LEOPOLDINA
FORTUNATI

2018

Fortunati, L. (2018). Women's knowledge Co-production and sharing in online communities. *Internet Histories: Digital Technology, Culture & Society*, 2(1-2), 75-97.

ABSTRACT

The co-production and sharing of lay knowledge among Internet users have grown. A large variety of communities of interest have contributed to redefine knowledge as a social construction and to redefine the mechanisms, elements and modes of knowledge sharing. I will draw on two case studies that were carried out in Italy in what has become commonly referred to as a shift from Web 1.0 to Web 2.0 inside the European funded project SIGIS Strategies of Inclusion: Gender and the Information Society (SIGIS). This project took place from 1 January 2001 to 31 January 2004. The first case study deals with a website on the rare disease Lupus erythematosus, and the second with the forums on the website of the most read Italian women's weekly, Donna Moderna. The ethnographic analysis of the two websites included the application of various methodological tools, among which were non-participant observation, interviews, online surveys and the collection of the messages exchanged in the two sites. Here I will focus on the content analysis of the messages: 1,845 from the first website and 4,287 from the second. The main result is that a practical knowledge deriving from an intertwined process of information, experience and experimentation that supported the decision-making process in users' everyday life emerged. Consequently, the knowledge produced in the vertical axis of specialists' knowledge was complemented by a knowledge produced in the horizontal axis of the peer.

KEYWORDS

Knowledge co-production; knowledge sharing; online communities; forums; health websites; online women's magazines

1. Rationale

In a particular moment of Internet history, what has become commonly referred to as a shift from Web 1.0 to Web 2.0 (Anderson, 2007; O'Reilly, 2005), the possibility of many modalities and experiences of mass sharing and co-construction of scientific and lay knowledge has opened up thanks to the initiatives of users (e.g., Holmes, McEwen, & Garde Hansen, 2016). As O' Reilly pointed out in 2004, Web 2.0 does not have a hard boundary from Web 1.0 but rather a gravitational core, consisting of being a platform that enables users to control their own data and to post their content without knowing specific computer languages.

The new technological infrastructure of Web 2.0 that was taking shape offered the opportunity, which users decided to transform into reality, to introduce and enhance online processes of innovative construction of knowledge, e.g., notions such as the sharing of knowledge (instead of the transmission of knowledge) and the co-construction of knowledge (instead of the production of knowledge).

This move, coming from the psychological (Granott, 2014) and educational environments (Davies, 2006), shifted the focus from an individual process of learning and receiving knowledge to a collaborative process of learning and building knowledge with others.

The collaborative process blurs the boundaries between learners and teachers because their roles become to some extent shared and interchangeable.

Learners are put in a context of working with peers to explore, examine, interpret and reorganise their knowledge.

This approach builds a complex textile of knowledge; it invites one to consider the emotional aspects of learning, the dynamics of learning with others, the dialogue among learners and between the teacher and learners, the significance of the context and the purposes, and generally the effects of learning.

In this vision, learning is seen as a complex, multidimensional process that involves everyone creatively.

This process also creates the conditions for learners and teachers to reflect on their learning and its meaning and applicability in various dimensions of their lives. The outcome is the co-

construction of knowledge, an outcome that also has inspired the process of knowledge building in the Internet (Oudshoorn & Pinch, 2003).
The co-construction approach has expanded to other important spheres of the Web, such as the production and consumption of immaterial goods (Terranova, 2004).

The new technical possibilities offered by Web 2.0 have been exploited by Internet users to blur also the traditional boundaries between production and consumption. Notions such as "prosumerism" and "prod-usage" have been proposed to depict the blurring of the relationship between producers and consumers (Bruns, 2011; Paltrinieri & Degli Esposti, 2013).
We need, however, to ask if this is to be understood as co-construction or as a reengineering of labour relations and the new locus of present and future production.
We must understand if this co-construction process develops new forms of expertise or if it ends to reinforce old knowledge hierarchies.
It probably develops both outcomes and for this reason there is the need at a certain point to arrive at a balance of which of these two outcomes has prevailed.
Science and technology studies have challenged the current perception of scientific discovery and technological advancement, and they have investigated the different forms and assemblages of knowledge they involve (Brown, Rappert & Webster, 2000).

One of these forms is comprised of lay knowledge (McClean & Shaw, 2005) and "citizen science" (Bonney, Cooper, & Ballard, 2016) found in Web 1.0 and especially in Web 2.0, where individuals and groups create and share ideas and information across their networks.
In the past two decades, on a political and institutional level Europe has shown an increasing interest toward knowledge as a powerful engine of innovation and economic prosperity (Norstr€om, Balvanera, Spierenburg, & Bouamrane, 2017).
The field of knowledge management, that is the policies for handling knowledge, has become a priority.
The aim of this paper is to advance our understanding of how societies have managed knowledge in a particular moment of the Internet history: the post-dot-com-crash shift in the early- to mid-2000s, which has registered more opportunities for users to be online, more opportunities for user-generated content and a "democratisation" of the Internet in terms of expertise, social interaction and knowledge production (Sapnar Ankerson, 2010, 2015).

As Allen argues (2012, p. 260), Web 2.0 conveyed in our conceptualisation of the Internet a discourse of versions positing itself as "a marker of the discourse about the nature and purpose of the internet in the recent past".
We focus, thus, on how knowledge was produced and consumed in online communities
at that time (Tomai et al., 2010; Van den Hooff & Huysman, 2009).
We will draw our reflection and discussion on two research projects that were carried out in Italy then.
The first deals with a website on the rare disease Lupus erythematosus.
The second is the study of the forums on the website of the most-read women's weekly in Italy.
These twocase studies were carried out inside the European-funded project, Strategies of Inclusion: Gender and the Information Society (SIGIS), the general purpose of which was to monitorthe strategies of women's inclusion in the information society.

Although the exploration of these two websites was designed to investigate these strategies, they also can tell us a lot about what type of knowledge is produced, and how it is produced, consumed and distributed in online communities. I propose to focus on the evidence they offer regarding knowledge.

This paper is organised as follows. In Section 2, I introduce and discuss the relation between knowledge co-production and sharing and online communities. I then illustrate the aims of these two case studies as well as the methods applied. I devote the Section 3 to presentation of the results, concerning a knowledge based on information, experience and experimentation but lacking an argumentative structure of thought; a knowledge that emerges as depersonalised, disembodied and delocalised and that reaffirms the importance of informal learning. Finally, in Section 4, I discuss the results of my investigation and conclude that these two online communities have contributed to a large process of redefining knowledge as social construction and somehow have contributed to innovating the mechanisms, elements and modes of transmission of knowledge.

