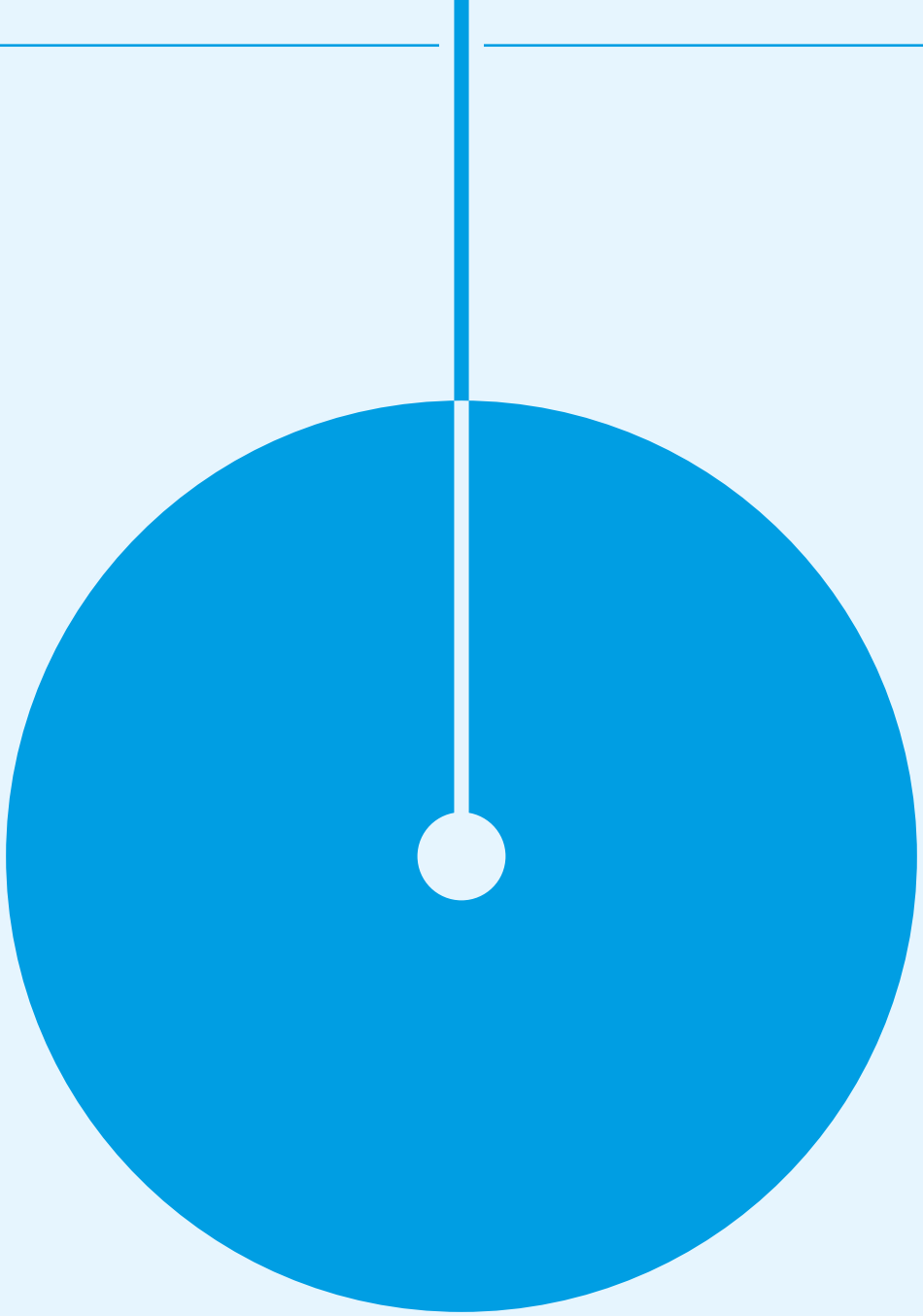

Charting Diversity

Working together towards diversity in Wikipedia

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1 Introduction

"One of the biggest enigmas facing Wikipedia experts and researchers is the question of what motivates the volunteers to become involved" (WMDE, 2011, p.125).

Wikipedians' commitment to producing and publishing free knowledge is, without doubt, truly exemplary. If we want to continue publishing a rich variety of high-quality articles in the future, efforts to consciously shape the social face of the Wikipedia community are going to become increasingly important. Every day, thousands of volunteers use Wikipedia's editing and discussion pages, thus contributing to what is the world's biggest collection of knowledge and a key source of encyclopedic knowledge. For this kind of collaboration to work, we must value diversity, tolerance and unity in diversity.

