he positively recalled these attempts as fun and enjoyable.

> I have never really finished any contribution. I started making several add-ons, but in most cases I came to a dead end. I wanted to contribute something, because of the amount of work others have put into this game. It just feels to me not right to do nothing, you know? I tried art (sprites for "Swamplings"), campaigns (never finished one, but I might do it someday) and scenarios ("The Siege" which is awful and the one I'm working on at the moment-a non-linear RPG based in the world of Wesnoth). I don't feel frustrated by the fact I haven't made anything big, it was fun :D I also translated one short campaign on a request made by wesnoth.com.pl user. It was fun, challenging but doable. It was really time-consuming, though. . . The coding was never a problem. This community is very helpful, and whenever I couldn't solve a problem someone helped me here. No one ever asked me to make anything. All my work was rather unnoticed here. The sprite I made for "Swamplings" wasn't even included, yet. And no one left a single reply in "The Siege" feedback thread. My name appears currently only in one spot on the add-ons server. I noticed a bug and fixed it, and the author uploaded updated version with my name next to his. It's a nice feeling, actually :) Although it may seem unpleasant, I had fun making all of this, and I don't feel disappointed.
>
> (Harper, Interview, 10/03/2012)

Finally, fun is also often associated with the long term involvement in the collective. Participants consider their sustained involvement in the project with their perceived enjoyment. They also have no problem quitting their activities, if they realize there is no more fun in contributing.

> I'm surprised that people would contribute to the game when they were not enjoying it. I certainly wouldn't! I have never felt **obligated** to contribute. (I suppose I could feel obligated to fix a bug, but I haven't yet.) I have gotten bored with playtesting before, and when I did, I did something else for a while. Usually I find creating scenarios to be at least as fun as playing them.
>
> (Nym, Developer, Interview, original emphasis, 03/02/2012)

> So what keeps me contributing? I'm not sure. Fun, I guess, but that's too broad. I keep working on Brent because. . . I just want to. I like the concept and I want to see it through. The support from the community helps, probably. I would be less motivated if I didn't get the occasional post in the Brent development thread telling me what a great idea it is. ;-) There is also some sense of a reward system: If I do something revolutionary enough, I might get a coloured name! And there's also the learning. I like learning.

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[64]See Section 5.2, for further discussion on this aspect.

Erlornas well de-constructs the idea of 'contributing for fun' and relates it to: learning, recognition, search for creativity and a supportive environment.

Playtesting is hard work

It seems that participants do enjoy most of what they do. However, some specific aspects of their activities cannot be considered fun: the partly overlapping activities of *playtesting* and *balancing* are clear examples.

Contributing and having fun at the same time is more complicated than what has emerged so far as it also seems from the above mentioned excerpts. However, this aspect became even clearer, when I attended Deoran's public talk at the FOSS conference I previously mentioned. In that one hour talk, Deoran de-constructed the complex activity of balancing FOSS video games, BfW in particular. Even though he tried to communicate that balancing could be fun, he repeatedly referred to balancing as a never-ending tiring activity, which is based on "trial and error" and which requires a lot of patience.

> Balance is a moving target, that's a hard one. We...we have been doing it this for years and we are still doing it, because whenever we change something it has also a ripple effect throughout the game ...so your game is never balanced, your game is about balanced, and then you find a weakness it's start being exploited so you change something to compensate the weakness and you create another weakness and if doesn't, that means that other weaknesses will still be discovered, because you will always have some sort of weakness, so it's a moving target ...it's pretty fun to actually look in and out and check everything and compensate. It is a developer job, but it's fun! It's not a science, you have to try stuff. [...]

> (Deoran, Public talk, FOSDEM 2012)

Balancing the game means avoiding that certain elements, for instance the battle units, are clearly stronger than all the other ones or, for scenarios and campaigns, to ensure that their difficulty levels meet the declared value[65]. In order to balance the content of a video game, *playtesting* is crucial, because it allows to test the content quality and tune it in regard to other existing elements.

Playtesting understood as an activity in the development of a video game is similar to testing and debugging software: when a component is edited in the source code, testing consequences in the software is requested. However in the case of playtesting the changes

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[65]For instance, if many expert and long standing players find it very difficult to win a scenario played at the "easy" level, then there is probably a balance problem in that scenario.

are checked to ensure that the fun of playing is preserved (and possibly enhance): it is not enough that the implementation of a change 'simply works' or that is 'free from bugs'. In *Game Design: Theory & Practice*, Rouse (2004, p.484) argued that playtesting is "the design equivalent of bug fixing". However, he also argues that:

> Playtesting can be one of the most exhilarating parts of the game development cycle. It is then that you take the project you have been working on for months or years, during which time only the development team has played the game, and show it to people outside the team. (Rouse, 2004, p.483)

This perspective is quite opposite to the one emerged from *The Battle for Wesnoth*. The main difference is that in FOSS, the artefact is not kept closed and out of users' reach for a long time. Instead, it is designed and developed openly and, as I am arguing in this thesis, *together* with the users, as a collective endeavour. The other difference is that, in BfW, playtesting is considered anything but exhilarating or fun. It is the only aspect of contributing that participants think of in a negative way.

> Since I joined the developers I don't play much anymore. [Play]Testing the stuff I am responsible for is just enough and I don't even enjoy it anymore. Playtesting is hard work.
>
> (Drogan, Developer, Interview, 12/05/2011)

This activity involves both playing and creating, but it is neither fun as playing, nor as creating content. On one hand, fun in playing is reduced, because participants focus on a more analytical and complex game experience during playtesting. Indeed, they do not play games neither to win matches, nor to try new strategies, but just to 'evaluate' them. On the other hand, it takes the enjoyment of contributing away because, as a trial and error process it requires to repeat the same action over and over without being able to clearly appreciate the progresses. As Nym and Elurin pointed out, when 'it is time to playtest' it is often the case to get bored or tired of it.

It is worth noticing that this aspect does not relate only to a handful of participants engaged in a specific contributory area. On the contrary, everyone directly involved in content creation[66] will sooner or later engage in playtesting. Regardless of the fact that content is either an official component of the game or a UMC distributed through the add-on server.

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[66]The only exceptions here are the creation of basic artworks (sprites for units and portraits) and music. All the other content types such as Factions, Eras, Maps, Scenarios, and Campaigns are supposed to be playtested to reach an acceptable quality.

In this light contributing *just for fun* represents both a cultural aspect of the collective and an individual motivation. It seems that participants engage in certain activities such as designing a new faction or implementing a new scenario, because they enjoy learning, being creative or facing new challenges. However, in the attempt of learning or being creative, some other activities are not considered fun, playtesting in particular. Nonetheless, the rhetoric of participating 'because it is fun' is used both by participants and mentioned in some areas of the infrastructure[67]

5.3.3 Having fun in a friendly and supportive environment

What does sustain contributory efforts besides the simple and general enjoyment? What does it make participation endurable, despite those activities which are less enjoyable?

In my opinion pleasant, positive and serendipitous discoveries about the contributory realm of *The Battle for Wesnoth* (BfW) are relevant here. The discovery of a friendly and supportive environment[68]; the authoring tools for working on artefacts; and the easy mechanisms to access and share contribution seem enough to inspire and sustain participants' engagement in the collective.

> Imagine my surprise and delight when I discovered that not only was an official website for the game, but that there was also a large and stable community behind the game, and that the current stable version was 1.6! I quickly realized that I'd been playing an obsolete version of the game for nearly six months, and wasted no time in downloading 1.6 and enjoying all the vast improvements that had taken place since 0.8. It was inevitable that I would join the community, and I did so in late December 2009.

> (Cylanna, Interview, 01/06/2011)

Cylanna happened to know an older version of the game in a software distribution system for Macintosh. She played that version for several months, but as she discovered that a whole community had been working on that game with continuous developments and improvements, she decided to approach it in the attempt of improving her artwork skills. A similar example regards Kai Krellis:

> The same friend who had introduced me to the game told me that he had "figured out how to hack the game". In reality he had simply stumbled across the WML files and seen how easy it was to edit them. I distinctly remember getting back home, finding the files for myself, renaming the Orcish Assassin to Ninja, and being ecstatic that it actually

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[67]Such as in the Forum posting guidelines, in the main page of Wesnoth website, or in the documentation for creating content.

[68]The argument of this Section is largely based on an exploratory work I conducted to better understand the discursive dynamics which take place in the Forum. Part of this exploratory work was presented at the *Participatory Design Conference* (PDC) 2012 in Denmark and it is available in the Conference Proceedings (Poderi, 2012b).

changed the unit's name ingame. I would say that was the point where I moved from being a player to a member of the community, because shortly afterwards, I joined the forums in hopes of getting help in writing WML and creating a campaign. [...] There I found extensive, user-friendly documentation, and a forum full of helpful, friendly people. The forum community was extremely welcoming, and gave me a good first impression. It was then that the solitary learning process ended and I began "really" learning WML.

(Kai Krellis, Interview, 31/05/2011)

Here two unexpected discoveries pushed Kai Krellis to actively get involved in the Wesnoth collective: the chance to edit the game through the WML and the presence of a supportive and welcoming collective.

Moreover, the authoring tools such as the map editor and the Wesnoth UMC plug-in also can bring new participants into the collective. I mentioned my experience related to my discovery of the Wesnoth UMC plug-in in Section 2.4.2. A similar case regards Baldras:

Later I downloaded Wesnoth 1.0.2, discovering to my surprise that there was indeed a map editor. I think the most enjoyable part about making content for Wesnoth is painting tiles in the editor and watching the game build (usually) seamless transitions between different terrains as you shape your scenario's map. That said, the lack of a proper scenario editor to add units, labels and teams to a map might be a bit disappointing or even demotivational at times, especially when your scenario consists mostly of such structural elements than complicated WML events.

(Baldras, Interview, 22/06/2011)

Baldras was first interested in the possibility of drawing maps, but since this could be done only manually in older versions[69], he had hesitated to get involved in such a consistent activity. However, when a Map Editor was included in the next versions, he started enjoying that activity and got involved in the creation of maps. He also mentioned how the lack of a full fledged *scenario editor*[70] may be a potential problem for whoever wished to engage in that activity.

A friendly and welcoming environment is another aspect to consider when trying to understand why participants would voluntarily spend their time in the collaborative spaces of BfW, for instance the Internet Forum.

As we analyse each thread, we can to notice members' habit to create and maintain a welcoming and encouraging environment that accompanies the contributors' efforts.

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[69]Technically speaking, maps are simple plain text files filled with series of coordinate numbers and terrain types code names.

[70]The Wesnoth UMC plug-in covers the function of a complete scenario editor only in part. It is rather a project management tool for scenario and campaign development, than a scenario editor per se. Similarly to the Map Editor (described in Section 3.3.2), a Scenario Editor should allow to define and position all the elements which builds up a scenario (such as setting the scenario objectives, defining the AI behaviour, placing triggering events, inserting text dialogues) through a graphical user interface.

For instance in this thread[71] a new music contributor asked for feedback for a personal composition. He received many praises, especially by one of the "Lords of Music[72]" (LoM), despite the fact that some members repeatedly asked him to improve his job:

"MUSIC CONTRIBUTION"

[28/12/10] Original Poster: I just created a first soundtrack for your game that you can listen here: [Link1]
Here is a sample of my other works : [Link2]
Hope you'll like it
Wait for your reply
Best wishes to all

[08/01/11] Participant A: Awesome stuff!! Definitely some of the best stuff I've seen here for a good while :D [...]
The only thing I'd say is that the instrument placing seems a little queer in my ears - I'm guessing you're trying to make them seem louder, but the drums all seem to be frontstage with the rest of the orchestra further back? Also, it might have been nice to use the good old Hans Zimmer strings staccatos under the percussion.
From 1:18 onwards, seems a little queer. TBH, it stinks of loop & copy paste mania :p - I'm not sure whether you're using a choir library for that, but if so, maybe consider adding some different syllables, and perhaps tone it down a little [...].
After that, the following transition could have perhaps get more active with some other drums in between to create some complex rhythms? [...]
Overall still, cracking stuff!! Its superbly held together seamlessly by the drums.

[17/01/11] Lord of Music: Great work. The harmony in this is great.
If you're considering this for mainline, I would take all of the spoken words out. It doesn't really fit with the theme and style of Wesnoth. It's more suited as a film technique., think Revenge of the Sith :D
One other thing is the timpani/percussion could use some beefing up. Layer some more percussion to give it more of a punch, it just sounds a tad thin. Other than that, great work, and if you can submit a version without spoken words, and fatter percussion, I wouldn't hesitate to submit this to mainline.

[20/01/11] Original Poster: I'm really excited and really honored that you like it.
So I did what you asked me to do: I deleted the voices and percussions are much fatter. You can find the file here: [Link3]
And if you think, there's too much percussions, I put the volume a little lower in this one: [Link4]
Thank you for all the attention you brought to my music.
Kind regards

[08/02/11] Participant B: Thanks for being patient and working to improve it.

(Internet Forum)

The explicit act of praising, the use of emotional emphasis and polite forms created a

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[71]The discussion took place in the "Music & Sound Development" board of the Internet Forum, between the end of December 2010 and February 2011.
[72]This is the title assigned to Developers in charge of Music and Sound in Wesnoth.

positive atmosphere throughout that thread. Members praise[73] each other for the quality of the contributions, their improvements, the value of the help received or the relevance a contribution has to the game. Similarly, they use polite forms for making explicit help requests, for greeting new contributors, for being thankful in regards to helpers, for acknowledging the efforts and also for criticising.

I am not asserting that conflictual discussions never happen or that no participant ever felt offended by any reply. For instance a trigger for misunderstanding or for making discussions annoying may concern the language: the Forum and most of the other channels are international ones, so members communicate in English, the official language. However, most members are not English native speakers. For this reason misunderstandings may happen and people may get offended[74]. One more reason for annoying participants regards cyclic discussions. For instance, before the Experimental Corner opened (See Section 4.2.1), this friendly environment was at stake: a few participants left after receiving harsh replies:

> Discussions started again and again and almost every time it was only a matter of a few posts until flamewars came up and things got ugly - again.
> Because of it, some very engaged players left Wesnoth. Not so much because of the RNG itself but rather the way they were treated.