2. Knowledge co-construction and sharing and online communities

The development of the Internet and digital media, accompanied by the rise in the education level of populations, and the changes undertaken by the development of the advanced service sector and thus the increasing need of immaterial labour have contributed dramatically to transform the way in which knowledge is produced, disseminated and consumed (Fortunati, 2007; Lin et al., 2000).

The changes have involved all levels of knowledge management from pre-school to doctoral education, from education and research to the application of knowledge in the business community and among the population on the whole (Chen & Hung, 2010; Yang & Farn, 2009).

The traditional boundaries among information, knowledge and science have been blurred as have the traditional boundaries between those who create knowledge and those who consume it, and those among tools, times and spaces of knowledge dissemination (Shirky, 2008).

This has entailed not only an easier collaboration across time and space among traditional knowledge producers, but also new forms of knowledge co-produced by professional knowledge workers and other community members, including prod-users/consumers (Bruns, 2011), informal or warm experts (Bakardjieva, 2005) and "amateurs" (Keen, 2008).

The public availability of specialised knowledge and the rise of online communities (previously limited mainly to trained experts such as doctors or journalists) have challenged traditional professionals and academic experts (Rice & Katz, 2001; Smith & Kollock, 2000). Moreover, the growing overloading of information (Harper, 2010) and the difficulty of establishing effective methods and procedures for selecting relevant knowledge over time have become over time a further obstacle (Eco, 2013). With the development of Web 2.0 media (Manovich, 2001; O'Reilly,2005; Van Dijk, 1999), digital communication has become important inside institutions of education, information, entertainment and research.

The consequence is that interactive, social learning environments have imposed a new agenda for knowledge management in society, in organisations and on every level of technological, educational and communicative practices.

As Wenger argues in his seminal article "Communities of practices and Social Learning Systems" (2000), organisations have shifted from considering the formal design of a production system as their primary source of value creation to considering informal processes, such as conversations, brainstorming and pursuing new ideas as their primary source of value creation. Friendly procedures that enable people to select and transform the information flow in relevant knowledge emerged (Chai & Kim, 2010).

For example, many educational institutions and individual teachers have integrated blogs among the tools they used to improve their teaching effectiveness.

Hsu, Hwang, and Chang (2010) report about a system capable of providing expert-like recommendations to students based on their reading preferences and knowledge levels as well as on the genres and features of the articles that they read.

Making access to digital technology and to digital skills universal was a strategy for bridging the gaps between the elite and the population at large, among generations, between educational systems and the larger social sphere, and between rich and poor parts of Europe and the world (Hargittai, 2008).

Another relevant element of the framework was the type of knowledge infrastructure that was available in that period. Cultural memory and cultural heritage as well as established and emerging knowledge were ensured in a rapidly changing digital knowledge management system through infrastructures such as archives, libraries and other institutions.

Bibliometric criteria, methods of measurement, standardised peer review processes and open access began to have in principle a growing impact on the creation of new knowledge in the field of fundamental research (Jankowski, 2007). Infrastructures, however, were and remain not only important for knowledge management but also for dissemination and knowledge sharing (Dunn & Holzner, 1988). Transmission and sharing of new knowledge run in three directions: (1) from research and development (R&D) departments and the academic world to policymakers, decision and regulatory bodies, professionals and the mass media; (2) from the academic world to educational systems in terms of teaching methods, textbooks and other materials and technology; and (3) from prod-users producing and disseminating online information and knowledge to policymakers, professionals, the mass media and larger audiences.

If this is the general framework in which the analysis of knowledge management developed at the beginning of the Web 2.0, what was the framework in which online communities organised

themselves? An online community can be defined as an information source or a place of knowledge creation with members that have some relative sense of belonging and inclusion.
The participants might have different degrees of knowledge or expertise but they might exchange useful information by communicating with each other (Koh et al.,2007; Kurabayashi, Yamazaki, Yuasa, & Hasuike, 2002).
From a sociological perspective, online communities also might be defined on the basis of their structural features or the strength and type of their relationships (Baym, 2003a, 2003b). Etzioni and Etzioni (1999) define online communities as having two attributes: (1) a web of affect–laden relationships encompassing groups of individuals (bonding) and commitment to a set of shared values, mores, meanings and (2) a shared historical identity (culture).
Romm, Pliskin, and Clarke (1997) define online communities as groups of people who communicate with each other through information and communication technologies, such as the Internet, and share common interests beyond their geographical location, physical interaction or ethnic belonging.

Ridings, Gefen, and Arinze (2002) also stress that online communities are groups that share common interests and practices and communicate regularly over the Internet by means of a common location or mechanism.
In all these definitions, online communities are described as social entities made up of individuals who share information and collaborate (e.g., Kingod, Cleal, Wahlberg, & Husted, 2017).
Our attention here is focused particularly on understanding how knowledge was produced, consumed and disseminated in online communities at the beginning of the Web 2.0.
As Kollock and Smith (2000, p. 16) argue, the Internet is the site of thousands of electronic communities that meet to share and produce information and knowledge, to discuss common interests, to play and to do business. According to Flichy (2004, pp. 35–36) the origin of online communities is the counter-culture communities that were very active in California in the 1960s, which tells us a lot about the values embodied in their practices.
Not by chance has the model of the hippie community represented an explicit point of reference for members of one of the first electronic forums addressed to Californians nonexpert in information science (the Well) (Rheingold, 1993).
Those who conceived the personal computer and the Internet, continues Flichy, have embodied in the information systems they developed the new social practices that they had experienced before offline.
According to several scholars studying the Internet, online communities have acquired an increasingly relevant role in knowledge production (Jeon et al., 2010).

The early works of Jones (1995), Wellman and Gulia (2000), Wellman and Haythornthwaite (2002), and many other scholars give evidence of the vibrant social life these online communities still have today.
A typical figure managing and regulating the life of these online forums was the web master, who was expected to elaborate the etiquette of the site, which generally consisted of not allowing obscene words, verbal aggressions, or posts that were too long.
Founding and maintaining a website was expensive because at that time it was necessary to buy technical competences and to dedicate to it a lot of time.
Groups still counted on some institution, firm or media group to create website infrastructure and on webmasters to act as moderators of the users' community.
Internet users were still guests of somebody else (the owners of the site) when online and this limited their self-expression.