In view of declining author numbers, the small proportion of female Wikipedians, and the ever-changing structures within the system, it is in the interests of the entire Wikipedia community to join forces and make Wikipedia a truly inclusive space – now and in the future. "Inclusive" primarily means that Wikipedians should, actively and on their own initiative, value diversity at all times. Every time a Wikipedian edits a page or takes part in a discussion, he or she is working as part of the Wikipedia community and helping to develop Wikipedia. In order to create a space that people can get involved in and where they can enjoy editing collaboratively, it is important that both long-time editors and newcomers feel welcome in Wikipedia and can participate on equal terms. All Wikipedians can play their collective and individual part in ensuring that when a person contributes to Wikipedia, his or her work is recognized and valued, and that, in difficult situations, everyone involved can be sure of fair treatment and can rely on the support and solidarity of the community.

New ways of encouraging greater participation in Wikipedia were identified in the context of the Wikipedia Gender Diversity, a research and development project carried out in cooperation with the Gender and Technology Center at Beuth University of Applied Sciences Berlin. The project focused on the causes and effects of the gender gap within Wikipedia and aimed to establish effective measures to close it. The objective was to develop an approach that works for women and then to apply it to other target groups that are underrepresented within Wikipedia. This development process was based on the open innovation approach to ensure that it would take the form of an open and participative dialogue with experts and the communities. Our aim was to explore the significance of diversity within Wikipedia. The project brought together all previous findings on female underrepresentation among Wikipedia authors. Wikipedians and various stakeholder groups then used this knowledge to develop and test various approaches for closing the gender gap.

Under the heading of "Diversity", we considered interaction within the Wikipedia community a top priority, alongside opportunities for developing the diversity competence of contributors in order to promote respectful conduct in, for example, conflict situations. We look forward to a constructive dialogue and to further ideas for increasing gender diversity within Wikipedia in the future! This project could not have been realized without the hard work and support of a large number of people. Special thanks go to all Wikipedia editors who have contributed to this project by giving interviews, suggestions, comments, and criticism.

2. Diversity and what it means for Wikipedia

Diversity means both variety and difference. In a sociological sense, the term "diversity" is about encouraging variety and creating equal opportunities. Diversity can therefore promote cultural variety, variety in age, variety in gender, or other types of variety. The concept of diversity has its roots in the American civil rights movement; today it is linked to efforts to promote equality, equal opportunities, anti-discrimination, participation and inclusion.

In the following three sections we will outline the various kinds of diversity (Section 2.1), discuss the opportunities and challenges that diversity creates for collaborative knowledge production (Section 2.2) and explore gender diversity in detail (Section 2.3).

2.1 Specific forms of diversity

Various kinds of diversity could be relevant to Wikipedia. These include the epistemic diversity of, for instance, the knowledge presented in Wikipedia, i.e. knowledge diversity (e.g. variety of topics, selection of sources); sociodemographic diversity (e.g. age, gender, background); and diversity in organizational roles, that is, variety in the roles performed by men and women in organizational or community structures (e.g. editors and authors). The following provides an overview of these different types of diversity and their significance for Wikipedia.

Epistemic, or knowledge diversity, covers aspects such as the variety of topics, viewpoints, relevance criteria and selection criteria with regard to, for example, the choice of relevant information and sources. It also concerns the kinds of approach taken to producing Wikipedia articles – such as the scope and type of resources in a body of knowledge, or the viewpoints included in a specialist area. Epistemic diversity (for further information on the term, cf. Gläser, 2012) is relevant for the quality of the content on Wikipedia's pages. It means that the encyclopedia can be expanded to include new topics and that the completeness of the encyclopedic knowledge is ensured by the collaborative knowledge acquisition of the different authors. In short, knowledge diversity is the foundation of Wikipedia's reason for existing and as such it is an attribute that directly determines its quality.

Heterogeneity within a group of authors can also be viewed through the lens of sociodemographic diversity. Sociodemographic diversity concerns everything from gender, ethnicity, nationality, age, and disability to religion, sexual orientation, income, family status, and level of education. (For further information on the term "demographic diversity", cf. Mohammed and Angel, 2004).

According to the premises of social cognition theory, individual knowledge depends on the epistemic environment in which individuals live and seek orientation (Baurmann, 2007/2008), and is thus the result of social processes (cf. Wilholt, 2007). It can therefore be assumed that sociodemographic diversity and epistemic diversity are closely interrelated. We also know from research in psychology and sociology that our actions and knowledge are shaped by socialization. Socialization can be understood as a social learning process in which norms, values, social roles and orientations develop over the course of one's life (Wiswede, 1998). Various aspects of diversity, such as age, background, education, etc., also have a large impact on an individual's development during the different stages of life.