(Gweddry, Interview, 04/12/2011)

Participants realize how important it is to feel part of a non-hostile environment. This awareness also emerged during Deoran's public talk at FOSDEM. On that occasion he stated how important it is for the collective that the ones who should 'set a good example' (*e.g.* developers and Forum moderators) do not get involved in potentially annoying discussions by replying in a bad way, even if the other members explicitly violate rules or do not respect the guidelines. Instead, they should take time to consider firm, yet polite and respectful answers, before replying.

I argue that in BfW these principles have been well appropriated by, at least, the Forum moderators, many core developers and long term participant users. During my whole field work, I neither witnessed conflictual situations whiche led, for instance, to the banning[75] of other members nor flame war discussions[76]. These heated discussion are renowned

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[73]Praising is intended here as a linguistic expression that is done with enthusiasm: an exaggeration of a compliment, not a mere evaluation of the positive aspects of the contribution.

[74]It is not uncommon to notice threads where debaters explicitly state their difficulties with English language or where someone ask to better clarify previous sentences.

[75]See http://en.wikipedia.org/wiki/Forum_bans#Banning_in_games_and_Internet_forums for general information about banning.

[76]These kind of discussions may rise in Internet mediated communications when multiple users engage in

in many FOSS collectives. The case of Torvalds' flame wars in the Linux collective are renowned (Bezroukov, 1999). In my case, they were neither visible at the level of 'developers to developers' interactions nor of 'developers to participants and end-users' ones (Bergquist & Ljungberg, 2008). This may sound surprising, but I argue that the pretty mature stage of the collective played a role here in helping to appropriate and perform a welcoming and friendly environment across the collective.

By means of praises, thanks, and greetings participants keep a positive atmosphere which pleases current members or potential new ones who may just be browsing the Forum. This is not only important to people joining discussions while they unfold, but also for non-participants and potential new ones, because each thread represents an artefactual evidence of a previous interaction. In this sense the Forum serves as a sort of 'safe house' where all participants can lay out their contributing dilemmas or showing off their progresses without fear to be harshly and publicly criticised.

5.4 The case of an unborn Faction

So far I described how individuals resort to other participants to keep and refine their own contributory efforts and how each one is responsible for the development of their artefacts. At the same time I showed how projects developed in the collective are often in an unclear state of slow or abandoned development: 'real life' commitments or the need to recover from burnouts can often get in the way of such works. Last, but not least, I discussed how enjoyable can be engaging in contributory activities in a supportive and welcoming environment.

In this last part I show how these aspects emerge when developing a new official game component. On one hand in some circumstances, individual initiatives are started and connect with each other. On the other hand the lack of continuity and commitment to such initiatives affect the 'success' or 'failure' of software innovation. Furthermore, from the collective's perspective, succeeding in innovating the video game is not considered a major issue.

Following is a developers' attempt[77] to introduce a new official video game component:

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provocative responses (often offending and based on personal attacks) to an original post. Flame wars often draw in many users (including those trying to defuse the flame war) and can overshadow regular forum discussions. See http://en.wikipedia.org/wiki/Flame_war for further information.

[77]Although the bulk of this attempt manifested during my fieldwork, some of the roots it sprung from were

a new Multiplayer Faction called *Khalifate*[78]. Such attempt is an interesting case for observing how participation into the collective strictly relates to the continuous designing of the video game. The Khalifate is a faction[79] primarily designed for Multiplayer game mode. According to the natives the faction units are complementary and, at the same time, pretty different from each other. This provides high flexibility in the use of the faction and on strategies to play. The whole units' tree[80] is made of 26 units. Aesthetically the faction is partly inspired by the imaginary on Middle East and Oriental armies. Except for a relatively short time, this faction has always been available to players as an Add-on for both software branches: the development and stable one. Rakshas, Eryssa and Landar are the three developers who jointly worked on different aspects of the Faction.

5.4.1   Official development of a new Faction

Among many other issues, during the 2008 FOSDEM meeting developers discussed whether and how they should push the inclusion of more heterogeneous content in the Multiplayer area of the game, but on that occasion no decision was taken. However, among many existing add-ons Khalifate was acknowledged to be one with some chances to next become an official game component.

Soon after the meeting, encouraged by Landar, an art contributor engaged in completing Khalifate artworks[81]. As usual a working thread was started to discuss and refine such a development. After a two-year work, by the beginning of 2011, the *units' tree* had been nearly completed with proper artworks.

With the artworks for the Faction almost completed[82], the introduction of a new MP Faction in the official game version emerged again at FOSDEM in 2011. This time developers agreed on including the faction in the forthcoming major stable version (1.10). For that purpose they decided to include the Khalifate Faction in the development branch, so developers and users could playtest the faction and provide the proper feedback.

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laid out before my entrance into the field.

[78]Over the years the Faction name changed more than once. For ease of reading I will refer to the Faction with its current name.

[79]This faction has a "lawful" alignment and it includes seven basic units: three units have high movements capabilities and double attack types; two 'assault' units have both double attack types; one unit has 'healing' capabilities; and the only unit with a single attack type has a relatively high amount of 'health points'. For further details about the relevance of units traits see Section 3.1.1.

[80]The units' tree refers to all the units which form a Faction: the basic units and their advanced (or *levelled*) versions. See Section 3.3 for a better overview on Factions composition.

[81]Some of the units baseframes and many of the units animation were still lacking at that time.

[82]Fig C.1, in Appendix, was the 'state of the art' for the faction development at the moment of the meeting.

Khalifate/New faction for mainline. We agreed that we do want to add the Khalifate to trunk as soon as possible. Rakshas reported that all the base frames should be basically done and we are just waiting for Landar with the unit stats at the moment. Once we got those, the new faction "Khalifate" can be added to trunk. The current plan is to create a new era with the current setup named e.g. classic. This would basically be the factions with the balancing used in default up to 1.9.4. The default era (still named *default*) would have the Khalifate included. We do know that this will extremely unbalance the default era, but this way we make sure that the Khalifate will get testing from our users. Then we got about 9 month to find a usable balance till we start a new stable series. [. . .]

(Documentation, "FOSDEM 2011 Report")

About three months after FOSDEM developers managed to include Khalifate in version 1.9.6 (development branch). The release announcement described the Faction as a work in progress, still usable, and the collective was asked for feedback:

New MP Faction: Khalifate
A new multiplayer faction is included in the multiplayer era default+Khalifate. Note that this does not in any way change the current default era! Khalifate units are lawful and have unique movetypes and resists. To use this faction simply choose the "default+Khalifate" era from the multiplayer game launch options.
The Khalifate are very much a work in progress. They are fully playable but are still lacking unit descriptions and some aesthetic components such as attack animations. Expect to see many changes and much improvement of these guys in future releases! There is not currently any campaign that uses Khalifate units, but they are fully available for use in campaigns and scenarios so any motivated individuals can be the first to write one!
You can give feedback and report problems in the [Link to ''Khalifate feedback'' thread].

(The Battle for Wesnoth, Release notes 1.9.6, May 2011)

At the same time Eryssa[83] started a working thread to gather feedback on the Faction, so many players started providing them. In particular they supplied replays of played matches and commented which units, in their opinion, would need to be optimized. During the first month the thread counted about 160 replies and Eryssa got busy examining the feedback and producing upgraded versions of the Add-on. He used to release multiple versions per week. However, after the first month Eryssa could no longer keep up with the project, so the refinement of the Faction slightly slowed down.

"KHALIFATE FEEDBACK"

[16/05/11] Eryssa: I still have almost no time but I wanted to make a few comments. First, thanks for the replays [. . .]
[21/06/11] Eryssa: Sadly I have limited Internet access and a busy schedule right now. The current changes didn't make it into 1.9.6, but I will update the addons when I can (next week? Two week maybe?)

(Internet Forum)

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[83]One of the developer responsible for the balancing of the Khalifate.

Furthermore, according to Eryssa, another limitation concerned the lack of feedback from 'top players'.

After five months and four more development releases developers realized that the Faction was not ready to be included in the forthcoming stable version (1.10), so they removed it from the development branch. The Faction was officially removed with the release of the development branch 1.9.10[84] with the following release note:

> **Removal of the 'Khalifate'**
> The Khalifate were a new race/faction added as part of a multiplayer era during the 1.9 development process. The original plan was to have them stabilized before 1.10, but further balancing and string changes are required which will not be ready in time for the planned 1.10. Because of this the development of this faction will continue as an add-on which is hopefully merged into trunk shortly after the release of 1.10 (and will be part of the 1.12 series).
>
> (The Battle for Wesnoth, Release notes 1.9.10, November 2011)

In the end *The Battle for Wesnoth* v1.10 did not include a new MP faction, despite the work which had gone on since the beginning of 2009 and the related effort by developers. The *lack of balance* was the main reason for removing Khalifate.

5.4.2 Collective development of a new Faction

So far I described a streamlined report of the events from the perspective of official development, but if we widen our view to include also participant users' works on the Faction we get a pretty different view of the events and of how official development strictly relates to collective's efforts.

Figure 5.2 shows all the activities[85] which have concerned the Khalifate Faction in recent times[86] and which concerned some aspects of its development or use[87]. Each horizontal line indicates the temporal extension of the thread from its start to the last reply received. I divided them into three categories: official threads, working threads and discussion threads. The first relates to official development activities taken in charge by developers. The second regards any kind of participants' activity aiming at creating or improving artefacts related

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[84]See Fig. 2.1 for a better overview of the development releases which preceded BfW v1.10.

[85]Interestingly enough, I was able to retrace all the threads of the Figure simply by following the existing connections amongst/within them, during my fieldwork. To ensure that I had not missed other relevant threads, I performed a Forum search, but the search only returned the two most recent "Discussion threads" as the ones which were previously unknown to me.

[86]Independently of their starting date, I included only the threads which had traces of activity by the end of 2010. There are two "Discussion threads" which I did not include in the Figure: they were promptly closed by the moderators since their topic was a replication of the other two "Discussion threads". Participants were invited to discuss in the existing topics by the moderator.

[87]As any other game content it can be used both by players or by content creators.

to Faction. The third concerns requests for clarifications or general discussions about the Khalifate. Only in two cases the threads were opened by the same author[88], the remaining ones were started and pursued by different participants.

Next is a brief description of each element in Figure 5.2 which provides information about the specific thread subjects and their relationships with the other Khalifate-related activities. Afterwards I discuss more organically these events.

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[88]The two release announcements are made by the same developer. The "Units naming" and the "Religion and Khalifate" also have the same author.
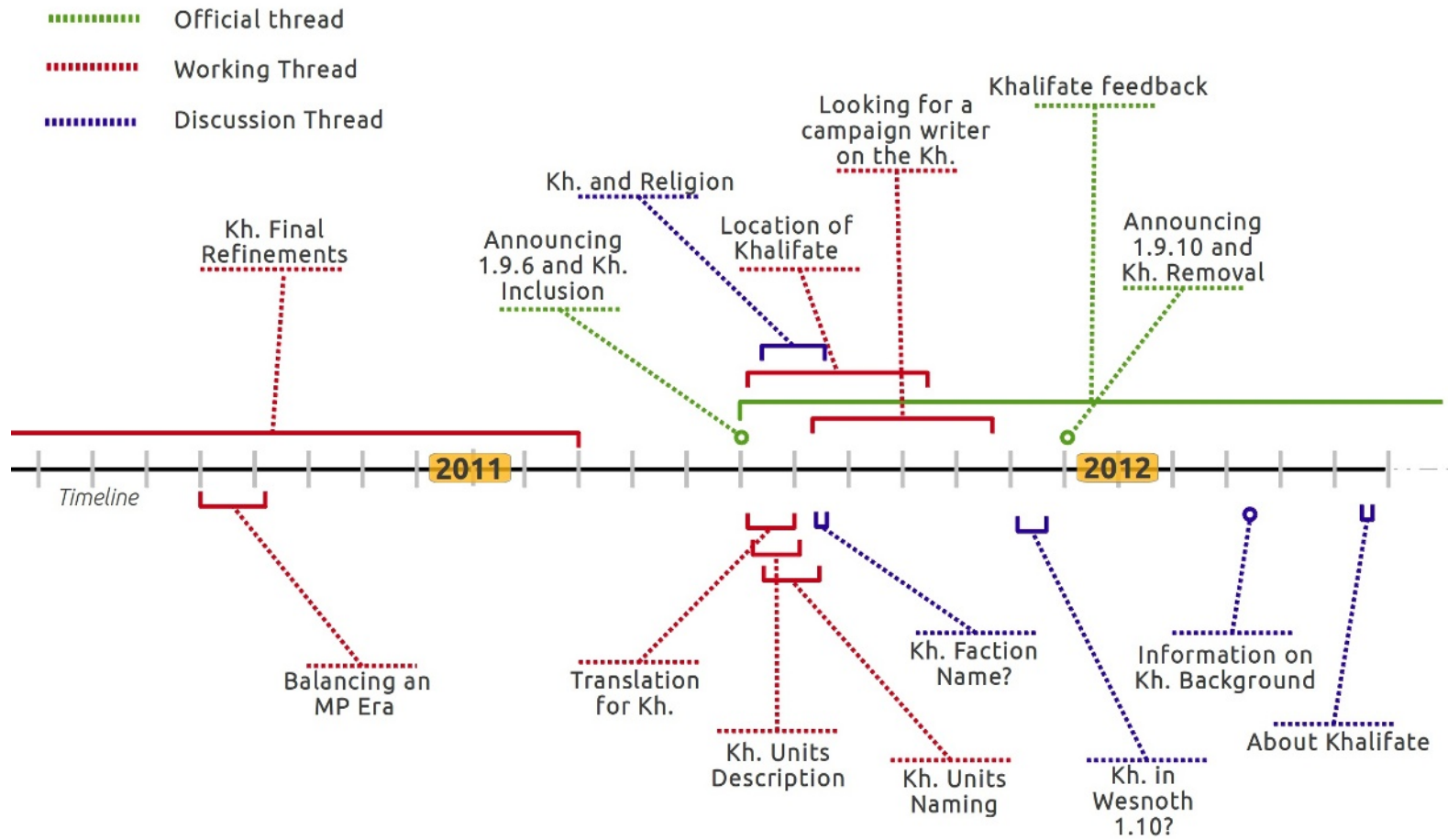
Official thread
Working Thread
Discussion Thread

Khalifate feedback

Looking for a
campaign writer
on the Kh.