Furthermore, at that time Internet users were still feeling the need to hide their personal identity with nicknames to protect themselves from the unknown other. We must recall that media discourse at the beginning depicted the Internet as a dangerous place (Drotner, 1999). The blog galaxy had still to develop.
Forthis reason, I treated these two communities as precursors of the Web 2.0, in which people could decide to expose themselves with their own names and surnames.
The two online communities that I present and illustrate here are quite different one from the other.
The first belongs to the world of health, while the second belongs to the world of information and the press.
These two worlds, as we will see below, have different purposes, procedures and styles of communication, but they produce interesting communities to be studied and compared.

The empirical research projects I report refer to a limited part of the knowledge management framework illustrated previously and precisely to that part which is concerned with how knowledge is produced, consumed and disseminated from the grassroots by prod-users.

Lay persons profited by what usually is referred to as the shift from Web 1.0 to Web 2.0, being able to comment and discuss for the first time with other people publicly in a written form.

Until then, they could talk in public, for example, in social and political movements, but could not deliver written comments, which happened massively only with the Internet.

In oral conversations, words die after being heard; writing implicates a durability and formality of personal opinions and expressions, as Walter Ong teaches (1982).

Written words require both different procedures for their production and expose themselves to a durable judgment by others (Ong, 1982).

For women, engaging in a public conversation was even more difficult than for men because traditionally women were more used to handling communication in the domestic sphere where the knowledge produced was connected to limited and closer networks (Tannen, 1990).

As it has emerged in this study, communicating online with other women (and also with men) has created the occasion for women to broaden their communication process and include unknown women.

This also has reinforced their freedom of speech because family and close relationships mean on one side warmth but on the other side control.

The various waves of the feminist movement represented a place where militant and sympathiser women could discuss ideas with unknown women but inside a political agenda in which the personal became political (Humm, 1995; Walker, 2000).

But very few feminist women contributed to pamphlets, leaflets, articles, essays and books. Furthermore, after a while, the unknown women became known and possible controls reappeared.

These two communities, which are embryos of the Web 2.0, are among the first online collective experiences.

At that time, women suffered from a strong computer divide that made it particularly difficult for them to access the Web to post their content (Fortunati & Manganelli, 2002).

According to OECD (2005), in 2003 in Italy (but also in Norway and Switzerland) men accessed, used more intensively for task-oriented purposes, and were more familiar with computers than women.

This technological evolution represented, especially for women, the opportunity to participate in online communities in greater numbers.

3. The two case studies and the methods applied

I selected the websites of www.lupus.it and www.donnamoderna.com for two reasons: I was interested in women's communities and in investigating two completely different websites.

While the first was a site offering health information on a rare disease, the second was originated by the commercial interests of the media group Mondadori.

The first website, "Without Mask", was set up in 1996 by the Department of Rheumatology of the Faculty of Medicine of the University of Padova to inform patients about systemic Lupus erythematosus that, being a rare disease, was little known even by doctors.

Thus, the Internet quickly has become a precious place for patients to obtain knowledge about the disease.

In this site patients could find information about the latest therapies, advice and suggestions on what to do in different moments of everyday life and also a space (a forum) dedicated to them where they could enter in a collective conversation in full autonomy.

This forum was opened for the pressure on the part of users. It helped that, although usually at that time the Web developers and the webmasters were generally men, the webmaster of this community was a woman. When I proposed to Prof. Andrea Doria to include his website in the case studies, he was very happy.

The participants in the community likewise were happy when they were informed that a scientific team of researchers with a strong track of feminist studies had begun to study the website for scientific purposes.

The users of the website mainly were women because this disease affects primarily women, especially young women. The second website was set up by the women's weekly, Donna Moderna, the most read women's magazine in Italy. It offered to online readers 12 thematic forums that reproduced the main areas addressed by the print magazine.
This official site was part of the Mondadori editorial group and thus was a commercial site in which the webmaster systematically proposed the topic of the threads according to the publisher's marketing strategies. For the editorial group, the opening up of these forums had two important functions.

On the one hand, the forums represented a new locus of knowledge production about consumers' tastes, desires, intentions, behaviours, attitudes and opinions that enabled the publisher to save money that would have been spent on expensive surveys.
On the other hand, the forums were the place in which to draw participants' attention to some products more or less openly. This strategy, of course, was not clearly evident to website users who were convinced to be in a website of free conversation.
Research commissioned by the media group Mondadori at that time revealed that this website was visited very frequently, with 1.3 million hits a month and 1,875,000 users (80% women, 20% men). As happened with many other sites, the majority of users were lurkers. In fact, only 0.02% of users took part in the forum. The multi-thematic forum, Donna Moderna, had 422 active participants in the 20 sections that were subdivided as follows: pets, news, cars, beauty, home, cookery, family, flowers, fitness, work, fashion, psychology, health, sex, money, leisure, men, travel, books and high-tech. The methodology applied to study these two websites was online ethnography (Hine, 2000).

I studied both the design and the structure of the websites at the organisational, communicative and relational level (Fortunati, 2004; Fortunati & de Luca, 2003). But here I will focus only on parts of the methods applied, those that related to the content analysis of the messages produced by the websites' online communities.
As regards to the first website on lupus, I observed this community for almost 1 year. At the end of this period, the forum contained 1,845 messages. The website, which had on average more than 1,200 connections a month, had a stable, but small community: 67 people (60 women, 7 men). The percentage of men (10.4%) reflects the proportion of men among lupus patients.
With respect to the Donna Moderna website, given the high number of the messages, I recorded all the messages in the site in one specific day, February 11, 2003. I collected 4,287 messages that also were subject to content analysis(Losito, 1993).
Qualitative content analysis was applied to analyse the messages posted in both forums.
First, they were broken down into discursive frames to get the most frequent categories (Altheide, 1996). However, as Silverman (1997) suggests, categories that recur infrequently but are relevant for the clarification of some points of analysis also were retained and discussed.

The textual corpus first was analysed to reduce its variability and for concentrating the elements of the sentences on the most 'dense' forms in meaning (adjectives, verbs, and nouns). From the lexical point of view, the common procedure includes normalisation of the text and lemmatisation of the graphic forms.

