



**HAL**  
open science

## Managing conflicts between users in Wikipedia

Bernard Jacquemin, Aurélien Lauf, Céline Poudat, Martine Hurault-Plantet,  
Nicolas Auray

► **To cite this version:**

Bernard Jacquemin, Aurélien Lauf, Céline Poudat, Martine Hurault-Plantet, Nicolas Auray. Managing conflicts between users in Wikipedia. Business Information Systems BIS 2008 Workshops Proceedings: Social Aspects of the Web SAW 2008, Poznań University of Economics, May 2008, Innsbruck, Austria. pp.81-93. hal-00283608

**HAL Id: hal-00283608**

**<https://hal.science/hal-00283608>**

Submitted on 30 May 2008

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Managing conflicts between users in Wikipedia

Bernard JACQUEMIN<sup>1</sup>, Aurélien LAUF<sup>1</sup>, Céline POUDAT<sup>2</sup>,  
Martine HURAUPT-PLANTET<sup>1</sup> et Nicolas AURAY<sup>2</sup>

<sup>1</sup>LIMSI CNRS UPR 3251, Orsay (France)

<sup>2</sup>ENST, Paris (France)

{Bernard.Jacquemin,Aurelien.Lauf,Martine.Hurault-Plantet}@limsi.fr  
{Celine.Poudat,Nicolas.Auray}@enst.fr

## Abstract

Wikipedia is nowadays a widely used encyclopedia, and one of the most visible sites on the Internet. Its strong principle of collaborative work and free editing sometimes generates disputes due to disagreements between users. In this article we study how the wikipediaian community resolves the conflicts and which roles do wikipediaian choose in this process. We observed the users behavior both in the article talk pages, and in the Arbitration Committee pages specifically dedicated to serious disputes. We first set up a users typology according to their involvement in conflicts and their publishing and management activity in the encyclopedia. We then used those user types to describe users behavior in contributing to articles that are tagged by the wikipediaian community as being in conflict with the official guidelines of Wikipedia, or conversely as being well featured.

**Keywords:** Social network, Wikipedia, Web community, Conflict, Collaborative work

## 1 Introduction

The Wikipedia encyclopedia project has become a reference informational resource, and one of most visible sites on the Internet. Amazing and far removed from the Enlightenment spirit – where the expert and his signature constitute the text quality guarantee –, Wikipedia is based on a very different editorial process.

The whole project is based on a few strong ideological principles, also called *pillars*, *official guidelines* or *fundamental principles* in Wikipedia. First, the goal is clearly to be a generalist encyclopedia project with several linguistic instances that are independently managed. Then, the Wikipedia contents also have to be objective. Wikipediaian reckon that the best way to grant the objectivity is to set out a *neutral point of view* (NPOV)<sup>1</sup>. Moreover, texts are

<sup>1</sup>The articulation between both is performed as follow: "What people believe is a matter of objective fact, and we can present that quite easily from the neutral point of view." (Jimbo Wales, co-founder of Wikipedia, [http://en.wikipedia.org/wiki/Wikipedia\\_talk](http://en.wikipedia.org/wiki/Wikipedia_talk):

freely edited and redistributed, and the encyclopedia has been developed with free and open source software. The entire editorial process, from the writing articles to the macrostructure organization, is collectively managed. Finally, the wikipedians have to respect elementary good manners. So, even if the Wikipedia editorial process totally differs from the traditional encyclopedia one, the goals of encyclopedic relevance and objectivity are in fact very close [5, 7].

Several formal and informal ways to regulate and control the encyclopedia have progressively been introduced by the wikipedian community in order to obey and to make users obey the *pillars*. The common wikipedian philosophy makes it possible to gather together a large population of users writing about an unlimited number of themes or domains, to share their incomplete knowledge, to represent the various ways of thinking, and to delete errors thanks to successive users rectifications [15, 3]. However, this philosophy also generates disputes and conflicts linked to inevitable disagreements between contributors. What processes does the wikipedian community use to resolve the conflicts, and what roles do the wikipedians choose in this process?