Kh. and Religion

Kh. Final
Refinements

Location of
Khalifate

Announcing
1.9.6 and Kh.
Inclusion

Announcing
1.9.10 and
Kh. Removal

2011

Timeline

2012

Balancing an
MP Era

Translation
for Kh.

Kh. Faction
Name?

Information on
Kh. Background

About Khalifate

Kh. Units
Description

Kh. Units
Naming

Kh. in
Wesnoth
1.10?

Figure 5.2: The Figure shows the activity which took place in the Internet Forum over the past years in relation to the Khalifate Faction. Each line indicates the duration of the discussion measured from the opening of the thread until the last reply received (updated to June 2012). Green threads are official ones: started by the core development team in relation to core development issues. Red threads are working thread: started by any participant to work on a specific artefact related to the khalifate. Blue threads are discussion threads: opened to ask clarifications about the Khalifate.

Khalifate Final Refinements. In this thread Perrin discussed the development of the artworks for the Faction units. Initially he focused on completing all the units *sprites*. Afterwards he gradually started introducing units *animation*. At the beginning of 2011 some of the animations were still lacking. At that year's FOSDEM, developers referred to the development state of the Faction as it was developed in this thread.

Balancing a Multiplayer Era. Here Rakshas tried gathering feedback to refine the MP Era, on which he worked, as a personal side project[89]. This Era is the only existing one which exploited the Khalifate as one of the four playing Factions. At first, the balancing of the Era focused on the other three factions. However, when it was time to balance by accounting for all four Factions (Khalifate included) work came to an halt[90]. It was pretty useless trying balancing it, since one component of the Era (Khalifate Faction) entered a further reworking stage.

Inclusion of the Khalifate and Feedback Thread. In the first of these two official threads the release manager announced BfW v1.9.6 and also included a brief description of the newly added Khalifate Faction, the request for submitting feedback to "Feedback Thread". At the same time Eryssa started that Feedback Thread where he dealt with the balancing work and the monitoring of the feedback. Initially, the thread was conceived to collect general feedback: bug reports, balance issues or other problems related to the Faction. However, after a while the purpose of the thread was restate to collect technical bugs and balance problems only. Players and participants reported replays of saved matches to help Eryssa identify Faction balance issues. At the same time Eryssa exploited the thread to communicate updated versions of the Faction[91].

Location of Khalifate. Through this thread a participant intended to make clear and define the origins of the Khalifate from the fantasy world of Wesnoth. The geographical and historical settings are important elements for all the official Factions. However, by that time, no one had thought about those aspects yet. For this reason that participant started collecting references to the Khalifate's lore mentioned in other discussions and artefacts. Rakshas' work

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[89]See the beginning of Chapter 4 for more context on Rakshas' work.

[90]During his interview Rakshas expressed me his desire to resume the work on the Era as soon as possible, yet he was aware that this would be dependent on the completion and stabilization of the Khalifate Faction.

[91]These versions took the form a renewed add-on (for the v. 1.8) and of a core element revision (for the forthcoming releases of the 1.9.x series).

on the MP Era was one of the earliest which provided a geographical reference for Khalifate, although this was neither a specific reference, nor it was intended to have official validity. Furthermore, the thread managed to gather elements from Eryssa's "Feedback Thread", the threads on "Units Naming" and "Units Description". Eventually, no proper location was identified, although all participants agreed on the fact that the 'people of the Khalifate' came from the far South-Eastern area of Irdya[92].

Translation for Khalifate. A participant wished to deal with the translation of units' description, names and basic lore. Given the particular nature of the Faction[93] he first wanted to get acquainted with it, then find an agreement on the conventions to use for translating names. In addition, he wanted to use this thread as common space for other translators working on the Khalifate. the number of translation conventions was not consistent and translations stopped relatively soon, because units descriptions and lore used to be revised too often.

Khalifate Units Description. A participant discussed his description for the Faction units. This activity included the replacement of deprecated descriptions, as well as the drafting from scratch of missing ones. The need to use the geographical roots of the Faction emerged more times during this work, so participant referred to the thread "Location of Khalifate", where they could find information available on this subject. Also, Landar pointed out that, since the Faction was intended to become official, such descriptions would needed for approval from a developer (if wished to become official), but nevertheless he encouraged participants to carry on.

Khalifate Units Naming. A player wished to have clarified the etymology of the units' name, so he investigated whether there would be either a possible connection to Arabic names or to others. Participants provided no clear answer, although Landar mentioned that similar units' name would be new to BfW and reminded other users that the introduction of non-English names had already been discussed in the past by developers.

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[92]The fantasy world of BfW where the reign of Wesnoth is located and where all the campaigns take place. See Figure C.2 for a geographical representation of Irdya.

[93]Differently from other Factions, the Khalifate had some resemblance or connection with 'real world' population.

Khalifate And Religion. The same player who questioned the units' names, also debated including in the game an artefact which would embed a religion-related dimension into a 'battle game'. Given that the Faction was inspired by an imaginary Middle-East, the association with the Arabic world and Islam had already been discussed in threads such as "Location of Khalifate", "Translation for Khalifate". Very few participants replied here, so the discussion died out relatively soon. Basically no one else, except for the original author, gave importance to such a connection to the above mentioned elements.

Khalifate Faction Name. In this very brief discussion thread were a participant proposed to think about a new name for the Faction which would not associate with Arabic world. The two former names, the current one and a potential alternative were compared and discussed. (In "Khalifate and Religion" a participant referred to this thread to support his arguments about linking real world religion and in-game entities.)

Looking For A Campaign Writer On The Khalifate. This thread was discussed in Section 5.1.2, where Kai Krellis and one more participant tried to develop a campaign based on the newly added Khalifate Faction. As already mentioned, this never reached a prototyped artefact, because the writer quitted.

Khalifate In Wesnoth 1.10? A couple of days before the official release announcement a player noticed that the Faction had been removed from the source code of the software, so he asked for clarification about the development status of the Khalifate and why that faction had been removed. No developer gave an official reply to those questions, although a few participants hinted at the same reasons which would have later been published in the official announcement.

Removal Of The Khalifate. In the release announcement of development version 1.9.6 developers stated that, due to an unbalanced and uncompleted status, they removed the Khalifate and returned it an add-on. Also, a couple of players express their wish to hopefully see the Faction soon included in future releases, so they encouraged developers to carry on working.

Information On Khalifate Background.   In this thread a new participant wished to receive more information on the background of the Khalifate Faction, because he was about to start creating his own campaign in the near future. Unfortunately, he did not receive any reply.

About The Khalifate.   In this discussion thread a player showed appreciation to the removal of the Faction, not because it was unbalanced, but because he considered it an unfitting element to the general fantasy setting of the world of Wesnoth. He hoped and argued for a complete removal of the Faction from developers' plans to introduce it in the future. In the short discussion which followed, other participants stated that developers' preferences would be more important[94] on those matters than his, but also that, in case of official insertion, players would still have the chance to play without 'activating' Khalifate.

As Figure 5.2 showed, developers' attempt to introduce a new element into the game, tightly related with participation to the collective. Firstly, the idea and the concrete possibility to add a new element to the official Wesnoth was based on the presence of an Add-on partially developed by another participant. Secondly, the inclusion of the add-on to the development branch and the announcement of its potential upgrade to the stable branch resulted in several different activities. Indeed, the activities and the discussions concerning the Khalifate mostly appeared when the Faction had been officially included in the development branch. Lastly, the ongoing development of the Faction was heavily proportional to participants' activities, both in a positive and in a negative way. For instance, on one hand Landar used large part of the geographical and historical lore, which was developed in "Location of the Khalifate" and "Khalifate units' description" for the official (yet unfinished) description of the Faction[95]. On the other hand the fact that all activities started and rapidly stopped, reduced the number of available completed artefacts in support of the Khalifate completion.

The last aspect I wish to highlight sets apart from the events manifested in the field and reflects on how I narrated them. My narrative of the events reported in chronological order, may give the impression that they had been planned, but not achieved. At this point readers might expect an explanation for the 'causes' of such failure. This expectation comes more from the artefactual nature of my narrative than from the substantial unfolding of events. Below I explain why.

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[94]See Chapter 4 for more details on this aspect.
[95]As he declared in the "Khalifate Feedback" thread.

The official announcement of its inclusion mobilized participants' interest about the Faction. However, these interests rose as serendipitous, spontaneous and largely individual ones. There was neither an individual commitment to complete their job (lore drafting, campaign development, or translation of units description), nor a consciously organized effort to bring them forward, nor the expectations that they will be completed. As of today, the only ongoing effort concerns the "Khalifate Feedback" thread.

Also, the removal of the Faction from the development branch and the decision of excluding it from BfW 1.10 were surprisingly smooth. These were basically handled by a three-developer group who directly worked on it[96]. No one expressed disappointment or complained about it, except for a couple of players who regret not having seen the Faction included in v.1.10. Anyway for such players the Faction is still available in form of an Add-on, functioning on any version of any branch.

In this last part, I further explain the subjects treated in this Section by using the conceptual tools I introduced in Section 2.1.2: local and translocal actions.

At the beginning of the chapter I explained how individuals try pursuing their project ideas by attracting and enrolling other participants' help. In other words they try to stabilize an actor-network of competences, resources and artefacts that would allow them to carry on their project ideas. The several processes of actor-network formation are highly unstable or unpredictable in regards to their evolution. On one hand the authors of these processes might be 'distracted' by external contingencies. On the other hand their collaborators, too, might abruptly stop providing their support to such activities.

Each attempt to establish an actor-network is a local activity. Within each of these local activity participants enrol some elements[97] and they locally interpret, appropriate and modify such elements. Sometimes, local efforts combine to so many other local efforts in the collective, so that a 'macro-phenomenon' seems to emerge. However, as I wrote in the Methodological chapter:

> What looks like a macro structure or a macro phenomenon from a distant
> perspective, it is actually only a multitude of translations at the level of local
> actions. In other words "all actions are local, but some of them are connected to

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[96]There is no trace, among the developers' group, of a collective discussion and evaluation of the state of the art for the Faction. Neither in the developers' mailing-list, nor in the IRC channel. Moreover, although I did not specifically asked this information to my informants, I was not warned about any collective developers' discussion when we addressed the topic of the Khalifate Faction.

[97]*e.g.* the understanding of Norwegian skin tone in support of the refinement of a portrait colour shading.

a great many other actions and repeated in many other places; in this way they become *translocal*." (Czarniawska & Czarniawska-Joerges, 2008, p.31).

In the Wesnoth collective several different Khalifate-related actor-network processes emerged. The collective's interest to such a Faction resulted in different local processes, each with specific 'goals', actors and artefacts. As a consequence the Khalifate Faction emerged as a translocal phenomenon (neither a macro nor an homogeneously shared phenomenon). From the perspective of participants who were *not* involved in the threads of Figure 5.2, the Khalifate faction was nothing more than just another name circulating as background noise in the collective (See Section 4.2).

Developers' announcement regarding the inclusion of the Faction in v.1.9.6 seems to have had a great catalyst role in translating participants' interests into a widespread, translocal effort. To some extent, developers' local effort for completing the Faction development (and including it into the new stable release) had a great influence on participants, but since the video game *Battle for Wesnoth* is the main 'means through which the collective comes together', this aspect should not surprise. It is more interesting to notice how participation discontinuity made it impossible for developers to make the Khalifate acceptable before the release of BfW v.1.10: neither developers succeeded in enrolling enough expert players to provide their feedback into "Khalifate feedback" working thread, nor participants' activities resulted in completed artefacts in support of the Faction development. For instance one of the two official motivation for the removal of the Faction was the incomplete description for units[98] which, as I showed, was partly pursued by participant users. Furthermore, while commenting on Faction removal, two expert developers acknowledged that, if a usable Add-on making use of the Faction had existed, developers would have hesitated much more before removing it.

"ANNOUNCING 1.9.10 AND KHALIFATE REMOVAL"

[12/11/11] Developer A: No, they could not stay because they are incomplete and need *huge* amounts of rebalancing. During feature freeze rebalancing would break backwards compatibility to earlier versions [. . .]

[12/11/11] Developer B: [to developer A] probably you would have hesitated a lot more to remove the Khalifate if you had an addon relying on them. :)

(Internet Forum)

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[98]The release notes for 1.9.10 refer to these as "more string changes are needed".

Concluding remarks

In this chapter I focused on some important aspects in regards to participatory dynamics in the collective and discussed how they relate to the ongoing software designing.

Participants team up by forming collaboratoriums or partnerships and use the collectivity's help to sustain, refine and co-design their own contributory efforts, regardless of being small, simple, big or complex, related to game components or to infrastructural elements. This dual aspect of participating as both an individual and collective endeavour, puts single participants and the collectivity in a tight relationship. On one hand, if single participants need the collective, regardless of their skills and time they can dedicate, on the other hand the collective needs single users for specific tasks. However, in the second part of the Chapter it emerged that participants start and stop contributing relatively often. They matured a specific terminology to signal their comings and goings, but this does not avoid a continuous state of uncertainty in relation to the further development of ongoing works. Nurturing a collective in which the practice of 'coming and going' is largely accepted favours long-lasting participation, but it implies that abandoned (or slowly developed) artefacts are more likely to be subject to deprecation and the taking over of such abandoned project becomes an uncertain matter. Thus *survivability* emerged as a richer aspect than how it is shown in literature (See Section 1.1.1). Yes, Wesnoth collective features a high degree of survivability. However, the collectivity survives beyond any individual contribution, not because someone can take over the abandoned works, but because the collective can actually afford to leave the abandoned work unattended and, in most cases, lose it. In a completely volunteer-based collective, in which participants come and go as they please, this aspect is not marginal at all.

Motivations keeping participation active in the collective are very similar both for developers and participant users. At first, I suspected that traditional motivations such as ego boosting, skill development and social recognition were marginal motivations for users participation, because only few users' contributions become so widely known to the whole collective that they grant their authors recognition and social status. I was wrong. Even though many participants get engaged in activities that somone may consider marginal or less important, they have anyway the chance to have fun, to be acknowledged or possibly show off their skills while contributing. I also noticed how the so called 'fun factor'

deserved particular attention: enjoyment and pleasure in contributing make development effort lighter, but this is not enough to deal with all activities and tasks that contribution requests. Playtesting, for instance, is a 'hard work which takes away the joy of playing and of developing' at the same time.