Sociodemographic diversity paves the way for cognitive diversity, which in turn creates scope for knowledge diversity. For instance, people of different ages or with different educational backgrounds (sociodemographic diversity) have different attitudes and ways of thinking (cognitive diversity), which can be sources of different topics and viewpoints for Wikipedia articles (knowledge diversity). In the case of Wikipedia, it would be necessary to investigate in even greater detail to what extent the sociodemographic diversity of Wikipedia authors and the epistemic diversity of Wikipedia articles are interrelated, while also examining the connection between sociodemographic diversity, the diversity in organizational roles and epistemic diversity. For the Wikipedia community, role diversity means having variety in the roles that Wikipedians can perform, e.g. editor, reviewer, administrator (for further information on the term "role diversity", cf. Gabriel and Liimatainen, 2000).

Some of the open questions in this area are: What is the proportion of female administrators to male administrators? And how does this influence the content selected for Wikipedia articles?

While not exhaustive, the types of diversity presented here provide examples of how complex and multidimensional this concept is, while also showing that it is a concept that can be of vital importance to the quality of Wikipedia.

In the following section we will present some thoughts and considerations on the opportunities and challenges that diversity brings to Wikipedia.

2.2 Diversity and group collaboration

Diversity is an essential attribute of both open communities and open societies. We still do not know much about the interactions that might exist between the different types and dimensions of diversity when it comes to producing knowledge for Wikipedia on a collaborative basis. It is possible to derive a few hypotheses from research into how diversity impacts heterogeneous teams within organizations. The research findings have shown, for example, that diversity can have both positive and negative effects on group performance (Jans, 2004; Boerner, Keding & Hüttermann, 2012). We can look at the different effects from a resource perspective and from a process perspective:

- *Resource perspective:* Sociodemographic diversity is regarded as a valuable resource, since, compared to homogenous teams, heterogeneous teams are likely to possess greater potential for expert knowledge, experience, opinions, and perspectives. This can lead to better decision-making processes and can produce more innovative solutions. By creating teams of people that differ in, say, age, gender, and cultural background, it is possible to tap into a larger pool of knowledge and life experience. This produces greater cognitive diversity, which can lead to better performance by the team, especially in tasks that require a high degree of cognitive flexibility (Jans, 2004; Boerner, Keding & Hüttermann, 2012).
- *Process perspective:* Sociodemographic diversity can, however, also be a cause of dysfunctions in group and organizational processes. Because similarities generally make people perceive the person with whom they are interacting as more attractive, those who see each other as similar will communicate more often and more intensively. Regular communication reduces conflicts and creates a stronger emotional and social bond. Perceived dissimilarity or otherness can therefore increase the potential for conflict and reduce social integration between team members. This often results in heterogeneous teams splitting up into ingroups (the group a person belongs to) and outgroups (the groups a person does not belong to). Stronger social bonds develop within the ingroup, along with a powerful sense of "us." This can intensify the marginalization of "the others" in the outgroup (Jans, 2004; Boerner, Keding & Hüttermann, 2012).

So if we want Wikipedia to meet the challenges presented by diversity (i.e. to prevent and reduce the heterogeneity-based exclusion or marginalization of outgroups), we need information about how to put diverse groups together. We also need to consciously address our own attitudes towards diversity. Given that there is a greater risk of conflicts arising and marginalization and discrimination increasing if otherness is handled with a lack of thought, diversity within Wikipedia must be consciously managed so that we can use the strengths of our differences and minimize the problems they might cause.

2.3 Gender diversity and gender competence

In a sociological sense, the term "diversity" is about encouraging variety and creating equal opportunities. Gender diversity addresses issues of equal opportunities related to gender. Gender has both a biological and a social component. The term "gender" is not used here in the biological sense, but rather as a social and cultural construct – as something that is learned and can therefore change. The traits, role expectations and behavior patterns attributed to various persons/groups based on the biological component of gender (e.g. certain behavior is considered typical for men; other behavior typical for women) are critically discussed under the rubric of "gender." Unlike efforts designed to promote women, gender diversity makes a point of considering both the female and the male perspective. It aims to create, beyond the restrictive bounds of gender stereotypes, conditions that allow both men and women to realize their abilities and potential to the greatest extent possible. As such, gender diversity can make a valuable contribution to helping men and women develop as individuals and evolve their skills. It goes, however, far beyond the binary (i.e. two-dimensional) concept of masculinity and femininity.

The plurality of genders also includes further gender identities, e.g. transgender, transident and transsexual. The abbreviation LGBTTI (lesbian, gay, bisexual, transsexual, transgender, intersexual) describes the wide range of different gender identities.