Then, I applied a grid of analysis that included the categories of meanings emerging from the texts and considered important. The use of this grid was, as usually, continually renegotiated during its application. At the end it gave me a list of the most important categories of meaning both at a speculative and emotional level (Krippendorff and Bock, 2008). As the analysis progressed, at a certain point no new categories emerged, indicating that informational redundancy or data saturation had been reached (Fusch & Ness, 2015).
The main strong point of this methodological tool consists in its capacity to give us new concepts or ideas to revise those that are taken for granted in the literature and to enable us to formulate new lines of research.

4. Results

4.1. The lupus website

The lupus website emerged as a vibrant community capable of producing collective knowledge about health by means of obtaining and spreading medical-scientific information.
This online community was an attempt to react against the fact that this disease, being rare, is spread over the territory.

The website gave its users the chance to virtually re-territorialise the population of patients. The forum was a very complex artefact with multiple functions, such as the exhortative, celebratory, consolatory, cursing, well-wishing, informative, educational, relieving and proactive. Producing collective knowledge about health by obtaining and spreading medical-scientific information, however, turned out to be not so obvious. We are used to attributing a positive value to knowledge. But the discussion in this site helps us to problematise this assumption. When knowledge on health goes online and becomes public, for example, it can be perceived as brutal and terrifying.
In fact, the discussion regarding the excessive amount of information was highly debated and revealed that not everyone appreciated it because it was perceived as frightening.
Antonia, for instance, wrote:

at times medical scientific information scares me who have had this thing for a long time, imagine the new ones who have only just got the disease. In the past we old hands of the old forum always tried not to panic the new wolverines, we approached the truth a bit at a time, softly, not brutally.

Accessing medical-scientific information sometimes might weaken the user instead of giving greater strength and capacity for controlling the situation. Furthermore, continuous access to information runs the risk of being seen as tantalising. No matter how much patients try to discover, they will never know as much as doctors. Moreover, there often is the risk of clashing with what doctors say. Apart this problem, overall there was great appreciation of the wider access to information on the part of many of the participants.
Therefore, this discussion helps us to consider knowledge as something that needs to be negotiated and mediated. There is the need of an intermediation by specific professional figures specialised in the popularisation of science.

Second, the lupus website advanced common knowledge by helping users to give a meaning to their disease. Understanding why the disease appeared and what factors triggered it helped the members of this community to rationalise the emotional reactions of fear and anguish and to reorganise their self-image, which the disease had destroyed. The interlocutors of the forum, who call one another affectionately "lupetti" (wolverines), use any expression connected with wolves (lupus/lupo) for playing with words to exorcise this disease.
Antonia wrote:

"If only this wolf would kick the bucket". Lupus was anthropomorphised and became a person referred to in the third person masculine by Gianna who wrote, "my personal little lupetto", and Michela, "I haven't had any great problems with him".

Given that in general, as it emerges from this forum, a disease is not only a symptom but also a trial and a teaching, the search for knowledge of it and its mental representation became a collective and social process.
This process is particularly relevant because lupus is a rare disease for which the production of common knowledge is rather fragmented and scattered. Because doctors treat symptoms and prescribe a cure but not give the necessary help and support to make sense of lupus in the everyday life of patients, this kind of website is relevant. The collective process of making sense of this disease is an important step in managing the healing process, as a disease is much more than just a pathology (see e.g. Freidson, 1962). Third, this website helped patients create strategies for coping with the disease: "be combative", "learn to enjoy life including little things", "express suffering but not for too long", "understand what this disease wishes to teach us".

The elaboration of these strategies for managing the course of the disease was fundamental.

Metaphors and irony are seen as a good cure for the soul because they keep spirits up and ward off a certain susceptibility that perhaps springs from the stress caused by the disease. There is also a great deal of self-irony. Enrico wrote:

Hi!, what do you mean lupetto! I feel like an Andrrewsarcus…ha ha ha ha! An unshod ungulate! NB I'm not sure of the name but I think that I've seen an animal like that, a few days ago on TV… it was a prehistoric wolf with equine hoofs…hee hee hee!!.
In the same vein, Andrea wrote, "In bocca al lupo" (in the mouth of the wolf: good luck! Break a leg!), while Enrico wrote, "I was aware that I had been eating like a WOLF", and Roberta posted, "goodbye with an accompanying howl".

These excerpts show that irony is an important "hormone of the mind", the use of which downplays the living experience of the disease and avoiding being lived by it.
It isthe discovery that everyday life is a representation and we are all its actors (Goffman,1959). Coping with the disease on a psychological and speculative level rests completely with the patients, and they must resort to other sources for their knowledge: philosophy, psychology, anthropology and sociology.

This website advances the elaboration of psychological and speculative strategies to cope with the disease, which are as important as following the treatment prescribed by doctors. In this particular case, the difficulty of putting up with the side effects of the cure has to be added. How this trial is to be dealt with and what significance to attribute to it depends on how much one is ready to learn from the pathological event.
Furthermore, looking after oneself does not mean only taking medicines and following medical prescriptions but also inserting therapy into the everyday experience, which presents innumerable situations and cases. At the same time, it advances knowledge on the operationalisation of prescriptions, which often presents not a few doubts and/or difficulties. For example, what shall I do in the case I forget to take a pill? Do I have just to skip it or take two next time? Being part of a community of self-help means the chance to find an immediate answer to all these doubts and concerns.
As mentioned previously, a disease is a form of trial for the person affected by it because it inevitably unhinges his/her psychological balance. The perception of and relation with the body are altered in relation to the self (many certainties are undermined and there often are negative effects on self-esteem). There is also a change in how one sees the future, which has to become compatible with the limits imposed by the disease.

This website revealed a serious problem that is becoming increasingly relevant for doctors: Their patients increasingly are foreigners, which opens cultural and linguistic problems in the relationship with them (Zendedel, Schouten, van Weert, & van den Putte, 2018). The increase of migrants and in general of international mobility has made communication between doctor and patient more problematic.
In itself, doctor-patient communication can be defined as complex (Tessarolo, 1991) but having to deal with different cultural and linguistic contexts has increased the level of complexity exponentially and claims to be addressed with the introduction of specific procedures and tools. A doctor who comes to know well the living experience of diseases is a better doctor. Vice versa, a patient who is correctly informed about his/her disease increases his/her possibility of healing.