In this article, by analyzing the contributors behavior in places where conflicts are resolved, we provide elements to help answer these questions. The users behavior is observed both in the articles that are tagged as being in particular accordance (*good* or *featured articles*), or conversely not in accordance, with the main guidelines of Wikipedia (*relevance dispute articles*, *NPOV dispute articles*. . .), and in pages specifically dedicated to serious personal conflicts, the *Arbitration Committee* [16, 13]. As a result, we present the following contributions:

First, we make a users typology according to parameters that bring to light their involvement in conflicts and their publishing and management activity in the encyclopedia. In particular, we establish relationships between the number of appearances before the Arbitration Committee, the initiation of a request to the Arbitration Committee, and the numbers of contribution to articles and talk pages of Wikipedia. We show that major contributors are often involved in arbitration, and mostly as the initiating party.

Then, we analyse the distribution of those types of users among the contributors to articles that do not respect a neutral point of view, given that it is one of the most important principles of Wikipedia. We find that all the major contributors who take their conflict before the Arbitration Committee are also contributors to NPOV articles, against only one half for the minor contributors.

Finally, by analysing the distribution of those wikipedians involved in serious disputes, among the contributors to tagged articles, we find that major contributors who are often involved in arbitration, are much more frequently contributing to protected articles (subject to disputes or vandalism), than to featured articles.

---

Attribution/Role\_of\_truth). Thus the Wikipedia's aim at the objectivity is only performed at an *opinion* inventory level, despite their uneven quality on the same page [8].

## 2 Related work

A number of authors study conflicts in Wikipedia in relation with coordination and cooperation underlying collaborative work. For instance, [9] develop quantitative measures of the costs involved by collaborative work, using the concepts of direct (i.e. writing article) and indirect work (i.e. discussion or anti-vandalism). At the article level, the history of the revisions is often used to model and identify conflict or coordination periods [9, 14]. The aim of the present study is rather to analyse the behavior of wikipedians, who are involved in conflicts, faced with the main tools wikipedians use to resolve conflicts.

Studies of conflict management and social control in virtual communities show that such social systems have the same kind of problems as real social systems. In particular, [10] show that the *social dilemma* between individual and collective interest in the problem of cooperation remains, even if it takes other forms. Furthermore, [4] observes that methods using both mediation and arbitration better manage conflicts than power strategies of social control, as it does in the real world. Indeed, the way a community manages its conflicts reveals its governance mode [2, 9, 14]. In the French Wikipedia, mediation takes place in talk pages of articles which have a template message at the top of the page, and arbitration takes place in the Arbitration Committee pages.

In fact, template messages at the top of article pages are strongly linked to the official guidelines of Wikipedia. Indeed, these principles play an important role in the management and resolution of conflicts. [15] analysed the content of the article talk pages, and found that 7.9% of the activity in those pages consists in references to Wikipedia official guidelines.

The behavior of wikipedians has been studied either from their motivations point of view [11], either considering the type [12] or the evolution of their participation [3]. Our analysis of the behavior of wikipedians is based on quantitative data as well as in [12], but is restricted to those wikipedians who are involved in conflicts.

## 3 Corpus

Wikipedia is a generic term for the free multilingual and collaborative online encyclopedia<sup>2</sup> as well as a reference to every instance of this encyclopedia. Each instance refers to a different country and/or language. The instance we are interested in for this article is the French version of Wikipedia<sup>3</sup>. The corpus we used was extracted from the Wikipedia backup of 2006/04/02: more than 600,000 pages including 370,000 article pages and 40,000 talk pages (according to Wikipedia's internal architecture, each article page can be linked to a talk page). A tool called Wiki2Tei<sup>4</sup> was then used in order to convert the wikitext syntax to a TEI-compliant XML syntax (TEI standing for *Text Encoding Initiative*).

The articles of Wikipedia are written by voluntary contributors working with each other via a wiki. Since anyone can freely edit any article, many virtual

<sup>2</sup>Available at <http://www.wikipedia.org/>.

<sup>3</sup>Available at <http://fr.wikipedia.org/>.