Last, but not least, in the attempt to develop official components for the software, developers often use the contribution provided by participant users both in direct and indirect ways. They exploit the feedback received and also adopt artefacts developed by participant users.

CHAPTER 6

CONSIDERATIONS ON METHOD

As I claimed in the Introduction of this work, when Crabtree suggested that the emergence of a new paradigm for the designing and development of Information Technology (Information Systems and Software programmes, in particular) appeared during the last years, he also highlighted the changes that these practices had at the practical and methodological level (Crabtree, 2003). From a purely sociological perspective, Suchman already hinted at this phenomenon in the 90s (Suchman, 1994). Computer Sciences and Software Engineering matured this awareness too in recent times. Clear sign of this change is the ripening of the interest that engineers and IS designers grant to ethnographic approaches for their own work (Fele, 2009).

As a sociologist who adopted an ethnographic approach to investigate a collaborative software development effort, I deem important to come back to some of my methodological choices and provide considerations about them. This shall help both sociologists who are interested in the study of Internet-mediated working practices and software engineers (or computer scientists) who are interested in understanding the potential gains of an ethnographically informed approach to the development of collaborative software systems.

During my journey for answering the question "*how do users participation and software development relate to each other in FOSS?*" as I moved around the cyber-field, the paramount and continuous challenge that I faced has been to understand whom to consider a (non-participant) user, whom a (non-developer) participant user, whom a developer. To expose the highly *relational* and *performative* characteristics of actors (humans and non-humans) in collective efforts similar to the one analysed here may be of interest for

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both sociologists and software engineers. Indeed, on one hand this provides insights on the challenges that a distributed, mediated and volunteer based collective poses in regards to the mapping of actors, roles and processes that researchers may be interested in studying. On the other hand, it shows the interpretive flexibility (Bijker et al., 1987), or the multiple nature (Mol, 2002), that artefacts (development tools, markup languages, prototypes) have in relationship to the various actors and processes that rely on and connect with them. In relationship to these aspects I focus the considerations about my methodological choices on.

However, before moving to the considerations, I shall recall some of the choices I made [1] which set my work apart from mainstream FOSS studies: I entered the field with no theoretically defined patterns on FOSS participants' behaviour and I grounded my research results on data; I used an ethnographic approach and relied on participant observation; I adopted the epistemology of *cyborgs* and borrowed a few analytical lenses from Actor-Network Theory and Action Nets. All these choices happened to be helpful to deepen a few principles of FOSS which are taken of granted in the current literature. This came to the detriment of the possibility to generalize my results, due to the qualitative, single-case and somewhat exploratory nature of this work.

6.1 Discovering the situatedness of actors and actions

The ethnographic approach employed in this research has been useful to let emerge the contingent and situated dimensions of actors and actions (Suchman, 1987, 2002). In particular, for exposing such dimensions they were key the choices: to study participation in FOSS collectives without adopting a specific theoretically defined patterns about FOSS actors and roles of participation (and, thus, entering the field with the least possible amount of prescriptive 'assumptions' about them); and to leave the boundaries of the field open to be constructed and explored as the research unfolded.

I also recall[2] the importance of participatory engagement on the researcher's side in the collective for the study of distributed and Internet-mediated collectives. Indeed, the artefactual traces left by participants' interactions only provide a partial meaning of those interactions[3] This has a parallel with what also participants themselves experience in the

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[1]For further details about these choices see Chapter 2 and, in particular, Section 2.1 and Section 2.2.
[2]See Section 2.4.2 for further details.
[3]I addressed this aspect in Section 2.1.

field: somewhere dispersed in the infrastructure contributors have at their avail most of the information they need to contribute. However, such an availability does not necessarily make them meaningful for participants. For instance, my first attempt to report a bug taught me that there are instructions about *where* to report a bug (in the bug tracker or in the Forum) and about *how* to write an helpful bug-report. Despite the documentation I could not understand whether my problem *was* indeed a bug to be reported. Through the help of other participants I made sense of my issue and managed to act upon it. If I had browsed documentation only, I would have grasped only a minimal part of the richness of the bug-reporting activity. Similarly, hardly I would have conceived the importance of deciding to implement adds-on for the Stable or for the Development branches, if I had not tried creating one on my own and confronted with other content creators.

These choices brought to the fore that *categorizations* for actor groups are unreliable either because the actual scope of individuals' work rests opaque to the researchers, either because there is inconsistency among the indicators used by participants themselves in the field or, simply because the same person may perform very different 'roles' in the various area of the collective. Thus, speaking at the methodological level, this research showed that: **not every participant is necessarily a user**, **inconsistency of indicators** may be embedded in the collectives, **inversion of 'roles', actors and activities** may occur in different working areas of the collective.

Not every participant is necessarily a user

After a short time spent in the fieldwork it became clear to me that neither developers nor participants were necessarily software users.

For instance one of my privileged informants told me he played the game at its earliest version and had little or no experience of the video game in its recent version; a developer also acknowledged he was in the collective only to enjoy coding and had no interest in the game itself; another one stated he had only playtested the game without actually playing it. As two long-term developers recalled, actively joining the collective can be time consuming and leave little space for software use.

> Since I joined the developers I don't play much anymore. Testing the stuff I am responsibly for is just enough and I don't even enjoy it anymore. Playtesting is hard work.

(Drogan, Developer, Interview, 12/05/2011)

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> I actually don't play that much these days. I spend much more time on development and community. But when I did, I enjoyed it immensely.

<div align="right">(Rakshas, Developer, Interview, 20/04/2011)</div>

Methodologically this aspect raises concerns about whether we can study FOSS developers as "the most passionate users of the software they develop". When our research interests are topics such as affiliation to the collective or motivations for participation[4] then it may be a research result to find out developers as passionate users. However, if the main research interest is the relationship between software design and users then assuming FOSS developers as sample of users population (or even a sub-sample) it might result in serious research design flaws: not only because developers are highly skilled, but first and foremost because they may actually be no users at all.

The inconsistency of indicators

In BfW the 'role' of *developer* is associated[5] to anyone who has writing access to the SVN repository. However, besides coders, writing access can be granted to a very heterogeneous range of participants: from digital artists to musicians, from content creators to translation managers and even to competitive gamers. More clearly many 'Wesnoth developers' neither have coding skills, nor sound knowledge of the technicalities which make the video game function. For instance, Landar is a developer, but he is not a programmer, so he cannot code for the BfW core elements[6]. He is responsible for balancing multiplayer content, whose activity mostly requires: knowledge of the Wesnoth Markup Language (WML); a lot of patience in monitoring users' feedback; watching the match replays and playtesting; but no coding skills. Of course *The Battle for Wesnoth* as a video game includes a broader set of elements besides source code. Soundtracks, artworks and game content perhaps are not typical elements any FOSS programme would have to deal with. Nonetheless it is possible that in other FOSS collectives the category of "developers" includes a broader and heterogeneous set of people who do not necessarily code, but deal with other activities. In addition, observing participants acting in *their roles* is troublesome when we move around in the collective's infrastructure. For instance roles in the Forum are highlighted by using account nicknames displayed in different colours. Red is used to identify developers, but in

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[4]For instance see Lerner & Tirole (2002).

[5]For more details on this aspect see Section 3.2.6.

[6]For an overview of the components which make up the video game see Section 3.3.1.

this case "developers" means "coders" and this category does not include digital artists or content creators. These ones respectively feature light blue and light brown colours.

Inversion of 'roles', actors and activities

Beside the inconsistency in the use of the term "developer" across different media (*e.g.* in SVN repository and in the Internet Forum), there is also a broader conceptual heterogeneity. Indeed, in the area of User-Made Content (UMC) participant users are the largest group which is engaged in the design and development of such a content, while developers (both coders and artists) mainly provide feedback. On the contrary, in core activities developers create artefacts and participant users provide feedback. Therefore, as I hinted in the previous section, the two areas of core development and of UMC portray a sort of inversion for what concerns roles, actors and activities. The former mainly includes maintenance work done by developers where participant users provide feedback. The latter includes innovative development done mainly by participant users where developers provide feedback. To further complicate things, there are a few developers who engage in the creation of UMC too, which makes them act as the majority of participant users.

In light of this the choice to freely monitor this field during the empirical research without defining key revenues or activities in advance was successful. For instance it allowed me to go beyond the quietness and low activity level perceived from IRC channels and from the developers' mailing-list. Indeed, as I recalled in Section 2.2.2, I begun my fieldwork by spending time observing and reading interactions mainly in developers' mailing-list and development related IRC channels. The pace and intensity of interactions in these media cannot be compared with the activities in the Internet Forum, in which one of the most relevant challenge is to be able to 'cope with the noise'[7]. If I had concentrated on IRC channels and mailing-lists and only on core development, I could have easily come to the conclusion that BfW collective was a fading one, but this is not the case. Indeed, in comparison to core development activities for the vanilla Wesnoth, the whole UMC area and its infrastructure are active and innovative, while the scope of the former shifted into maintenance and require fewer work.

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[7]I addressed this aspect in Section 4.2.

6.2 Cyborgs and multiple actor-networks

Adopting the epistemology of the *cyborg* and considering participants behaviour as a multitude of 'actions in a net' helped to value the fieldwork too.

On one hand the *cyborg* helped me identify the tight relationship existing between participants' 'real-life' outside of the collective and participation in that collective, which, in other words, represents a sort of continuity between on-line and off-line. On the other hand Actor-Network Theory (ANT) and Action Nets allowed me to look into *cyborgs actions* and their related elements without the need for applying to theories concerning human behaviours. *Cyborgs* and cyberethnography allowed my inquiry to span outside the Internet mediated infrastructure of the collective. For instance, one of my first interviews was taken face-to-face and my attendance to the FOSDEM conference in Brussels became a pivotal moment for my research.

More analytically the idea of *cyborgs* was useful to grasp how much participants can be rich socio-cultural entities through their cyber-identities (whether they are Forum accounts, e-mail addresses or bug-tracker accounts). This has been a key aspect to me to understand and figure out one of the most important phenomena for this thesis: it allowed me to grasp the several facets of the *wesbreak* as well as the implications coming from the wobbling participation[8]. Indeed my theoretical sensitivity about cyber-identities made me receptive to micro or, apparently, marginal phenomena such as the use of signatures in the Forum as a way to signal important (for the individuals) connections to events external to the collective.

In addition employing the constructs of ANT and Action Nets for looking into cyborg performance in the collective brought me to the conclusion that both individual and collaborative dimensions of contribution activities are strictly connected. As I stressed in the Methodological Chapter, the same limitation highlighted by Gad & Jensen (2010) about the need to account for the multiplicity of perspectives rose up pretty soon in my empirical research: the process of translating and mobilizing actors' interest into an actor-network is always linked with other actors' attempts to establish other actor-networks, regardless of them being in competition or simply 'parallel' with each other. Thus, adopting the perspective of a single actor-network process prevents us from seeing the relationships among the other processes[9]. This would have limited my research too. Indeed, in BfW

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[8]I addressed this phenomenon and its implications in Section 5.2.

[9]As I already mentioned in Section 2.1.2, ANT acknowledges the existence of other actor-network processes,

processes of actor-network formation can be relevant to each other even if they do not directly interact with each other while unfolding, as it was in the example of the Khalifate (See Section 5.4). Contrary to the original layout of ANT regarding scientific laboratories, in BfW there is no aware and explicit competition among the various attempts of teaming up[10] in actor-networks. Of course receiving help and feedback by other users is useful, but this search for help is neither in competition nor in conflict, with other participants' searches for help. Furthermore, the continuous state of development the artefacts are subject to it makes the implicit search for a *stabilization* process of ANT somehow unfit to think at participants' acting. For participants a prototyped idea for an artefact represents a stable actor-network as when it reaches beta stage, as when it goes beyond v1.0 or as when it gets abandoned.

Therefore to look at the whole collective activity from the perspective of a single actor-network process could have had framed the phenomenon way too narrowly. Instead, by integrating ANT with the frame of action nets the direct and indirect relationships among the several actor-network processes, in their different stages of evolution become more evident. For this the constructs of *local* and *translocal* actions were crucial.

The idea of local and translocal actions sprung out of Organizational Studies and it mainly derives from the study of traditional organizational settings[11] (Czarniawska & Czarniawska-Joerges, 2008), in which looking into the emergence of specific subjects and their evolution in different situations[12] was relatively easy. This does not regard BfW, since the collective is distributed and operates via Internet based technologies. Practically I observed and analysed the translocality of emergent issues through their manifestations in the Forum. This may cause confusion and give the impression that all activities I described in Figure 5.2 were, indeed, only local ones. To some extent this is correct, but this is not the level of analysis which I used the concept at. As I tried to show in Section 5.1, threads started in the Forum are tools to express doubts, problems and work results happening *somewhere else*[13], which is hardly accessible both to researchers and other participants. Thus the need to use a consistent place to investigate the phenomenon, which, in my case, it happened to be the

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but frames them only as antagonists. Furthermore it frames as antagonists only the ones which enter in direct contact with the main actor-network process.

[10]Most of these allies being non-human artefacts, share the non-rival and public nature Steven Weber referred to about software. See Section 1.1.1.

[11]Czarniawska later also uses these concepts for domains other than traditional organizations.

[12]Ongoing actions in business meeting, human resource departments, R&D units or in administration offices are usually well confined both geographically and institutionally.

[13]Typically on participants' home computers or working devices.

Forum. In Section 5.4 the Khalifate Faction emerged as a translocal phenomenon, because it was local to different people involved in different activities: BfW developers involved in the development of an official game component, participants involved in the creation of UMC and end-users who generally discussed about the Faction.

Interaction spaces – Hint for an analytical frame

I claim that we, as researchers, need to develop analytical lenses which allow us to distinguish the phenomenon we are interested in from the places in which it manifests. A frame which allows to look at, for instance, bug fixing activity as disengaged from the sole use of a bug-tracking system. A frame which would allow to see how various issues emerge in different areas of the infrastructure and travel across them. A frame which would allow space for focusing on *processes* rather than on *actors* and on their *actions*.

The lens of *interaction spaces* adopted in the socio-cognitive framework by Sack et al. (2006) and already applied in a study[14] of a FOSS collective might be a fruitful approach to explore. For instance it was used to focus on core development activities and to look at feature proposal processes[15]. Feature proposals were analysed by observing how they were dealt with in the collective in three different interaction spaces: documentation, discussion and implementation (Barcellini et al., 2009).