The messages posted to this website reflect a society that is becoming more and more multi-ethnic, multi-linguistic and "glocal". Several of those taking part in the forum are foreigners who are living in Italy and learning the language.
Sometimes they have problems understanding the meaning of the written interactions. Because Italian is mixed with English and other languages, some users also undergo little improvised foreign-language lessons as an aid to understanding other forum participants.
Furthermore, messages containing phrases in other languages such as French, English, Spanish and Vietnamese are exchanged. This shows how many of the participants have cosmopolitan experiences, good knowledge of many languages and wide travel experience.
The latter is very important because one of the first things that an illness like this puts in crisis is the desire and energy to travel. Ill people tend to close themselves within a local horizon to use all available forces to face the disease.

Thus, showing that some lupetti travel and are immersed in a cosmopolitan dimension is encouraging for community members. Enrico confesses that he learned English on the medical sites of Yahoo, adding "that was the origin of the saying: All's well that ends well".

Knowledge of foreign languages, however, has turned out to be inadequate in many circumstances such as when a foreign word is written as if it were Italian.
Susy wrote, "and why don't we do as Julia says, odiens in TV?" (our emphasis).
Other times misunderstandings arise, as when Enrico wrote in French ("j'ai du mal a m'assoir sur la chiotte") and Antonia took that to mean "when I sit down my buttocks hurt" (in Italian chiappe means buttocks) instead of "I have problem sitting on the loo".
At the same time, various local expressions from different dialects are used in the forum.
Dialect, that is the language of familiar and family relations and of intimacy (De Mauro & Lodi, 1979), is used when one wishes to give more color to a remark, to make people laugh, or to create a more intimate atmosphere. Many onomatopoeic sounds also are used, for example, "Grr!!" or "a big smacker" to mean a kiss. Abbreviations are also used for taboo words so one can use the word without openly writing it.

In this forum, knowledge also develops a fusional type of writing in which modes typical of mobile and e-mail language converge. Some frequent abbreviations presumably derive from Italian text messages: K instead of ch, X for per (for), cmq for comunque (anyway), prox for prossima (next), + instead of piu (more) and so forth.
From email conventions come the emoticons. Furthermore, the language used in this forum is emotionally charged with many images, colloquial expressions, and all sorts of original expressions which quote and rephrase advert slogans, book titles, songs and proverbs.
We are very far away from the scientific language of the medicine.
While this is aseptic and rigid in its codification, the language assumed by the self-help community is affective and is a language denoting a strong contamination with the language used in other devices or applications or services. Specialised medical language, however, also is inevitably used here, alternating with the language of everyday communication while also using various register and text-type conventions, such as fairy tale (Queen Cristella, written by Cristina); poetry (the dreams of Peter O'Connor, "I wanted a posy of violets", by Regina Cristella); pop songs (by songwriters such as De Andre or Jovanotti: "piove senti come piove"); short stories (the little frog); mobile phone language, "tvb" (ti voglio bene, I'm fond of you, I love you); "ink" (incazzato, pissed off); and the narration of events and dreams, like Antonia's about Padre Pio or Antonella who dreamt that she had gone to Lourdes with her mother and a dear friend.

The advance of knowledge about the living experience of a disease passes through the language used, which is new not only at the level of linguistic experiments of contamination, but also at the level of the emotional intensity of words and expressions.
The beginnings and endings of messages show the type of relationships that exist among the members of this online community.
The most frequent way of starting is to plunge straight into the subject, but the beginnings and ends are handled quite imaginatively.
Enrico plays with words and ends with "Salute a tutti" ("health" instead of "saluti", "greetings").
In another instance, Enrico signed off with "ENRICO (na bestia)" ("a beast").
Antonia also uses the English XXXXX ("it's the only thing I learnt from my English cousin, they use X to mean KISS"). Others sign off by using a foreign expression, such as when Enrico wrote,

"Notte a tutti …y suerte!"

There is also no shortage of interesting stylistic solutions such as mock dialogues to make communication more realistic and lively. Antonia wrote: "Hi Enrico what shall I do, shall I write it? Yes, Good night, Enrico". But what is more relevant is that the prevalent style is that which we may define as stream of consciousness (Gergen, 1999; James, 1890), in which the thought finds its expression in a flow of information in continuous motion, oriented toward choosing some objects to the detriment of others.

From this perspective, the self, as the elaborating principle of the forms of individual thought, takes on a central position in the communication of the individual.

The aspect that this community most develops is that of the self, taking on the great questions of humanity, negotiating them with emotion and intimacy but also speculatively and with a spiritual approach. In this forum, however, we pass from messages that are like stream of consciousness, eliminating all punctuation, to messages with long rows of exclamation marks, question marks and dots to highlight a relevant passage or to stress some particular point. Interjections also are quite frequent to show, for example, when some funny remark is being made: ("ha ha ha").

This has the same function as pre-recorded "canned" laughter accompanying comedians on television to try and get the home audience to laugh, too.

Capitalisation is widely used to give emphasis to words or concepts. The contamination that is produced here between scientific and lay language calls for the need of a mutual learning about different styles, roles and modes.

The process that this online community puts into practice shows an extraordinary array of technologies and their modes of use to remain in contact and develop interpersonal relations both in the public space of the forum and at a more private level. The computer and the Internet are sifted through to find all possible sources of information: emails, chats and other forums. Karin wrote:

it's the first time that I find myself writing to a forum and above all to this forum (…) now I am finding myself searching the Internet for anything that can help me to understand what's wrong with me.

Even if at the beginning there is little expertise in using the computer or the Internet, participants say that they progressively achieve it by using digital media. Each participant, as soon as she/he learns something, becomes a teacher for someone else. Never has the double role – learner and teacher – been so interchangeable as in the case of this kind of computer usage and the Internet. This also suggests the need to consider how members of this community became proactive subjects of practices of inclusion in the online world.

In this website, if a newcomer had difficulties posting a message, immediately some among the old members came to the aid. Moreover, there always was a telephone or mobile number to call or email to write to receive help resolving practical difficulties.

These behaviours are different from the arrogant attitudes often expressed at that time toward newcomers in forums dominated by men (e.g. Kendall, 2000).

Sometimes social cohesion among community members is created against the design of the site. Although the forum administrator recommended brevity, many messages were rather lengthy and, indeed, become progressively longer. With the passing of time, expressions become more affectionate too, as if with the development of mutual knowledge, the personal rapport had grown stronger. Diminutives abound, and narration increasingly develops, as when an introduction of oneself becomes the narration of the story of one's life.

Finally, the data gathered show that on one hand the Lupus community has effectively produced a strategy of inclusion of women in the Internet world by originating a content capable of attracting the attention of other wolverines. In fact, as the participants stated in the online survey I launched in the forum, they began to use the Internet more intensively and more competently. Being part of this community gave women the stimulus to become more heavy and savvy Internet users (surely one has to weigh the fact that the majority of these women are young).