<sup>4</sup>Open software available at <http://wiki2tei.sourceforge.net/> and freely distributed according to the terms of the BSD license (<http://www.opensource.org/licenses/bsd-license.php>).

places are provided to avoid or settle conflicts that may arise in the process. First of all, each article is linked to a discussion page where contributors can exchange and justify their assertions, and thus reach compromises according to Wikipedia's netiquette and neutrality policy. Furthermore, users can insert specific tags<sup>5</sup> on top of articles which do not respect Wikipedia's official guidelines (such as neutrality or relevance dispute) [11, 6] or, on the contrary, to reward an exemplary article (called *featured* or *good articles*<sup>6</sup>). These tags are used to highlight for the community the fact that some articles need improvement and thus can be used as points of reference for users. Finally, when disputes degenerate into personal conflicts and get out of hand, each user can register a complaint to the Arbitration Committee. The Arbitration Committee is a group composed of seven contributors to Wikipedia, elected by the rest of the community for six months. Deliberations and votes of the Arbitration Committee are public and usually tend to reach unanimity, which implies consensus, as it is the rule for the articles. The role of Arbitrators is not to express an opinion about the scientific rightness or the editorial policy of an article but to ensure that Wikipedia's official guidelines are respected: neutral point of view (NPOV), the need to cite general sources, netiquette (called *wikilove* by the wikipedian French community), the respect of the law, etc. They have the right to impose sanctions on users such as temporary or definitive article probation (meaning that the user cannot contribute anymore to one or more articles) or, less often, general restriction (meaning that the user is literally banned from all Wikipedia).

Thus, there are three virtual places to manage a conflict, in order of seriousness: the discussion pages linked to an article, the discussion pages linked to an NPOV dispute article and the pages of the Arbitration Committee. We focus on the last two because they correspond to open conflicts.

The first corpus we collected is composed of about 1,000 articles that have (or have had) the NPOV tag. Each article is associated, when possible, to its discussion page (some articles are not linked to a discussion page because the discussion may have started after we extracted the corpus). About 1,600 contributors intervened in these pages. We automatically added semantic tags to this corpus in order to extract each contribution and its size, who wrote it and when – which tells us which contributions were written during the conflict and which were not – and, when possible, to whom it answers. However, it is impossible to know who wrote a contribution when users do not sign it, deliberately or not. This is the reason why between 2% and 5% of the contributions may have been improperly tagged.

The second corpus is composed of about 80 pages from the Arbitration Committee. These pages are relatively well formed and homogeneous, allowing us again to automatically tag them so as to clearly make their essential architecture stand out: the conflict description, who registered the complaint and when, the parties involved, if the complaint is admissible or not, and the verdict of the arbitrators. Furthermore, each user is associated to his messages, and each arbitrator to his contributions and, of course, his vote. Finally, the verdict is composed of at least one verdict proposal and a vote; there are as many

<sup>5</sup>Defined in Wikipedia as "a frame type in articles indicating a piece of information or a link" <http://en.wikipedia.org/wiki/Wikipedia:Template>.

<sup>6</sup>[http://en.wikipedia.org/wiki/Wikipedia:Good\\_articles](http://en.wikipedia.org/wiki/Wikipedia:Good_articles).

counterproposals and votes as needed until the arbitrators are able to reach an agreement. Each proposal is clearly identified and associated to the right arbitrator and each vote is associated to its arbitrator and to the proposition it refers to.

## 4 Typology of users in conflict

The Arbitration Committee is therefore a formal place for the resolution of conflicts. Though rather rare – only about one hundred users among 31 000 wikipedians were implied in an arbitration within a 5-year period –, arbitrations represent an important tool for Wikipedia governance. Indeed, elected arbitrators can impose penalties against Wikipedia users who transgressed the *pillars*. For instance, penalty may consist in blocking a user in order to keep the user from writing within articles during a certain period of time. It therefore gives strong means for controlling publication.