These interaction spaces get defined conceptually and do not necessarily correspond to specific media or tools, on the contrary they try to frame in a general, yet not too vague, way an area of the collective in which prevails a certain domain of activity. Thus, for instance, with 'documentation space' we could frame all the wikis page, the documentation files embedded in the source code and the procedures for writing and maintaining such documentation.

For a given collective we may map several interaction spaces which we deem relevant for our goals and look at how certain issues get defined, constructed and, ultimately, emerge in the various spaces and how they become translocal to other ones.

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[14]This framework was used in more than one publication, but these relate to the same investigated case (Barcellini et al., 2008b,a).

[15]In their case, the feature proposal process was more formal and institutionalized than in the case of BfW.

6.3   About a mature collective

A final consideration in this methodological part concerns my initial choice to ground the research on an *active* FOSS collective and the maturity of *The Battle for Wesnoth* which I realised early in my fieldwork. Indeed, I chose BfW mainly because, according to the traditional indicators for FOSS active and successful projects[16], it stood out among other FOSS collectives. However, as I hinted in Sections 2.2.1 and 3.2.1, understanding what it counts as an 'active' collective is a subtle matter.

The case of BfW showed that indicators such as number of developers, credited contributors, video game downloads, forum registered members and frequency of version releases are only a superficial part of the story. In fact the kind of work that actors performed in the collective and the type of changes included in the releases have heavily changed in recent times, despite the fact that the population of the collective kept slowly increasing and the frequency of releases remained relatively stable through the whole life of BfW. Developers' core activity moved towards a sort of 'active maintenance' of existing and largely completed artefacts. In other words their work on code and other elements became largely a response to users' feedback rather than a manifestation of their own desire to experiment and create something new. At the same time the various elements that were progressively added to the *vanilla Wesnoth* (both at the engine and content levels) stiffened the flexibility and openness for experimenting.

From a certain point of view this aspect can also be considered an interesting insight which well integrates in the few literature about FOSS projects lifecycle. This literature focused on organizational aspects of FOSS projects at different stages of their life and highlighted that in advanced stages (*e.g.* at the end of *growth* and during *maturity* stages) maintenance of code and of infrastructure may become major concerns in the projects. This is motivated by the fact that, by the time of those stages, many early developers have already left the project and the remaining ones have to cope with a complex infrastructure and a relatively large users population which produce a large amount of feedback (Lattemann & Stieglitz, 2005). In addition to this, my research suggested that as the collective matures there may be also an intrinsic depletion of space for introducing novelties in software and for new (wannabe) developers to find engaging areas where they can experiment their own ideas. In this light it

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[16]See Section 2.2.1 for more details about the selection process for the investigated case.

should not surprise that the part of the collective which features most creative activities and innovativeness is the one related to the UMC, in which contributors do not have to conform their artefacts into design principles, quality standards, or lore consistency constraints.

Another key point has both a methodological and a substantive relevance and it concerns the difficulty to realize the actual status of a FOSS collective by 'observing' it from the outside.

I chose the case on the basis of a few traditional indicators which suggested it as an 'active project'. Somehow naïvely, I can say in retrospective, I expected a collective featuring a certain kind of enthusiasm with many people actively involved in completing and innovating its key by-product: the vanilla Wesnoth. It took me a few weeks of actual fieldwork, some interactions with natives[17] and the attendance of different areas of the infrastructure in order to realize that I had to re-consider what "active" meant for my work and that I had better talk about a "mature" collective. This aspect raises the issue of whether researchers can actually select FOSS projects at different stages of their life *before* having begun their research activity and by grounding the selection process on the above indicators. Moreover my experience also highlighted the challenge of identifying shifts towards different stages. Indeed I found myself to conduct a research on a mature collective, but during my whole 18 months of affinity with BfW (See Figure 2.1) I could not grasp any significant variation in the overall activity which suggested that the collective was either *declining* or *reviving*[18]. The only two occasions which I suspected as signals of a declining collective concerned a slightly longer-than-usual silence period in the developers' mailing-list[19] and a timid scepticisms expressed against BfW participation to GSoC 2012[20]. I claim that BfW has been (and still is) in a mature stage for my whole research period. However understanding when this stage started is pretty daunting. For instance from the perspective of a long standing contributor, such as Cylanna, to remember a period when 'things were different' it was necessary to go back to five years earlier[21], approximately in 2006 between the releases of BfW v1.0 and v1.2. Yet, at the end of 2010, I entered the field with the presumption that I would have observed an 'active FOSS project'.

As I hinted above, the difficulty to understand the general status of the collective from

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[17]Such as a retired developer a couple of active ones and a couple of participant users.

[18]These are the two possible stages indicated as following *maturity* by life cycle approaches.

[19]In this list there is usually a period of few silent-weeks (6-7 weeks) after most releases announcements. Recently after the release of BfW v1.10 the silence lasted longer.

[20]For the first time in BfW history one of the developer involved in mentoring students for GSoC raised some doubts about the benefits of participating. His doubts went basically ignored and BfW participated to GSoC 2012.

[21]See Cylanna's closing quote at the end of Section 2.2.1.

the outside might have a substantive relevance too. Indeed if one of my motivation to choose BfW was grounded on a wrong perception could this apply also to users and their onset of participation? In other words, if I knew that BfW was a collective with relatively little active development at its core I would have probably considered more thoroughly whether to choose it as a case. What about users? Would they start (or not start) participating if they knew that the collective were in a mature stage and with little space for new original contributions? Is it important for the collective to mimic a different status than it has in reality? If yes, are participants self-aware of the image that the collective display to the outside? Such questions might be worth considering for further research on participation in FOSS collectives and their relationship with different stages of their life.

CHAPTER 7

MAKING SENSE OF USERS PARTICIPATION

In this final chapter of the thesis I recall and deepen all the insights and hints I collected
during the whole work to answer the very first question of my research. In Chapter 6 I
focused both on epistemological and methodological aspects of this ethnographic work. Here
I dwell on its substantive findings.

As claimed in the Introduction this work places itself within the broad interest for
understanding the changing 'working relations between technology production and use'
and took the paradigm of Free and Open Source Software development as key nexus for
studying these changed working relations. In particular, by putting users participation in
FOSS collectives at the centre of the inquiry, and thanks to a multidisciplinary approach
primary built on Cultural/Anthropological studies, Science and Technology Studies (STS),
Participatory Design, Information System research, and secondarily on Computer Science,
Management Studies, Human Computer Interaction, Software Engineering and Ergonomics,
this research explored how software continuous design and development intertwine with
such participation.

This research provides on original contribution to the area of FOSS studies on the first
instance, because it produces an original sociological take on the human formations that take
care of FOSS development which is able to account for the relevance of users participation
in relation to the core software development effort. Indeed, the research suggests that this
human formations are best described as involved in the activity of *exploring* and probing
the possibilities offered by the creativity and resources of the collective, rather than in
experimenting with them. It also provides original insights to the understanding of the

relationship among the dimensions of participation, design and sustainability in collaborative, bottom-up, volunteer based and Internet-mediated phenomena such as FOSS is.

Below I discuss these insights, but before moving there I provide a streamlined recap of this manuscript to help readers recalling the many passages and arguments made in this thesis.

7.1   Content Summary

In Chapter 1 I defined FOSS development as a process in which 'associations of humans and non-humans actors emerge from experiments with adaptability in the attempt to maintain and to further their own means of associations, and where artefactual by-products result from such experiments'. As a consequence, *project* and *community* become one new entity and software becomes a by-product among many others in the collective activities. I also defined users participation as an emergent phenomenon which is relevant in the collectivity, regardless of the chance to affect its governance directly and which is in close relationship with the infrastructural elements through which it manifests. Participation becomes relevant even if it does not manifest through specific development tasks or specific development channels. Therefore the *distributed* dimension of participation cannot be neglected. Moreover I brought inside the theoretical 'map' of the research, considerations on FOSS designing processes. Indeed, in order to properly understand how a distributed participation relates to software (by-)products through the ongoing and emergent work of the collective, it was necessary to explicate how the collective deals with designing. Designing is not an easily identifiable activity which is confined within clear boundaries and stated goals, but it is actually the sensemaking of emerging and ongoing interactions in the infrastructure of the collective.

In Chapter 2 I laid out the epistemological foundations for my research, its overall design and methodology, and the research activities involved in my fieldwork. Firstly, I discussed the cyborg epistemology and the cyberethnography approach as the most appropriate to investigate a phenomenon which is mainly mediated by Internet-based technologies. Cyberethnography as an ethnography of cyber selves[1] allowed me to reckon FOSS collectives

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[1] The attempt to account for the fluid and heterogeneous processes that are enacted and re-enacted by cyborgs. For more details see Page 51.

as entities which are tightly intertwined[2] with their 'off-line dimension', not online only. Also I adopted the concept of *translation* of interests from the Actor-Network Theory (ANT) and *local and translocal* actions from Action Nets to: (*i*) avoid entering the field with a priori assumptions about hierarchies or relationships between micro and macro level of social actions; (*ii*) framing cyborgs' actions in the collective; (*iii*) *keep society flat* and *follow the actors as they move and perform through their actions*; and (*v*) grasp how local actions seem to become global.

Secondly, I explained the rationales for this research as a single case and for the choice of *The Battle for Wesnoth* (BfW) as a suitable example to look into. I proceeded in that way because (*i*) it showed an ongoing development and maintenance activity despite the fact that the software was basically completed; (*ii*) it gave users the chance to be involved in many participatory activities (above all, in the creation of User-Made Content); and (*iii*) it regarded a volunteer-based collective featuring heterogeneous participants and contexts of use, because software was available for all main operating systems. Lastly, described the processes of ethnographic interviews, participant observation and note taking during my fieldwork from the end of 2010 to early 2012.

In Chapter 3, I highlighted the main features of BfW as a strategy video game, a 'FOSS project', and a participatory system. The first part was useful to explain the differences between the two main game modes and how the various elements interact with each other to give players the experience of a strategy game. The second part is about how the BfW collective grew from a personal project (released as a prototype in 2003) to a widely recognized niche game and a successful, participated collective. Indeed, since the beginning contributors kept joining and the infrastructure matured with the changing population (*e.g.* the addition of the Internet Forum and several IRC channels; the implementation of a server for the content distribution; and several authoring tools). In addition, BfW always kept a relatively steady release rhythm both for the development branch of the video game (where releases are frequent, but more 'buggy') and for the stable one (where releases are rarer, but more solid). Also nowadays that all the key software elements have been developed and few of the most crucial developers and contributors left the collective, new video game versions get regularly released . Furthermore, the collective set up an heterogeneous funding system which is adequate to satisfy developers' basic needs. A relatively simple

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[2]As the arguments I presented in Chapter 5 clearly show.

design and development philosophy together with a pervasive, yet complex, contributory system, allow participants to contribute in several different ways. All these contributions are homogeneously distributed under the GPL licence which makes them easily accessible, shareable and re-usable.

In Chapter 4 I discussed analytically whether and how users affect video game designing. On one hand although a tool for proposals is up and running, hardly users ideas are implemented. Developers firmly claim that everyone is free to propose new ideas and features, but no one should expect that all of them will be implemented. The official video game is largely **developed according to developers preferences**[3]. It seems more plausible that who suggested the idea turns into a participant by taking responsibility for it and attempt to implement it, than it is to see a developer taking up such proposal as a personal task. On the other hand, developers are genuinely committed to providing a valuable video game which can engage players. Indeed, more than once, developers reverted back implemented features or spent additional work on largely completed elements just to address widespread and recurrent requests. Furthermore developers' stance about their right to make design decisions for the official version of the game, it emerged as an attempt to avoid further increasing the 'noise' the collective is embedded in.

To deepen the understanding of how widespread issues emerge in the collective, in Chapter 5 I focused on key elements regarding participatory dynamics in the collective. Firstly, three **grouping patterns** (collaboratorium, casual partnering, and intentional partnering) rose from participants ongoing activities: individuals rely on the collectivity's help for co-designing and co-developing their own contributory efforts. This dimension of participation as both an individual and collective endeavour, puts individuals and the collectivity in a tight relationship. If on one hand individuals need the collective regardless of their skills and available time, on the other hand it puts the collectivity in needs of specific individuals for specific tasks.

Secondly, the **wobbling** dimension of participation emerged as so pervasive and relevant that participants created a specific terminology and an informal way to inform the others on their attendance or non-attendance to the collective. However, this does not prevent users from collaborating and operating in a steady way, regardless of the uncertain future

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[3]Such a closure in regards to proposed ideas primarily affects non-participants because they are unaware of or cannot grasp the socio-technical implications of their own requests (both at the technical level of their implementation and at the level their relationship with existing game components).

development and collaboration. Unexpectedly that situation hardly worries participants and it is both widely accepted and, to some extent, welcome. I argued that this has implications: nurturing a collective in which the practice of 'coming and going' is accepted sustains participation over a longer period of time, but it makes abandoned (or slowly developed) artefacts subject to deprecation and the taking over of such abandoned projects a potentially problematic issue.

Thirdly, the Chapter showed that **individual motivations** for participation in activities which are unrelated to core code development do not differ from the ones that literature indicates for FOSS developers. At first, I thought that motivations such as ego boosting, skills improvement or social recognition were not leading for users participation, because I though that only few users' contributions could become so widely known to the whole collective that they could grant recognition and improved social status to their authors, but I was wrong. Even if the engagement with the collective happens in activities that might be perceived as marginal or less visible, such an engagement can provide fun, recognition and skills development. It also emerged that the so called 'fun factor' is a multi-faceted aspect. Indeed, even if the enjoyment and pleasure for contributing accompany the participants in their efforts, this is not enough to cover all activities and tasks which are involved in the development of an artefact. Some of these are not fun at all: playtesting, for instance, is hard work and wipes out both the joy of playing and developing at the same time.

Last but not least, the Chapter made clear how the development of an artefact which starts as a localised effort may progressively **turn to a collective endeavour** of interconnected local efforts. In this regard, it was explanatory the tentative inclusion of the Khalifate Faction into the vanilla Wesnoth. Here a couple of development activities pursued by developers were progressively followed by other endeavours, which were independently started and pursued by other participants. As such, it seemed that developers' declared intent and their development efforts about the inclusion of a new game element, it was enough to let emerge related activities by other participants. However, this was not enough for bringing the overall development of the artefact into a satisfactory status for its inclusion in the video game. I also mentioned the lack of a sustained users participation in the official Feedback Thread and of User-Made Content for the Khalifate Faction as critical bottlenecks for the 'failure' of this effort.