4.2. Donna Moderna website

The second online community was developed on the website of Donna Moderna, the most popular women's magazine. This online community is quite different from the lupus community, as it developed as a community of interest in socialisation, interpersonal communication and collective discussion.

The collective discussion running in this forum is a patchwork of hundreds of topics related to the domestic sphere and constitutes a place for women's everyday expression that they cannot find elsewhere. Community members, who are mostly women, often give a sense to their participation by discussing it together.

dusty intervened at this proposal, writing, "Why are we taking part in the community? I for example like to get to know new people. And you?" Patrizia78 answered:
Yes, I think that it is our desire for being together, to get to know other people with possibly our same interests…That is why online communities work, people like communicating with others. It is often easier to speak with strangers than with people near to you.
Donatella said, "We use it to get to know people, knowing that we can meet all sorts, from people similar to us to people who if it wasn't for the Internet we would never have met", while Maresole wrote:

I participate because I love to communicate, meet other people and socialize. I don't think it's a question of solitude, it's just a way of interacting with people who are different from me, with whom otherwise I would have not been able to meet in everyday life. Younger or older people, more or less educated, from the North or South, normal people, but different from those that I normally have to do with, who have different ways of thinking and offer me new horizons. I think it is very stimulating.
Raminga wrote, "I like it because I can ask advice from people who don't know me and the advice is impersonal. Which has usually been the right advice. Thank you!"
The areas of discussions in the forum and the frequency of messages posted by its members are reported in Table 1.

Table 1. Messages left according to gender and topics.

Topics	Males	Females	Total
News	135	481	616
	21.9%	78.1%	
	15.6%	14.1%	14.4%
Sex	151	431	582
	25.9%	74.1%	
	17.5%	12.6%	13.6%
Psychology	66	353	419
	15.7%	84.3%	
	7.6%	10.3%	9.8%
Leisure	93	317	410
	22.7%	77.3%	
	10.7%	9.3%	9.6%
Family	76	336	412
	18.4%	81.6%	
	8.8%	9.8%	9.6%
Beauty	66	336	402
	16.4%	83.6%	
	7.6%	9.8%	9.4%
Cookery	57	344	401
	14.2%	85.8%	
	6.6%	10.1%	9.4%
Fitness	83	308	391
	21.2%	78.8%	
	9.6%	9.0%	9.1%
Money and work	96	256	352
	27.3%	72.7%	

	11.1%	7.5%	8.2%
Fashion	42	260	302
	13.9%	86.1%	
	4.9%	7.6%	7.0%
	17.5%	12.6%	13.6%
Total	865	3,422	4,287

The percentages are calculated first by row and then by column.

Table 1 shows that the most discussed topic in this website is news, followed by sex. Discussing news means taking the floor on recent events and expressing opinions instead of just being readers or listeners of what the media convey. It is interesting to observe how the concept of information developed on the part of these users. The news agenda was not constituted by comments on national and international political news; they were rare.

These discussions were constituted by "news" regarding women's everyday life and had a political value for participants. Constructing a public space has always been a difficult experience for women because they traditionally spoke among themselves at home, that is, in places of domestic intimacy (Tannen, 1990). Without entering into the merit of the political reach of this public debate, the discussion that women began in this and in other online forums at this historical moment was relevant to overcoming the traditional under-presence and representation of women in the public sphere (Baxter, 2006; Beard, 2015).

The dense exchange of messages in these areas is significant; there is clearly a certain educated and quite young part of the feminine population that is pressing to have a say on the agenda setting proposed by the media (Carpini, Cook, & Jacobs, 2004; Habermas, 2006).

By contrast, women's interest in discussing sex is linked to factors such as the lack of sufficient information, the pleasure in talking about this topic, the need to compare one's own experiences with those of others and so forth.

Distinguishing the content of messages by gender, women's messages seem to be concentrated more in the areas of psychology, cooking, family and beauty, while those of men are more in the areas of work, money and leisure (see again Table 1). In these forums, knowledge was built by responding to questions or suggesting other sites or books for further information.

By way of example, in the cookery forum the following recipe sites were indicated: www.tantericette.com, www.tuttogratis.it.html, www.cucina.casainrete.com, www.web.e-cuoco.it/ ,www.cucinaitaliana.it/ .

Alternatively, the suggestion was to browse the wide recipe archive in the Donna Moderna site itself or in specialised sites containing recipes for diabetics, coeliacs or people with little time to dedicate to cooking. Many cookbooks were also offered or recommended by the members of the community, ranging from classic book recipes to more recent and original volumes, such as the book devoted to recipes of the Italian and international cinema (Amelie's creme brulee, Almodovar's paella, Babette'squails, etc.).

In general, in this website knowledge was developed as a function of thousands of issues or questions about everyday life that emerged in all its difficulty of management and in front of people who do not want to be alone in thinking and deciding. For example, in the cookery forum some people introduced the subject of shopping online. I report some excerpts because it is interesting to see how at the beginning of e-commerce people elaborated their strategies to deal with this new tool. Carlo 37 wrote:

It's a bit long time, when you have to make your list of favourite things, but then it's really handy. I buy all the big things on line: washing powders and liquid, mineral water and drinks, paper rolls, milk. But fruit, vegetables, hams and salami I still buy them straight from the supermarket round the corner.

Punny used the same strategy: "Online I buy only reserves of water, wine, washing powder and heavy things. I discovered it when my car broke down". Others protested at the additional cost of shopping online. Giangi, for example, complained about the limit of 12 bottles of water and the fact that it costs too much to have the goods delivered, while another participant "dusty" admitted to buy only things for the house on the Internet.

A discussion emerged in the family forum about the most adequate strategies parents should adopt toward new and old media. An issue was whether to buy a mobile phone for children ages 9–10 just because "they want one for Christmas" or "everybody's got one in their class". This subject was launched by Mariasole, who received four responses and three participants advised her not to buy one.

There was also a chorus of protests against using the mobile phones in public places in the leisure forum and lively protests against the high costs of the landline phone.

A constant reason for worry on the part of parents in this forum was how children's behaviour changes as a result of the influence of television. A grandmother wondered also about whether to allow advertising during children's programmes. Some participants in the forum replied with resignation that unfortunately there is nothing to be done about it.