Among the hundred arbitrations which took place from the beginning of Wikipedia-France to 2006 april, some user names appear more often, either as the *initiating party*, or as the *other involved party*. Those two topics, frequency of appearance and role in the complaint, allow us to draw up an initial typology of users engaged in a dispute. We first distinguished three kind of protagonists depending on the frequency of their appearances: *very regular ones* who have between 3 et 14 appearances<sup>7</sup>, *regular ones* who have two appearances, and *occasional ones* who have only one appearance. Concerning their role in the complaint, we then distinguished three categories, the *initiating party*, that is to say those who are most often the initiator of the complaints, the *other involved party*, and finally those who appear in a more balanced way, sometimes as initiating party and sometimes as other involved party. We can see on Table 1 that among the wikipedians who often appear, the *very regular ones*, are the initiating party for most part, even though *occasional ones*, who appeared only once, are mainly other involved party. We also note that most of those who appeared twice took once the initiating party position, and once the other involving party position.

Table 1: Appearances before the Arbitration Committee

Appearances	Users	Initiating party	Other party	Both
3–14 (very regular ones)	10	50%	30%	20%
2 (regular ones)	17	12%	29%	59%
1 (occasional ones)	74	30%	70%	0%

We then added to that typology the way users contribute to Wikipedia. We considered the number of their contributions in editing articles, either in article pages, or in the discussion pages, because it is mainly in this place that conflicts begin<sup>8</sup>. Concerning this point, we noted big differences between users. We drew up four categories, the *major contributors* whose number of contributions extends from about 12,000 to 40,000 during the studied period, the *Large*

<sup>7</sup>14 is anyway a sort of record, then there are two of them having 7, another having 4, the other ones having 3 appearances

<sup>8</sup>We did not consider for instance contributions in the *bistrots* of Wikipedia.

*contributors*, between 2,800 and 12,000 contributions, the *middle contributors* between 600 and 2,800, and the *minor contributors*, between one and 600 contributions. Finally, we considered the type of their contributions according to whether they contribute to article pages or discussion pages. We therefore distinguished three categories according to whether they contribute more often to articles or to discussions, or to both of them in a balanced way.

Table 2: The contributions of the protagonists before the Arbitration Committee

Contributions	Users	Article orient.	Discussion orient.	Both
12,000–40,000 (Major contrib.)	7	100%	0%	0%
2,800–12 000 (Large contrib.)	23	96%	0%	4%
600–2,800 (Middle contrib.)	31	81%	0%	19%
1–600 (Minor contrib.)	40	70%	5%	25%

Table 2 shows that users who get involved in disputes in Wikipedia contribute more to articles than to the associated talk pages, despite their conflicts. Nevertheless, it also shows that the less they contribute to articles, the more they have a tendency to discuss.

Comparing the number of contributions and the frequency of appearances (Table 3), we realize that parties of the Arbitration Committee who are *very regular* are for the most part *big contributors*, while *occasional* ones are more often *small contributors*.

Table 3: Categories of contributors in complaints

Appearances	Contributors	Major	Large	Middle	Minor
3–14 (very regular ones)	10	20%	50%	30%	0%
2 (regular ones)	17	13%	29%	29%	29%
1 (occasional ones)	74	4%	18%	31%	47%

Comparing the number of contributions and the role in the complaint (Table 4), we note that the *big contributors* are more often the initiating party and that the *small contributors* are more often the other involved party. Indeed we note an increase of the proportion of *other involved party* and a decrease of the proportion of *initiating party* as the number of contributions decreases. Part of protagonists who are sometimes the initiating party and sometimes the other involved party is marginal for each category of contribution size.

Table 4: Role in the complaint by size of contribution

Contributions	Users	Initiating party	Other party	Both
12,000–40,000 (Major contrib.)	7	57%	29%	14%
2,800–12,000 (Large contrib.)	23	39%	44%	17%
600–2,800 (Middle contrib.)	31	32%	58%	10%
1–600 (Minor contrib.)	40	15%	75%	10%

The analysis of these tables evokes that the big contributors assimilated the *pillars* of Wikipedia, and really care about enforcing them [1, 6]. Indeed, the emerging trend is that the more they contribute to articles, the more they carry

out publication control at the same time. They exercise this control in the framework of the Arbitration Committee through their role as initiating party. They exercise this control mainly over *middle* and *small* contributors.