In Chapter 6 I made a few considerations about the epistemology and method adopted

for this work and tried to highlight the pay-offs of my choices.

7.2   From experiments to explorations

When I defined FOSS assemblages as collectives involved in the maintenance and furthering of their own means of associations, I brought to the fore the process of *experimenting* and put to the background design and development planning for the 'software product'. To a great extent this aspect matched with what is going on in BfW collective. Medium and long-term planning is pretty unachievable and rarely considered. I am convinced that a few interconnected factors contributed in creating such a situation.

The collective does not have formal rules or guidelines which help volunteers management as a conscious and collectively negotiated effort[4]. BfW collective follows a form of *do-ocracy*[5] in regards to which works 'get done' and which not. In most cases works get done if proponents of such works 'roll-up their sleeves' and do the job. For instance, as I already wrote, it should not surprise *Wesnoth-UMC-Dev* platform motto:

> Take responsibility for your own projects and never expect other people to do your work for you. If they do help out take it as a bonus and be grateful.

Similarly, it should not surprise that Baldras' call to developers to outline a general design goals map felt through the air: after BfW v1.10 release, Baldras announced his working plans for the following release to the developers and suggested others to do the same, so that everyone had a better overview of what was going on. No one replied to his call and a few months later he acknowledged the following on his personal blog:

> Back in January, I posted my initial plans for Wesnoth 1.12 in the developers' mailing list to gather some feedback and motivate other developers to do the same with theirs. Guess what, that didn't work.

Furthermore the constant state of unpredictability about the presence of other participants and their inclination to team up for co-designing, co-developing or refining even the simplest artefact, make it unlikely to follow medium or long-term planning. Paramount is Kai Krellis' attempt[6] to develop a campaign which felt apart due to the abandonment of his main collaborator. Twist of fate: a reliable and committed collaborator was specifically looked for

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[4]It has documentation pages and guidelines for explaining participants how to contribute and they mostly focus on the technical details of the activities.

[5]I mentioned this aspect in Section 3.2.6 and it also emerged as an insight from the developers' position against users' proposed ideas (See the beginning of Chapter 4).

[6]I recalled this episode in Section 5.1.2.

this project. Participants engage with experiments as these get defined by the contingency of the situation and are co-constructed with the help of other participants who 'stop by' and provide their feedback.

The collective is continuously involved in a series of parallel and particular experiments. A part of these experiments regards the development of the vanilla Wesnoth and is pursued by developers (*e.g.* introducing a new official Faction, making missing portraits, or tackling usability and accessibility problems); another part concerns infrastructural components (*e.g.* the renewal of the Wesnoth UMC-dev platform, the implementation of a UMC plug-in, the creation of a *Bestiary*); finally, a large part of these experiments is about UMC and is mainly pursued by participant users (*e.g.* creating Add-ons for a new Faction, a Campaign or a Multiplayer Scenario).

Partly, this insight is not surprising: the fact that FOSS collectives are ceaselessly involved in software development is a renowned pillar[7]. Furthermore my decision to expand my frame on the phenomenon and include all activities in the collective together with the choice of a case in which the creation of UMC is an important part of the collective itself, made it somehow predictable to find these dynamics.

However, it is interesting to stress how the achievement of such collaborative experiments are marginal to the collective. At least, this is the case if we consider the achievement of an experiment to be the creation of a relatively stable, largely complete and usable artefact. Participants engage in their tasks spending time and efforts, regardless of the final stage they can reach through their efforts. They may start experimenting on the initial design of a campaign without ever reaching a prototyped artefact or getting close to a 1.0 version. Participants are satisfied with it nonetheless, and, more importantly, even though such experiments do not reach a proper completion they are not necessarily useless. Let me recall the attempt to create the lore of the Khalifate Faction. This attempt ended up with only about half of the required material, but this did not prevent it from being adopted by the developers and from being included in the official description of the Faction. Furthermore the very experiment of introducing a new official Faction into the game is a concrete example of what I have been trying to highlight: the removal of the Khalifate from the development series (the acknowledgement of the 'failure' in including the Faction) was almost ignored

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[7]See the arguments I made in Chapter 1 about FOSS "continuous development", "always in beta and always developed", and "continuous design".

and raised no concerns among those who were involved in those experiments.

To come closer to the terminology I initially borrowed from Cornford et al. (2010), I shall argue that the stabilization (even temporary) of the experiments results is not a prominent goal for participants. It is rather an artefactual acknowledgement that we, researchers, set a posteriori when we are able to look at events which already happened.

If we recall Kelty's words about experiments this construct prompts us to reckon changes in the collective as the 'results of experiments that have worked':

> Adaptability does not mean randomness or anarchy, however; it is a very specific way o resolving the tension between the individual curiosity and virtuosity of hackers, and the collective coordination necessary to create and use complex software and networks. [...] Linux and Apache should be understood as the *results* of this kind of coordination: experiments with adaptability that have worked, to the surprise of many who have insisted that complexity requires planning and hierarchy. (Kelty, 2008, p.211, original emphasis)

As I hinted in the previous page, my focus on the collective's ongoing activity brought to the fore BfW's peculiar way to pursue its own 'experiments'. At least we have to acknowledge that they have a peculiar way to conceive 'successes' and 'failures' of these claimed experiments.

To provide a more fine grained perspective on the phenomenon and to overcome the bias of 'experiments' I rephrase my initial construct and suggest we look at FOSS collectives as

> *a collective where temporary associations of humans and non-humans emerge from explorations of possible ways to maintain and further their own means of associations, and where artefactual by-products result from such explorations.*

Participants explore the collective. They probe the infrastructure in order to see whether their sketched ideas for a campaign, their rough prototype of a scenario, their beta versions of a documentation resource, or their nearly-completed new Faction meet the interests of the collective and, thus, have ground to be pursued further. Often these explorations bear no or very limited results: there is either no aggregation of participants and resources around that exploratory attempt or is such an ephemeral gathering that it dissolves before the desired artefactual result is achieved. Sometimes these probing efforts manage to continue long enough that the starting point which they departed from translate into a renewed artefactual

form. Indeed these explorations concern any aspect of the path which bring game and core components or infrastructural elements, from their initial ideal and vague conception to an implemented and complete status[8].

At any given point in time, if we look at the by-product of BfW ongoing activity (*i.e.* the video game) it looks like the result of 'experiments that have worked', so to speak. We see a stable and functioning software artefact made of several components each of which seem to have followed a trajectory of experiments. However, if we look at BfW ongoing activity we see that those trajectories never existed. At the level of video game development we see a multitude of explorations about how to appropriate, extend, change or improve the general game design; recursively, at infrastructure level we see a multitude of explorations about how to best support explorations at content level.

In light of this, for instance, the current standard and quality for BfW artworks is not a relatively stable result of a series of experiments which had the aim of improving the original 'place-holder style' of BfW v0.1. On the contrary it is a serendipitous combination of explorations pursued by individuals in relation to artworks: the current shading of the different water based terrains it is not the result of experiments aiming to find the adequate shading for water based terrains, on the contrary it is a contingent result sprung from exploring one of the possible ways to solve an accessibility problem[9]. Similarly, the removal of the Khalifate Faction from the official development[10] is not just a failed experiment in the attempt to add new content to the video game, more deeply it is the fading of an exploratory effort. In this case we witnessed a collective effort which lasted relatively long, but an exploration nonetheless. In 2008 developers explored the possibility to add a new Faction in the video game. No concrete outcome resulted from that exploration a part from a vague hint to the Khalifate as a future-potential candidate. In 2009 developers explored again the possibility to add a new Faction. This time the Khalifate was already the departing point and the recovery of artworks development for that Faction was the only achievement of this scouting. In 2011 developers, starting from the Khalifate with a nearly-completed artworks set, explored again the possibility to include the Faction in the forthcoming BfW v1.10. This time the scouting found widespread support from which emerged a few partial artefacts

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[8]Of course, ultimate completion is never reached, but a status in which artefacts only need active maintenance is often reached.

[9]See the part on "Accessibility" in Section 4.3 for more context.

[10]See Section 5.4 for more context on this aspect.

such as a Faction lore, a draft for a campaign design, a units description, an MP Era and a set of feedback. Unfortunately they were not enough to bring Khalifate to BfW v1.10.

I see *exploring* as an approach to involvement in the collective which requires relatively low commitment and expectation about the artefacts which the exploratory efforts refer to. Explorations continue further when they find interest, support and legitimacy in and through the collective, because it is mostly in this case that the experience of "fun" and "joy" for contributing are collectively constructed and preserved. Furthermore, in the frame of explorations they become more comprehensible aspects such as the 'It Is Ready When Is Ready' (IIRWIR) philosophy or the widespread acceptance of wesbreaks.

7.3 Participation, Design and Sustainability

This work provides insights about the relationships among participation, design and sustainability in FOSS. Hereby I articulate these insights and, to the extent possible, attempt to provoke some generalization about them.

When in Chapter 1 I defined participation as:

> an emergent phenomenon where the end-users of a technological artefact take part to the activities that are distinctive of the collectivity linked to the come into being of the artefact. This phenomenon influences and is influenced by the evolution of the socio-technical collectivity, notwithstanding the fact that real chances to directly affect the governance and decision centres exist or not.

I set up this research close to the Participatory Design (PD) scholarship and borrowed elements from the area of Distributed Participatory Design (DPD). Provided the differences existing between the traditional application domains of PD and the emerging bottom-up development process of FOSS collectives[11], I stress the challenge of considering FOSS collectives as instances of DPD phenomena.

Generally, it would be a twisted interpretation to claim that BfW makes the inclusion of *users participation* into the collective a conscious and sought goal. The collective does not actively attempt to bring in new participant users. Certainly there are requests for feedback and bug reporting in each release announcement; similarly there are occasional reminders about what kind of help developers need from potential participants, but these are not part

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[11]I highlighted some of these differences in Section 1.3.2.

of a widespread and coherent effort to use users participation as a means to provide software
as if it would be a participatory design effort. Indeed as a counterpart to these sporadic
efforts, I recall that developers (largely supported by other participants) take distance from
end-users' proposed ideas. The answer to the Frequently Asked Question (FAQ) I reported
at the opening of Chapter 4 is clear.

Why doesn't Wesnoth have my favorite feature?

> Because we are building this game for ourselves, to suit our own preferences. We're not
> building the game for you, in large part because this is our hobby, not our job; whether
> you like it or not is immaterial to us. [. . .]

Even though the apparent harshness of this statement is a 'residual artefact from stricter
times' (as a developer recalled) and participants try to create a positive and polite atmosphere
in the collective, the bottom line of the FAQ remains valid: software in the BfW collective
is not made to fit end-users preferences. People who engage in this 'hobby' and who enjoy
taking part in the collective are the ones having the right to decide how to shape the artefacts
they are working on.

Contrary to Participatory Design (PD) efforts or to development projects where HCI
experts are officially involved, openness to users participation in BfW is not intended to suit
(non-participant) end-users' needs. In this regard I want to acknowledge two things: the BfW
collective provides plenty of possibilities for people to take part in the collective's activities;
these possibilities portray more than one kind[12] of participation.

Users participate *indirectly* to the core development of the video game (*i.e.* the vanilla
Wesnoth), because they engage in bug reporting activity and in content feedback submission,
for instance. I call this kind of participation "indirect" because before users' inputs are
encoded (if they are at all) into the software they need developers' mediation and, as
already mentioned, developers act upon the artefacts they are working on primarily guided
by their preferences. In this case I can affirm that users participation indirectly helps to
co-design software. However, the BfW collective also includes another wide area where
participation occurs in a more *direct* form: the creation of UMC. I reckon this as "direct"
because participants are responsible for the design and implementation of the elements they
would like to see in the video game. The possibility to extend the game through Add-ons
allow participants to modify the game to a great extent (*e.g.* they can introduce Role-Playing

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[12]In Section 1.2.2, I made the distinction between *direct* and *indirect* type of involvement. See that Section for
further details.

Games mechanics, they can narrate stories taking place outside the fantasy world of Wesnoth). In this case I can state that users' participation helps to co-develop the video game as broadly intended (not only for the Vanilla version): they provide additional content to play, which is available to anyone through the add-on server and which extends the longevity of the video game itself. They also provide artefacts that, in some cases, happen to be integrated in the vanilla Wesnoth.

The availability of infrastructural support both at the level of authoring tools and of communication spaces emerged as important elements to facilitate new people participating. These aspects go along with other ones which help keeping participants close to the collective over a medium or long-term period: a communicative environment which is perceived as friendly, welcoming and supportive[13] and a collective which is respectful of participants' autonomy in participating[14]. For instance elements such as the Map Editor, the Wesnoth-UMC-Dev platform, the UMC development plug-in, the wmllint validator or the extensive up-to-date documentation about the WML emerged as important resources for participants both to start engaging in the UMC area and to sustain their ongoing efforts there.

Nonetheless, while contributing, people tend to confront with other participants and to team up to solve and to better pinpoint challenges they encounter such as the doubts about the 'appropriate' design for an artefact, the technical problems about its implementation or simply the need to find collaborators. For these aspects participants make extensive use of the interaction spaces that are available such as the several Forum boards and IRC channels[15]. For them is crucial that the interactions in these channels happen in a non-hostile environment. Implementation mistakes, trivial design, unjustified doubts, even occasional rules infringements shall not be stigmatized or treated with harshness. It is paradigmatic the situation Gweddry recalled in Section 5.3.3:

> Discussions started again and again and almost every time it was only a matter of a few posts until flamewars came up and things got ugly - again.
> Because of it, some very engaged players left Wesnoth. Not so much because of the RNG itself but rather the way they were treated.

These elements show that in a mature collective, participants (at least some long-term ones) become conscious of the fact that also the general environment perceived in the collective

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[13]See Section 5.3.3 for more details on this aspect.

[14]In my case, this had particular reference to temporary and unpredictable leaves. See Section 5.2 for more details on this aspect.