Another discussion concerned the disruptive influence of the computer on the domestic harmony. Elementale launched the theme "Men and the Internet" writing:

My husband had always been such a marvelous person. Unfortunately he started using the Internet three months ago and not only for work (that didn't worry me) but also for games on line. He spends hours and hours at the computer and neglects his other duties, the family, and also me.

The space of discussion of the forums organised on a taxonomy established by the forums' designers based on commercial objectives was subverted by women's behaviours.

The sections were reshaped gradually by the women who accessed the online space without any preoccupation about the pertinence of the message for the forum topic and regardless of the rules and suggestions proposed by the webmasters.

The participants imposed this fluctuation of boundaries between the subjects of the various forums. Their points of view unified topics within a single conceptual framework of communication and knowledge in which everyday life was a vital, concrete, practical and all-embracing vision of existence.

As far as specialised knowledge is concerned, women's weeklies have always offered their readers "the words of the expert" – from the psychologist to the dietician and from the gynaecologist to the lawyer – to allay doubts, give advice, respond to questions, express opinions, and so on.

These experts in the women's weeklies generally have a column where they reply inside a vertical up-down relation and give an interpretation, indication or diagnosis based on their specific knowledge.

Generally, they select from among the letters they receive during the week one or more letters to answer. The consequence is that only a few readers have the chance to get an answer. Furthermore, the answer usually avoids entering into the merits of the problem, which is taken as a pretext to discuss the subject raised by the reader, in general.

The figure of the expert has been introduced along with the social representation of a woman being inadequate and/or insufficient because she lacks specific knowledge. The twin figure of the modern woman (domestic and extra-domestic) in women's weeklies has been constructed over time fundamentally as being complementary on the one hand to the man and on the other hand to the holders of the true knowledge (the experts).

By contrast, women and in general all the users in these forums can get an immediate answer to their questions from the other users who provide help and comfort together with an understanding of their problems and proposed solutions inside a horizontal relationship.

They act on the basis, not of some specific knowledge, but of a collective reflection on the infinite situations that emerge in everyday life.

The stereotyped figure of the woman proposed to the readership by women's weeklies was eliminated by the women of this website, making room for women who began to use the online space to listen to other women, and in general to people who may be strangers or members of the same association, but who in all cases act, on the same plane, as experts of life.

4. Discussion of the results and final remarks

These two case studies show how their online communities have developed a vast process of redefinition of knowledge as a social construction and have redefined the mechanisms, elements and modes of transmission of knowledge.
The first feature of this process is that the focus of the knowledge produced has shifted from the vertical axis of specialists' knowledge to the horizontal axis of peer-to-peer knowledge.
Comparing these two communities to determine differences and similarities, however, revealed this shift was not a linear process. In the case of the lupus website, knowledge shifted to a double regime: the community kept doctors and medical science as their solid point of reference but integrated this vertical top-down knowledge based on a scientific and specialised knowledge with another type of knowledge, the horizontal, peer-to-peer knowledge.

Thus, knowledge coming from the communicative and relational practices of the selfhelp community is based on the merging of information, experience and experimentation.
Hardey (2001) argued that members of health self-help communities such as that of the lupus group become significant providers of health information and, for this reason, they give the term "expertise" a new connotation.
This community shows how knowledge production for the first time has become more articulated in the sense that, to the tall towers of specialised and academic knowledge, another type of written knowledge was added online.
Of course, the vertical form of knowledge did not evaporate but was enriched by the horizontal knowledge with some tensions. These two types of knowledge production in fact remained quite separated, as they were not able to interact each other.
Without specific professional figures dedicated to selecting interesting materials and then handling a mutual osmosis, the contribution of lay knowledge or citizens' science to scientific knowledge remains unachieved.

Either communities are ignored like the blogs studied by Hindman (2008) or they risk being predated by academic researchers who use their materials without asking their informants' consent, as denounced many years ago by Eysenbach and Till (2001) as well by Mele (2000). Nowadays maybe there is a hope: If these big data can be treated as "public" goods and processed, maybe citizens' science can become a good contribution to scientific knowledge.
By contrast, in the Donna Moderna website, knowledge shifted directly from the vertical axis of experts' knowledge to the horizontal axis of the peer. This type of shift has been shown, within certain limits, to be more effective in helping community members cope with the variety of everyday life situations.
The great attempt at bottomisation of knowledge which was at work in these forums put into crisis the control over feminine behaviour exercised so far both by specialised knowledge and by the front line of the network of feminine relations (mother, sisters, aunts, female cousins, female friends). Today, in this forum people, but more precisely women, obtain an understanding of their problems, find solutions, correct their mistakes, and obtain support and comfort.

Furthermore, these communities advance the understanding of the different aspects of knowledge production, diffusion, transmission and sharing in online communities (John, 2012). For example, the lupus case study makes us reflect about an important aspect of knowledge production in online communities, which is its popularisation.
As Rice and Katz argue (2001), however, the acquisition, elaboration and transmission of medical-scientific information are part of the popularising practices of the Internet, and thus they contain a strong load of ambiguity and uncertainty.
The spread of knowledge entails translation, reduction, simplification, and even distortion in the impossible operation of popularising science. Consequently, the desire for information on the part of the selftaught can be dangerous.
It can be a serious problem when medical knowledge becomes public and can be accessed by everyone as scientific knowledge needs some form of mediation to be used in an appropriate way. The community of the lupus website tells us, as patients, that searching for knowledge on the web can be frightening.

The discussion regarding too much information is very heated in this forum and reveals that knowledge is not automatically pursued as a positive thing.
The Donna Moderna case study sheds light on other important aspects of knowledge production.

This community has built a vast process of redefinition of knowledge as a social construction, of redefinition of the mechanisms of the production of knowledge and of the elements that constitute it.
The members of this community sought knowledge that derives from experience, not from journalistic or specialist knowledge, as if the latter were cold or unreliable.
The focus of mass knowledge was shifting from the vertical axis of specialists' knowledge to a horizontal one of the travel companion, which is warm and more equal, and hopefully more appropriate for the different situations that existence creates around people.
These users were interested in knowledge that derives from a common and collective production, with results that could be shared in greater measure by the subjects involved.
The practical knowledge that was sought here and in other forums derived from information, experience and experimentation, and it questioned the control over feminine behaviour that had been exercised by specialised experts and by the front line of the feminine relation network.