In the following section, we study whether we can complete this typology of contributors before the Arbitration Committee with the types of article they contribute to, involving the *pillars* of Wikipedia. Indeed, we saw that users put different tags within articles in order to warn other users about breaches of the rules of Wikipedia. We used those tags to categorize articles as *featured articles*, *NPOV dispute articles*, *relevance dispute articles*, and *protected articles*.

## 5 Users in conflict and *pillars* of Wikipedia

The NPOV dispute tag is the first tangible evidence of a disagreement between wikipedians. Thus we studied characteristics of contributors who participated in articles with the NPOV tag, and particularly the ones who are also parties of arbitration by the Arbitration Committee. This analysis reveals several behavior trends. In Table 5, we study the behavior of the contributors, shared out in categories following the number of their contributions. We compare contributors in articles with a NPOV tag to all the contributors in Wikipedia. The second column indicates for each section the number of contributors in NPOV articles. The third column shows the number of appearances before the Arbitration Committee for the contributors in NPOV articles in comparison with all the protagonists before the Arbitration Committee, for each category (see Table 2). In Table 6, we study the behavior of the contributors who appear before the Arbitration Committee, considering on the one hand the appearance frequency, and on the other hand their role in the complaint. The second column indicates, for each category of frequency and of role, the number of contributors in Wikipedia who appear before the Arbitration Committee. The third column indicates for each category the number of contributors in NPOV articles who appear before the Arbitration Committee, and the proportion of these contributors to all the contributors of the same category who appear before the Arbitration Committee. Table 5 shows that 77% of the protagonists before the Arbitration Committee appear among the 1600 contributors participating to at least one article with the NPOV tag. It suggests that a lot of conflicts arise from an objectivity controversy.

Table 5: Protagonists who appear before the Arbitration Committee (AC) among the contributors in NPOV articles, by contributions size

Contributors categories	# NPOV contributors	NPOV contributors before the AC
Major contributors	30	7 (100% of 7)
Large contributors	151	21 (91% of 23)
Middle contributors	335	27 (84% of 31)
Minor contributors	1121	23 (57% of 40)
Total	1637	78 (77% of 101)

We also notice (Table 5) a very marked presence of the protagonists who appear before the Arbitration Committee among the most verbose contributors of our sample. We also note (Table 6) that the *very regular protagonists* before

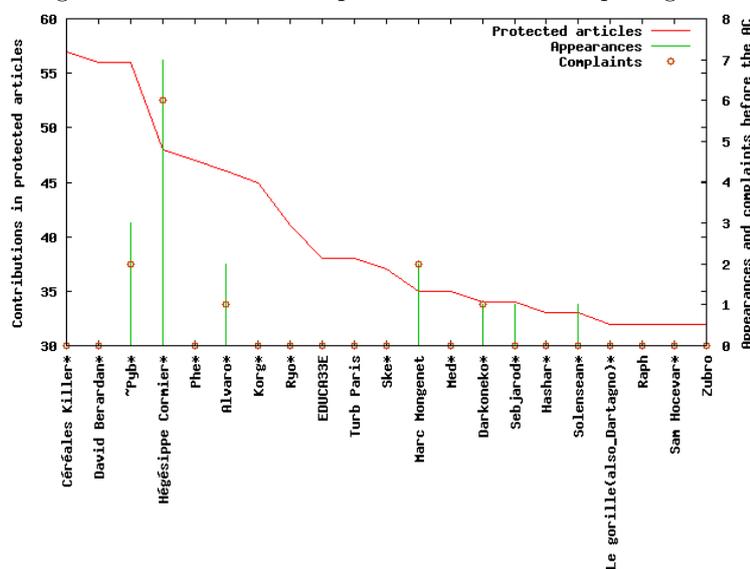
Table 6: Protagonists who appear before the Arbitration Committee (AC) among the contributors in NPOV articles, by appearances type

Protagonists categories	Before the AC	In NPOV articles
Very regular	10	10 (100%)
Regular	17	12 (70%)
Occasional	74	56 (76%)
Initiating party	29	26 (90%)
Other party	60	44 (73%)
Both	12	8 (67%)

the Arbitration Committee and the initiating parties contribute more in NPOV pages than *regular* and *occasional protagonists*, or than other involved parties. The *very regular protagonists* and initiating parties are particularly present in NPOV discussions.