[15]As I mentioned more than once, in comparison to the Forum the IRC channels are much less populated, but are used nonetheless to support contributors.

should be preserved. The friendly, welcoming and supportive environment of the collective should be preserved as much as an efficient revision control system or a bug-tracker. It is largely Forum moderators' and developers' responsibility to set the example about how to behave in the Forum. However is also participants' responsibility to seize this example and to preserve such atmosphere by avoiding impolite answers and out-of-scope ones.

Similarly it became an occupation for some participants keeping in sync the infrastructural resources with the needs of the collective. For instance the wmllint validator was updated more than once to align with the newest features of the WML, the UMC development plug-in reached its version 2.0.1 in July 2012, the Wesnoth-UMC-Dev platform was completely renewed in 2011 after it already had substantial modifications in 2010.

Finally, even if this aspect may seem paradoxical, a key to keep participants engaged to the collective over a medium or long-term is the possibility to temporarily (and often unexpectedly) suspend such engagement without being stigmatized. As widely discussed in previous chapters, this possibility however comes with the trade-offs about the perishability of artefacts, their slow development and the impossibility to establish roadmaps or make forecasts about them. This should not surprise, since the BfW collective is made up of volunteer participants.

Now, presuming for the moment that the FOSS dynamics that I have described are generally characteristic of many FOSS collectives or other forms of open, collaborative and bottom-up efforts which feature volunteer-based participation the following general implications would follow.

1. Since the continuous software development that characterises FOSS collectives basically translates into small and incremental changes that, in some cases, resemble more maintenance and ad-hoc interventions than implementation of innovative and new features, then it is crucial for the software to be up-to-date and well maintained that participation is kept alive and sustainable over time. The possibility for volunteer participants to preserve their freedom to participate without formal or limiting constraints is an important characteristic for sustainable FOSS collectives since it favours participation over longer periods of time. However, it also implies an intrinsic unpredictability concerning the outcome of the various sub-projects which are internal to the collective. More importantly, this implies a tight bond with the redundancy of similar artefacts and their wastefulness.

2. Since FOSS collectives may mature different affordances for participation and each of these can feature different *type of users involvement*, as they are understood in traditional Participatory Design (PD) practices (Cavaye, 1995), then each collective may fathom different types of users empowerment (Damodaran, 1996) in relation to the same software development process. This is relevant to the emerging area of Distributed Participatory Design (Gumm, 2006) which should also develop concepts and tools for understanding the relationship among these different empowerments, besides focusing on the distribution of resources and actors.

3. Since participation in itself represents a key dimension of the continuous (re-)designing effort in these collectives and since the ones who participate are mainly those people who share and identify with the collective's principles and practices, then such collectives may be seen as forms of collective closures towards external influences. An apparent opening to and reception of new participants and their enthusiasm, de facto, turns into a seizure and incorporation of such 'workforce' into established dynamics while non-participants occasional input remains neglected. In relationship to FOSS usability this is a critical issue for all those collectives which do not feature organized and institutionalized attempts to work on *quality assurance* by means, for instance, of HCI experts. More broadly, this issue may also be relevant to other types of expression of participatory culture or socio-political movements. For instance it is no mistery that the the free and collaboratively written online encyclopedia *Wikipedia* features strong cultural bias behind the shaping of the articles (O'Neil, 2011). Similarly, it will be interesting to monitor whether or not political movements such as *Movimento 5 Stelle*[16] will be the harbinger of a renovation designed from the bottom, by the participant citizens, or just another means to institutionalize traditional power by leveraging on the rhetoric of participation[17].

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[16]This political collective recently affirmed itself at the Italian political general elections of 2013. *Movimento 5 Stelle* (M5S) uses as main rhetoric for enrolment the open and democratic participation through the Internet and the political renovation as key goal to be pursued. http://www.movimentocinquestelle.it/.

[17]Recent events such as the harsh marginalization of participants who stood out of the crowd of the M5S during the voting of the President of the Senate of the Italian Republic (Pietro Grasso), make me think the latter.

7.4 Conclusions

It is now time to come back to the initial research question about *how users participation and software development relate in FOSS* and, in this regard, to claim in more general terms what my inquiry showed us.

Through an holistic framing of the development of a FOSS software and an ethnographically informed approach to the inquiry, this work provided an empirically grounded validation of something which was already inferable from theory: the fact that non-developers participation permeates, both directly and indirectly, both by being present or absent, all activities related to the shaping of software. By all means participating to a FOSS collective equates taking part to its own designing.

Nevertheless, this work also showed that, at least when participation is voluntary, this is highly unstable and unpredictable in regards to where it focuses and how steady it is. This makes software designing subject to the same dynamics. As such this type of volunteer-based collective mimics a rhizomatic behaviour.

A rhizome is an entity which resists development based on linearity and causality. Rhizomes favour nomadic systems of growth and propagation. Rhizome "ceaselessly establish connections between semiotic chains, organizations of power, and circumstances relative to the arts, sciences, and social struggles." and such connections potentially overflow in every direction (Deleuze & Guattari, 1987, p.8). They may break down, but new connections will emerge continuing from the interrupted parts or creating completely new ones (Deleuze & Guattari, 1987, p.10).

Similarly, a FOSS collective is populated by participatory efforts each of which relates to specific elements in the collective. Via efforts of editing, renewing, improving or fixing any aspect of the collective, participants establish contingent connections with the semiotics of artefacts they work on, the organizational context which frames the artefacts and the perceived socio-technical challenges at the basis of such efforts. Volunteer participants may interrupt their shares and thus break the connections. Other interventions may, or may not, resume abandoned works, but nonetheless new interventions will again establish connections. As such a FOSS collective resists any presumption of direct, conscious, homogeneous or institutionalized management or coordination. Indeed, as attempts to drive the organization of the collective or to steer its design, these would be just two among many heterogeneous

and serendipitous elements that are mobilized and re-configured in each connection by participants and through participation. *Coordination* and *management* in FOSS collectives are much more similar to no-coordination and no-management at all than they are to sought-after key qualities.

About 30 years ago FOSS started arising and taught us that software could be developed both outside the boundaries of formal practices of software companies and against a few software engineering tenets. Perhaps it is time to take seriously the lesson and to reckon that, with particular regards to software designing, coordination and management are not as crucial concerns as they are the selection and evaluation processes about what makes sense to add, integrate and deposit into the software source code and how to shape it.

The great value of FOSS is the general capability to let a complex artefact as software to emerge from a rhizomatic collective. In other words, the ability to embed stability and coherence in a technological artefact by building on the instability and unpredictability of participatory connections.

Of course, aspects such as governance, socio-technical incentives, release management or guidelines remain relevant, but, if I am to name the key insight that this research provided, it is the relevance that the chance for users to participate itself has for FOSS collectives, regardless of the possibility to guide such participation. Indeed, it is participation that gives sense to the artefacts developed in the collective and shapes them both by co-designing and endorsing them.

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APPENDIX A

FURTHER RESEARCH – GENDER AND INCLUSION

The present coda about directions for further research rises from a dimension on participation which became evident to me at the end of the empirical research, during my attendance at FOSDEM conference. There, I noticed a much clearer 'us and them' dynamic or rhetorics performed by developers in regards to users than it was possible to grasp from the observations of computer-mediated channels of the infrastructure. Although in Chapter 4 I partly tackled this aspect, I did not develop it as the central focus of my thesis.

I recall from my notes such perception:

> […]
> - The room is packed with audience (about 40 people, a few of them standing at the entrance) for Deoran's talk. The other talks of the "game track room" were similarly packed, but probably less.
> - BfW developers (6 people) occupy the first two small rows at the centre of the room. They seem to know each other quite well. They joke and laugh among themselves, but I cannot hear about what.
> - They are all connected to BfW IRC channel (as I am) and, mostly provide updates to other BfW devs about the unfolding of the event.
> […]
> During his talk, it seemed to me that Deoran made a lot of clear distinctions between us/them (devs and users), by often referring to "we (who develop the game)" and "them (who use it)" when talking about feedback received on the Forum, for instance. Furthermore, the way he referred to users as a resource "to be used" for development purposes (even though it could be 'annoying' to deal with them), provides a clear line of demarcation.
>
> - in Deoran's vocabulary: 'non-geeky' are the ones who cannot interact with the source code
>
> - he (and the other devs in the room) agree on the joke that "sometimes it is difficult to be civil with them" (in relationship to the rise of cyclic questions)
>
> - he promotes the idea that users can be educated (trained) and possibly should be
>
> (Fieldnote, "Fosdem12 - BfW", 05/02/2012)

More importantly, that occasion was the only one when potentially hidden gender biased dynamics became evident. Again, from my notes:

> […]
> While a few BfW developers are comfortably sitting in a same room in Brussels, they communicate with each other through the IRC channel, and also informed the other devs about what's going on at the conference.
> - Interesting. They started making a few jokes (in IRC) about the presence of 'even a few women' (8 or 9) in the conference room:
>
> D1(atFOSDEM): Yes, there is even some female audience!
>
> D2(atFOSDEM): several females in fact!
>
> D3: darn, i should have know that earlier ;P
>
> D4(atFOSDEM): lol
>
> D5(atFOSDEM): maybe even <name> would be here now then
>
> D6(atFOSDEM): D2, too bad you couldn't be here

<div align="right">(Fieldnote, "Fosdem12 - BfW", 05/02/2012)</div>

In hindsight, I should acknowledge there may be implicitly discriminatory and marginalizing practices at play in BfW, which do not easily emerge through an unfocussed observation of the collective, but which can be highly relevant for a discourse on participation and design in FOSS collectives and, thus, shall be specifically looked for.

Despite a mature collective such as BfW already developed the awareness for the importance of an interaction space which can be experienced as welcoming and polite (see Section 5.3.3), it is also possible that, contextually, it appropriated conversational (or other type of) practices which exclude those people who are usually marginalized in 'male-dominated' domain such as the one of technology production, and FOSS in particular. Namely, female participants.

Recent studies highlighted how FOSS, despite a general rhetoric of openness to participation, democratization of innovation and technology production processes, remains highly resilient to the integration of female participants (Lin, 2005). Indeed, FOSS collectives are as male-dominated as traditional technology development projects (Reagle, 2013).

In the case of BfW there is attention towards the construction of a video game which does not embed evident gender bias in its design. For instance, there is awareness about the relevance of the gendered terminology in the narratives of the campaign plots; often translators open threads in the Forum to discuss about how to best translate gendered names in different languages and they also support creators for the use of non-gender biased language in the creation of their artefacts; similarly, in the official Factions and Campaigns female characters are valued (even though these are slightly less in number than male ones). Despite this attention and the attempt to provide a 'gender friendly'

video game, female participants seem a tiny minority. In 2010, one thread was specifically opened to gauge participants' sex through a survey. Even though the survey is in no way representative: out of 101 respondent only three declared to be female. Furthermore, after a few weeks the poll was closed because it kept drifting off-topic due to a few participants who leaned towards gendered biased allusions. The moderators attempted keeping the thread spot on the topic, but ultimately decided to close it in order to avoid for it to offend female participants.

From a certain point of view, BfW collective does not discriminate blatantly against particular type of participants, but it possibly portrays the gender-gap which is typical of other FOSS collectives. If, on one hand, the most renowned, respected and 'taken as example' artist in BfW is a female portrait artist[1], on the other hand female participants are a rarity in BfW.

As the existing literature on gender and computer-mediated interaction hints, potential explanation to such a situation may rest on the so called 'bad apples' and 'poison people': usually, a small minority of people who are more vocal or have relatively more time than others to spend on the media and who promote (consciously or unconsciously) discriminatory dialogues and interactions (Herring, 2003).

It would be relevant to explore if and in what measure the conversational practices (or other forms of interactions) which distinguish mature FOSS collectives developed over time to portray gender (or other kind of) biases. It is also important exploring to what extent such entrenched practices can be subverted or disrupted and, ultimately, if there is any interest in the collectives to do so. Finally, the other direction to explore would be the understanding of how this bias is reflected and embedded in the technological artefact under development.

---

[1]She is known by other participants to be a female, and despite she no longer contributes actively herself, she stops by once in a while to provide feedback on ongoing art works. Her feedback are always highly appreciated.

METHODOLOGICAL

Interviewees Recruitment

Public call

E-mail sent to the developers' mailing-list as a public call for interviewees recruitment.

From: Giacomo Poderi <giacomo@poderi.eu>
To: wesnoth-dev@<domain>
Subject: Research project on (end-)users participation in Free Software - Interviewees recruitment
Date: Thu, 24 Mar 2011 16:08:00 +0100

Dear Wesnoth developers,

I'm Giacomo Poderi, a couple of months ago I introduced myself and my research project [0], announcing a forthcoming recruitment for interviewees. Now, here I am to call for your help in carry on my research project.

Brief summary.
I'm working within the area of distributed participation in continuous-design based projects. In particular, my research project takes BfW as a case study to investigate how (end-)users participate to FOSS design & development. I use qualitative methods (mainly interviews and participant observation) to carry my research.

With the interviews I intend to run here, I am interested in understanding how BfW developers gather, use and make sense of knowledge coming from end-users and that relates to their participation (to the BfW project) and to their users' gaming experience.

For this reason, I'm asking for your help and a little bit of your time: I'm looking for candidates volunteering to be my interviewees! If you are willing to be interviewed

please let me know by private mail. Details about the interviewing process are provided below, but I will also be happy to clarify any further doubt (either by private mail or public discussion).

Thank you very much for your attention and I'm looking forward to your participation!

Cheers,
Giacomo Poderi - BfWEthnographer

—

PARTICIPANTS
- Anyone subscribed to the -dev mailing list and who contributes (or contributed in the past) to the furthering of the BfW project is eligible for and welcome to participate to the interview!

ROADMAP
- Recruitment: open until 4th April 2011
- Scheduling interview dates/line-up: 5th - 9th April 2011
- Conducting interview: Starting from 11th April until 6th May (approx.)

INTERVIEWING METHODS
I am available to conduct interviews in different ways, accordingly to your needs.
- E-MAIL: it involves a longer, but more flexible, time span for the interview, since it could run for some weeks. This looks more like an ongoing e-mail discussion rather than a 'classical interview'. I plan to ask 5/6 questions, each question within one e-mail. You can answer them when you prefer and have time to.
- IRC: we will set up a date and run a chat-session on IRC. Basically, I plan to ask the same 5/6 questions but in a more dynamic and interactive way. I do not expect the session to last longer than 2h (we can also split it in two sessions of 1h, if needed)
- VoIP/PHONE: We set up a date and your favourite VoIP (or a fixed phone number where I can reach you) and I run the interview by 'phone'. Interview should last between 1h/1h30m.