Using the Internet, women (but also men) tried to remove the sharing of knowledge from the web of power, even if it meant forgoing the "warmth" of knowledge (Ball & Vincent, 1998). Forum participants were asked for those opinions and immediate counsels that once were asked from sisters, mothers or friends. Learning from a sister/mother or from a friend/colleague means being able to obtain warm knowledge, but at the same time it means accepting the inevitable modelling and conditioning of the knowledge that a family or interpersonal relation carries with them as power relations (Fortunati, 2014; Henwood, Wyatt, Hart, & Smith, 2003).
Therefore, since today there is less compactness and sharing of life among mothers, daughters, sisters but also cousins, aunts, sister-in-law, daughter-in-law in everyday life, a second order solution is to recur to unknown women, met in forums like this.
The results enable us to better define computer-mediated knowledge.
If generally warm knowledge is considered any form of operational, practical knowledge accumulated by an individual or a small group, and if cold knowledge is that which is produced by science, then the mediated knowledge produced by such online communities is halfway between them.

Mediated knowledge implies fewer emotional implications and in this sense is less warm than body-to-body knowledge but it also is less cold than scientific knowledge because here the knowledge is publicly and collectively negotiated in a more shared process, although not checked by the scientific community. What do these two communities have in common? First, they produce the type of knowledge participants need to make reflective and supported decisions in their everyday life. In particular, these communities have shown that the interest is in knowledge that derives from common and collective production, whose results can be shared in greater measure by the subjects involved.

The practical knowledge sought for in these two forums derives, as mentioned previously, from an intertwined process of information, experience and experimentation. This common knowledge is the kind that exists with difficulty in books because it entails the advent of new things (like new technologies) or the existence of events, processes or phenomena that are in rapid transformation. But this type of knowledge has a serious limitation because it lacks any elaborate structure of thought on the subjects investigated.
Second, these two online communities have shown that the renunciation of being known to and knowing the single individual (members here use nicknames) has allowed Internet users to receive the thoughts of others in a mediated way.
This detachment of knowledge from the identity of those who transmit or receive it implies fewer emotional implications but more freedom.

The communication and production of common knowledge in a situation of transitory and functional depersonalisation is something that attracts many people because it makes it possible to try out new dimensions.
Our Western culture, in fact, has been based on the progressive development of individuality with a correlation of high levels of responsibility on the one hand and the isolation which that entails on the other.
The first phase of the Internet has made it possible to slow this process and to recover possibilities of depersonalised communication in a virtual space.
The knowledge that was produced and consumed on these sites, being detached from personal identity, was a disembodied and delocalised kind of knowledge and therefore in a certain sense freer.

The lupus and Donna Moderna communities also are important arenas for knowledge management because they represent a feminine space for public communication and knowledge prod-usage. Differently from the readers of women's weeklies who were conceived as being inadequate and/or insufficient and thus in need of being guided by experts, considered the true holders of knowledge, the women of these communities have begun to use the virtual space to listen to the voice and judgment of other women, and in general of "normal" people who may be strangers or members of the same association but who, in all cases, act as experts of life.

Third, the knowledge produced uses many languages, dialects, registers and cultures, and it elaborates language in a sophisticated and global way; metaphors and irony are used frequently, and different registers and stylistic solutions are activated by users who seem to possess robust cultural tools.

Fourth, the knowledge produced in both these communities reaffirms the importance of informal learning as women help each other acquire the skills and expertise to master and domesticate the Internet.

This reconfirms the findings presented and discussed on social learning in the information society by Williams, Stewart, and Slack (2005).

Fifth, another important element that emerged is that women's empowerment did not pass through an identification with other women as such.

Even in the lupus forum, which functioned as a women's self-help community, there was discussion about the long feminist tradition behind their experience.

It was in fact the booklet Women and their Bodies.

A course (1970) that initiated the long story of appropriation by women of the knowledge and control of their bodies.

In these forums, there was a great refusal of macro-categorisations, such as the notion of men and women as indistinct and undifferentiated universes.

Everyone wanted to claim their own individual specificity and be able to recognise new similarities or unexpected contiguities.

In sum, these case studies tell us their own history of the Internet and of the multifarious nature of this technological artefact that can be used by self-help groups as in the lupus site or by firms to re-engineer their relationship with possible consumers.

We could say that users tried to elaborate a breviary, a manual of advice for practical living, starting from problems and experiences.

We could say that these conversations are centred on the aspiration to a handbook of civil living.

This new way of socialising cognitive processes was a response to the limited socialisation and social sharing of experiences due to the isolation in which people live.

At the same time, it has set into movement a process of very fragile social cohesion, as in the case of the Donna Moderna forums. In fact, this community brings to mind the definition of the pseudo-community because the discussion there remains only skin deep, and very rarely a subject is explored in any depth (Beniger, 1987).

Moreover, this process of redefinition of knowledge lacked any elaborated structure of thought on the subjects investigated. Although it presents several shortages, this effort of collective elaboration should be appreciated as it deserves because it opened up new paths of knowledge production.

These two websites may help us to find an answer to the questions we raised in the introduction. Both of them produced a knowledge shared among and by lay people, mainly women, originating from the bottom, which is new in the sense that it acquires a public visibility that it never could have had in the past.

The first website was a place of potential co-construction of knowledge among patients and potentially between doctors and patients.

The problem was that it lacked a figure that could ferry the knowledge produced in the website to the doctors and that could transform the potentiality in a reality.

Whereby, to answer to our second initial question: Are "new forms of expertise" being developed or are "old knowledge hierarchies" simply being reinforced? The answer is that the study of this website (Fortunati and de Luca, 2003) shows that the new forms of expertise that have been developed could not be integrated inside medical science because of the lack of a professional figure that could realise this integration.

Thus, the old knowledge hierarchies regarding the rheumatologists involved remained unchanged, at least in the short term.

The lack of these figures does not concern only this website but also the news and information provided by readers in online forums hosted by the digital sites of print newspapers (Fortunati, 2009).
The large dissipation of the knowledge produced by citizens continues to exist and even increase. Citizen science seems to have still today few relationships with established science.
By contrast, the second website speaks more as a re-engineering of the relation between a publisher and its possible consumers because the webmaster was involved in
applying the marketing strategies of the publisher group.
These strategies were much more effective because they were not evident to website users who were convinced to be in a website of free conversation.

Disclosure statement

No potential conflict of interest was reported by the author.

Funding

This work was supported by the European Union "Strategies of Inclusion: Gender and the Information
Society (SIGIS)" [grant number IST-2000-263229]

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