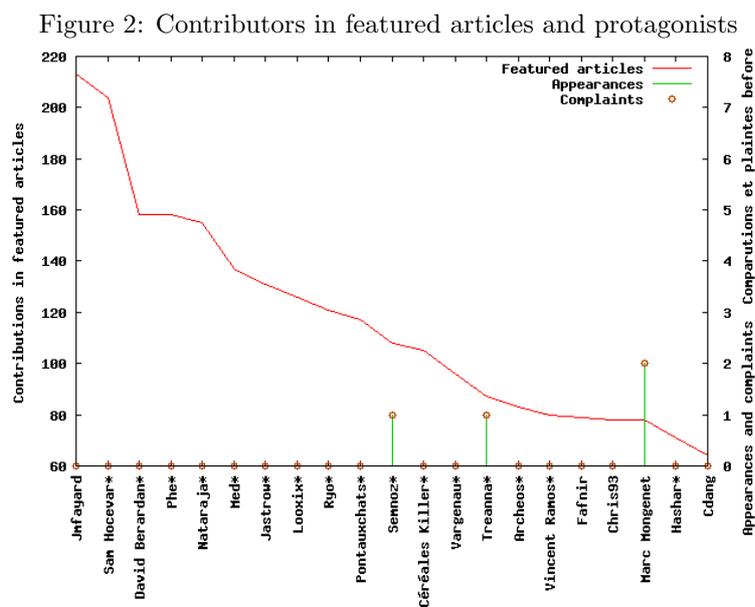
In order to study further the behavior of the contributors in conflict, we now consider their participation in other articles with a particular tag, indicating either a breach of relevance or objectivity principles, or a particular ageement with the official guidelines of Wikipedia. These tags are the neutral point of view (NPOV) dispute tag, the relevance dispute tag and the protected article tag, that takes place when the controversy degenerates into conflict in order to prevent the article from being modified, and the featured article tag, that indicates its particular quality, according to the *pillars*.

Figure 1: Contributors in protected articles and protagonists



In Figures 1, 2, 3 and 4, the sample comprises only contributors in NPOV articles, who sometimes also contribute in articles with another tag. The curves in these figures present in descending order the number of contributions for the 20 most verbose contributors, respectively in protected articles, in featured

articles, in NPOV articles and in non-relevant articles. For each contributor, the number of his appearances before the Arbitration Committee (vertical line) and the number of his complaints (small circle) are also indicated, corresponding to the right scale.



We observe several interesting differences in these figures. In particular, among the 20 most verbose contributors in protected articles (Figure 1), 7 are protagonists before the Arbitration Committee, namely 35% of the major contributors on these articles. Furthermore, their behavior before the Arbitration Committee is disparate: some of them initiate the procedure and the others are other involved parties, some are very regular or regular protagonists and the others are occasional ones. On the other hand, Figure 2 shows that, among the most verbose contributors in featured articles, only 3 appeared before the Arbitration Committee, all of them as initiating parties. Nonetheless their apparent aggressiveness must be put into perspective: as none of these protagonists is a regular one, the complaints are few.

The behavior of the major contributors in NPOV and relevance dispute articles is between these two trends. Among the 20 most prolific contributors in NPOV articles indeed (Figure 3), 25% appeared before the Arbitration Committee. And 4 of the 20 major contributors in non-relevant articles, ie 20%, also appeared in arbitrations (Figure 4).

In all these figures, the wikipedians with a particular status<sup>9</sup> are starred (\*). It is interesting that most of the major contributors in the considered articles have also a particular status.

<sup>9</sup>Some particular status exists in the wikipedian community, e.g. administrator, steward, arbitrator, bureaucrat... Such a status is conferred by the community to a contributor through an election process. This status grants him/her extended rights in prospect of managing the encyclopedia.