I will provide more information for each given method to interested people.

REFS:
- [0] <LINK>
- Overview of my research project: http://www.poderi.eu/node/2
- My research blog: http://www.poderi.eu/blog

—

PhD Student - Information Systems and Organisations
Department of Sociology and Social Research
University of Trento

Private call

Standard private message sent to potential interviewees as a call for recruitment.

> Hi <PARTICIPANT>,
>
> I'm Giacomo and I'm currently doing a research on users participation in Battle for Wesnoth. You might have stumbled upon my thread here <LINK> where I introduced a bit my research.
>
> I noticed that you are an active forum member, a moderator and a developer, which is a very interesting combination for my research interests.
>
> I'm currently looking for more people to 'interview'...I was wondering whether you'd be willing to answer some of my questions. They wouldn't be more than 5/6 open questions which I could forward you through your favourite medium: we could it over the forum pm system, e-mail, IRC...
>
> Your help would be of great value for me.
> Let me know if you are interested or if you wish any further clarification
>
> Thank you!
> BfWEthnographer
>
>
> —
> My Research on BfW: <LINK1> • <LINK2>
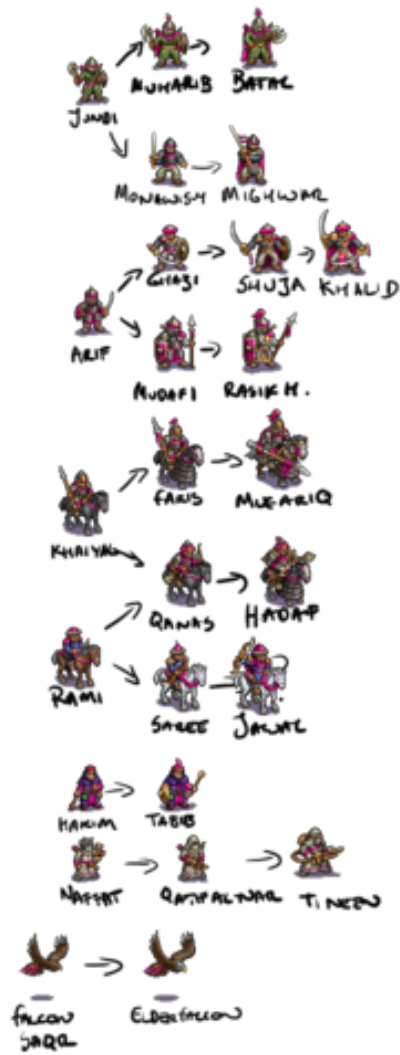
Figure C.1: Overall view of the artworks for the Khalifate units tree.

Figure C.2: Irdya.

(a) Water terrains in *The Battle for Wesnoth* v1.8.
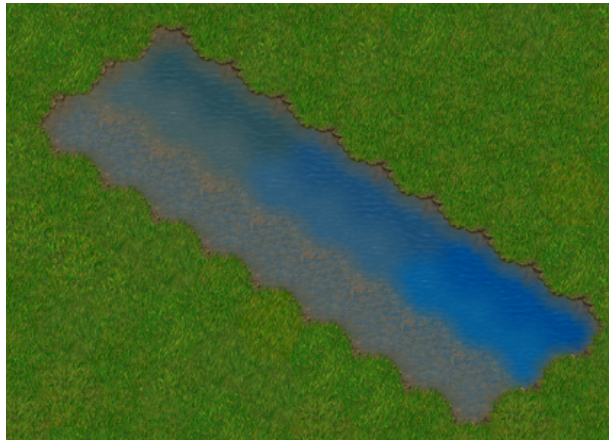
(b) Water terrains in *The Battle for Wesnoth* v1.9.
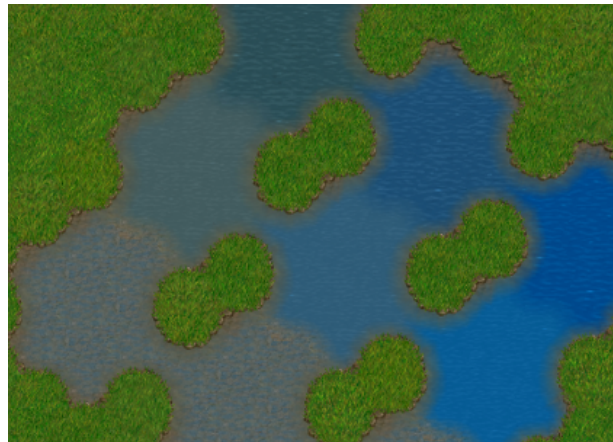
(c) Water terrains in *The Battle for Wesnoth* v1.9.7 and after.

Figure C.3: A comparison amongst the different versions of water terrains. The one in Figure (b) is the one with low contrast which was solved in Figure (c). Note: in these screenshot the difference is not as evident as within the game where water terrains are animated.

Figure C.4: The standard game interface of *The Battle for Wesnoth* v1.10.
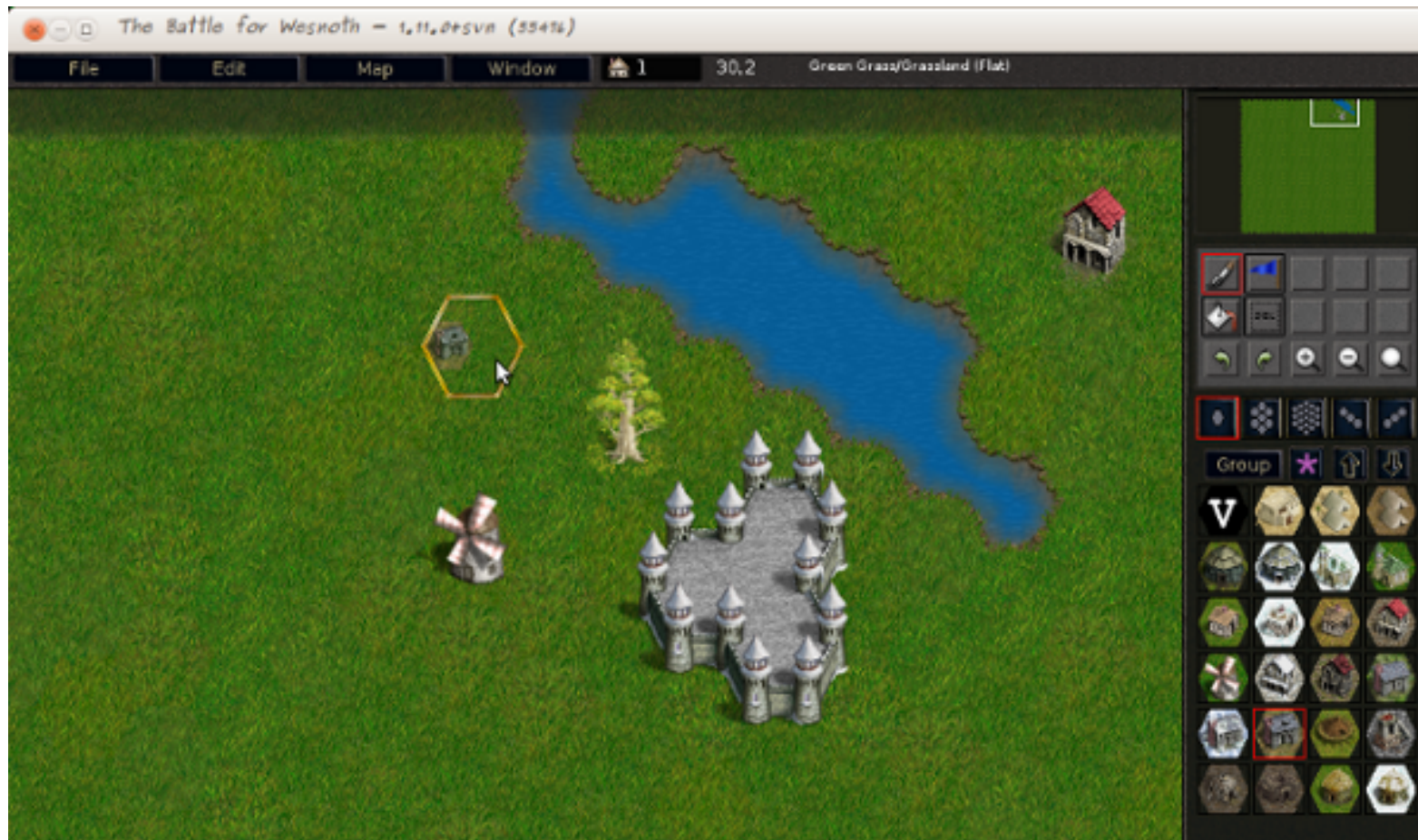
Figure C.5: The interface of the Map Editor from *The Battle for Wesnoth* v1.10. Map elements can be selected from the menu on the right column and placed on the terrain.

Development of a Bestiary

Below are a few artefacts discussed in Malifor's working thread for the development of the *Bestiary* (See Section 5.1.1). More than 30 people (amongst these, 7 were developers) took part to the thread over a period of 11 months.

Figure C.6 shows the initial prototype of the *Bestiary* which was presented by Malifor when he first announced his ongoing plans about the project. Figure C.7 shows some artefactual evidences (a screenshot and a mock-up) which a couple of participants reported in order to make layout problems more evident. Figure C.8 shows a prototype for explaining how he intends to structure the website and thus how content will be available for browsing. Few weeks after this prototype he also presents a completely renewed layout which tries to address most of the feedback received in the working thread.

Figure C.6: The initial prototype of the *Bestiary* which was presented by Malifor, when he first announced his ongoing plans about this project.

(a) Troublesome layout formatting

(b) Incongruous layout structure

Figure C.7: Participants highlight layout problems which are present in the early version of the *Bestiary*. Both participants provided artefactual evidences (a screenshot and a mock-up) to make these problems more evident.
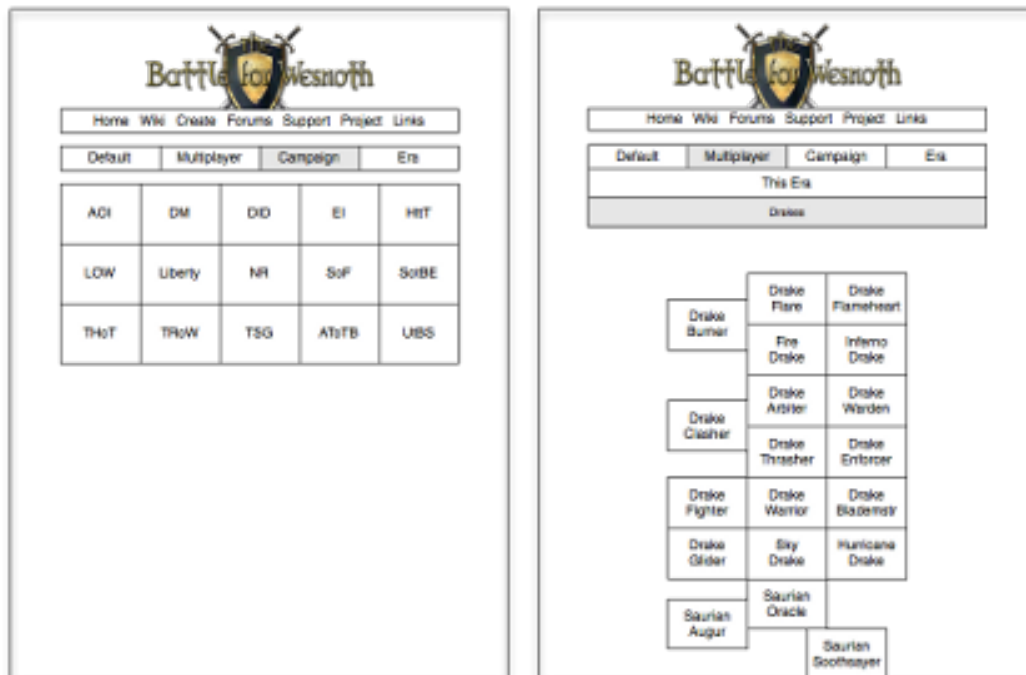
(a) Prototype of the *Bestiary* browsing structure

(b) Renewed version of the *Bestiary*

Figure C.8: Malifor present an overall browsing structure for the *Bestiary* and, few weeks later, also a completely renewed layout to take into account the problems highlighted in the working thread.

Elf Champion unit

It follows part of the WML code which defines the unit "Elf Champion" and which is included in the file `Champion.cfg`.

```
#textdomain wesnoth-units
[unit_type]
    id=Elvish Champion
    name= _ "Elvish Champion"
    race=elf
    image="units/elves-wood/champion.png"
    profile="portraits/elves/hero.png"
    {MAGENTA_IS_THE_TEAM_COLOR}
    hitpoints=70
    movement_type=woodland
    movement=5
    {LESS_NIMBLE_ELF}
    experience=150
    level=3
    alignment=neutral
    advances_to=null
    {AMLA_DEFAULT}
    cost=55
    usage=fighter
```

```
description= _ "Those few elves who deliberately hone themselves

into weapons of war become something which belies the peace-loving

reputation of their race. [...]"

die_sound={SOUND_LIST:ELF_HIT}

[portrait]

    size=400

    side="left"

    mirror="false"

    image="portraits/elves/transparent/hero.png"

[/portrait]

[portrait]

    size=400

    side="right"

    mirror="true"

    image="portraits/elves/transparent/hero.png"

[/portrait]

[attack]

    name=sword

    description=_"sword"

    icon=attacks/greatsword-elven.png

    type=blade

    range=melee

    damage=9

    number=5

[/attack]

[attack]

    name=bow

    description=_"bow"

    icon=attacks/bow-elven.png

    type=pierce

    range=ranged

    damage=9

    number=3

[/attack]

{DEFENSE_ANIM_RANGE "units/elves-wood/champion-defend.png"

"units/elves-wood/champion.png" {SOUND_LIST:ELF_HIT} melee}
```

```
[attack_anim]
    [filter_attack]
        name=bow
    [/filter_attack]
    hits=yes
    [missile_frame]
        begin=-150
        end=0
        image="projectiles/missile-n.png"
        image_diagonal="projectiles/missile-ne.png"
    [/missile_frame]
 [...]
 [/unit_type]
```