Figure 3: Contributors in NPOV articles and protagonists

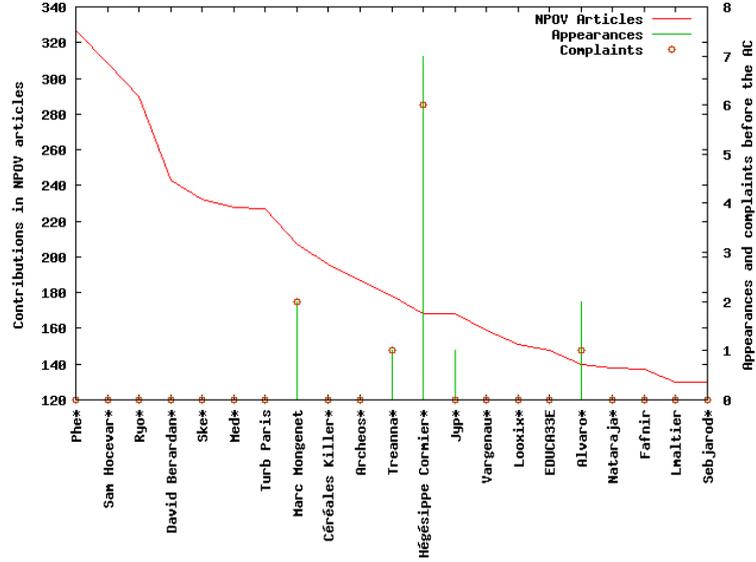
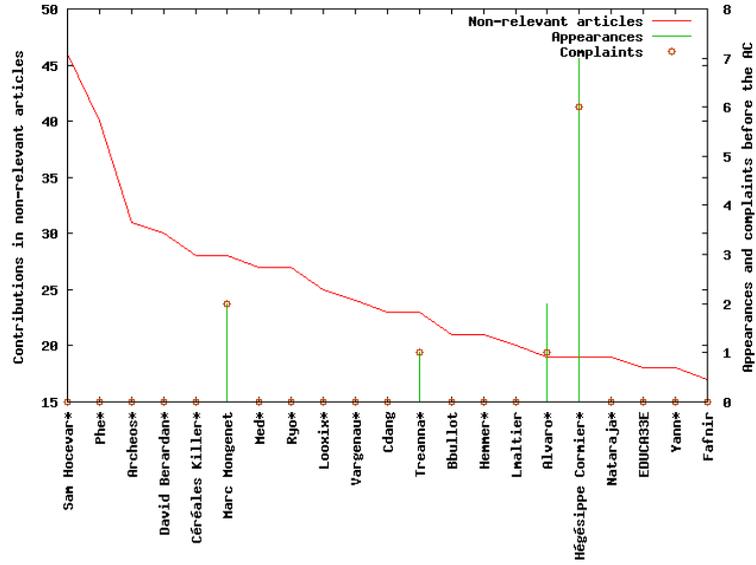


Figure 4: Contributors in non-relevant articles and protagonists



This observation confirms the previously mentioned correlation between a strong involvement of the contributors in the Wikipedia project, denoted both by the number of contributions and by the particular status [1, 6], and their intervention where and when the official guidelines need to be protected.

## 6 Conclusion

The Wikipedia encyclopedia is mainly based on collaborative work. This official guideline yields to cooperation patterns, including discussions and information sharing in order to realize the common goal. But such an extended collaboration also engenders conflicts. Disagreements which degenerate into serious personal disputes, with possible insults or systematic reverts, are finally not so frequent. They only involved one hundred users among 30,000 wikipedians over a period of five years. Official guidelines, the Wikipedia *pillars*, are clear, and there are not many of them. They constitute strong bases for conflict resolution. Tools and procedures have been developed step by step in order to enforce those principles.

We studied conflict evolution through the behavior of users who appear before the Arbitration Committee, and through their contributions to those articles that are tagged such as *featured articles*, *NPOV articles*, *non-relevant articles*, and *protected articles*. As expected, users appearing before the Arbitration Committee are more numerous on articles subject to a NPOV or relevance controversy, and much more on protected articles, than on featured articles.

The presence of involved parties before an Arbitration Committee has different meanings depending on whether one is the initiating party or the other involved party. We note that major and large contributors, also often involved as Wikipedia administrators, do most of the job of publication control. They are more often the ones who initiate arbitrations, and moreover the ones who contribute the most to featured articles. Tables 2, 3, 4 of Section 4 clearly show the evolution of the relative sizes respectively between initiating parties and other involved parties, between contribution to articles and contribution to discussions, between regular and occasional involved parties before Arbitration Committee, according to the size of contributions.

As a result, we may say that conflicts in Wikipedia are resolved both by means of a strong commitment to clear official guidelines, through specific places devoted to managing them, and by interventions of some attentive users.

### Acknowledgements

The research reported here was supported by a grant from the French National Research Agency (ANR), within the framework of the Autograph project ANR-05-RNRT-03002 (S0604108 W).

## References

- [1] Anthony, D., Smith, S., Williamson, T.: Explaining Quality in Internet Collective Goods: Zealots and Good Samaritans in the Case of Wikipedia. Dartmouth College, Hanover (2005)
- [2] Auray, N., Poudat, C., Pons, P.: Democratizing scientific vulgarization. The balance between cooperation and conflict in French Wikipedia. *Observatorio* 3, 185–199 (2007)
- [3] Bryant, S.L., Forte, A., Bruckman, A.: Becoming Wikipedian: transformation of participation in a collaborative online encyclopedia. In: ACM

- SIGGROUP Conference on Supporting Group Work, pp. 1–10. ACM Press, New York (2005)
- [4] DuVal Smith, A.: Problems of Conflict Management in Virtual Communities. In: Smith, M., Kollock, P. (eds.) *Communities in Cyberspace*, pp. 134–166. Routledge, London (1999)
  - [5] Endrezzi L.: La communauté comme auteur et éditeur: l'exemple de Wikipédia. In: Journée d'étude des URFIST "Évaluation et validation de l'information sur Internet" (2007)
  - [6] Forte, A., Bruckman, A.: Why Do People Write for Wikipedia? Incentives to Contribute to Open-Content Publishing. In: *GROUP 05 Workshop: Sustaining Community: The Role and Design of Incentive Mechanisms in Online Systems* (2005)
  - [7] Giles, J.: Internet encyclopaedias go head to head. *Nature* 438(7070), 900–901 (2005)
  - [8] Gourdain, P., O'Kelly, F., Roman-Amat, B., Soulas, D., von Droste zu Hülshoff, T.: *La Révolution Wikipédia. Les encyclopédies vont-elles mourir? Mille et Une Nuits*, Paris (2007)
  - [9] Kittur, A., Suh, B., Pendleton, B.A., Chi, E.H.: He says, She Says: Conflict and Coordination in Wikipedia. In: *SIGCHI Conference on Human Factors in Computing Systems*, pp. 453–462, ACM Press, New York (2007)
  - [10] Kollock, P., Smith, M.: Managing the virtual commons: cooperation and conflict in Computer communities. In: *Computer-Mediated Communication: Linguistic, Social and Cross-Cultural Perspectives*, Susan Herring (ed.), pp. 109–128. John Benjamins, Amsterdam (1996)
  - [11] Kuznetsov, S.: Motivations of contributors to Wikipedia. *ACM SIGCAS Computers and Society* 36(2), 1–7 (2006)
  - [12] Ortega, F., Gonzalez-Barahona, J.M.: Quantitative Analysis of the Wikipedia Community of Users. In: *WikiSym'07*, pp. 75–86, Montreal, Canada (2007)
  - [13] Stvilia, B., Twidale, M., Gasser, L., Smith, L.: Information Quality Discussions in Wikipedia. Technical Report, University of Illinois at Urbana-Champaign (2005)
  - [14] Viégas, F.B., Wattenberg, M., Dave, K.: Studying Cooperation and Conflict between Authors with history flow Visualizations. In: *SIGCHI Conference on Human Factors in Computing Systems*, pp. 575–582. ACM Press, New York (2004)
  - [15] Viégas, F.B., Wattenberg, M., Kriss, J., Van Ham, F.: Talk Before You Type: Coordination in Wikipedia. In: *40th Hawaii International Conference on System Sciences* (2007)
  - [16] Zlatic, V., Bozicevic, M., Stefancic, H., Domazet, M.: Wikipedias: Collaborative web-based encyclopedias as complex networks. *Physical Review E*, 74(1) 6–11 (2006)