In this context, gender competence includes aspects such as knowledge of how gender relations are constructed in society, knowledge of the differences in male and female linguistic behavior and communication, knowledge of the latest research in the field, and the ability to deal constructively with gender-based differences in, for example, group processes, conflicts, and work situations. The starting point here is that while our actions and knowledge are shaped by gender socialization, they are also affected by other aspects of diversity, such as age, background, education, etc.

3. Participation in the creation of Wikipedia

Wikipedia's goal is to create a collaborative online encyclopedia based on voluntary contributions. The opening words "Welcome to Wikipedia, the free encyclopedia that anyone can edit" summarize the key mission: the collaborative creation and publication of free knowledge by everyone, regardless of their educational qualifications, country of residence, age, or gender.

Although this vision of digital inclusion has sometimes been criticized as utopian (cf. Dobusch, 2013), the principles of openness and voluntary work remain central to Wikipedia's identity. Wikipedia, in its own description of itself, states that "any Internet user can not only read Wikipedia but can also contribute as an author" (German Wikipedia/Overview).

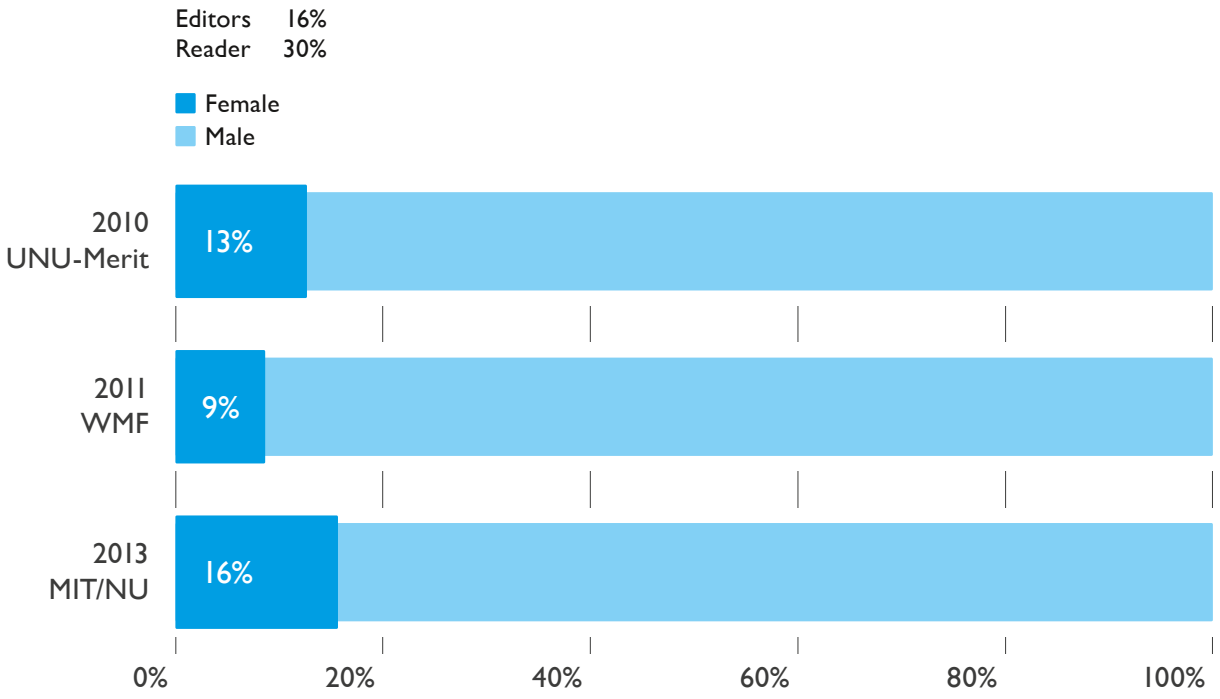
3.1 Sociodemographic diversity in Wikipedia

Despite – or perhaps because of – these principles of openness and voluntary work, Wikipedia is commonly held to attract a particular type of person. Wikipedia contributors are generally perceived as diligent individuals with a thirst for knowledge and the desire to contribute to a greater goal. According to the Editor Survey 2011 by the Wikimedia Foundation, however, the facts dispel the myth of the typical Wikipedian being a young male programmer who is still in education (see WMF, 2011).The Wikipedia community is much more diverse than is generally expected, and includes many older and better qualified people. Twenty-six percent of Wikipedians are between 22 and 26 years old, while 28 percent are over 40 (WMF, 2011). Older Wikipedians also do more editing than younger contributors, and account for 36 percent of users with 10,000 or more edits. Sixty-one percent of Wikipedians who took part in the Editor Survey 2011 hold a college degree; only nine percent have no more than a primary school qualification. Forty-three percent of the survey participants were in full-time employment; 15 percent were in part-time employment and 42 percent were not currently employed (this includes e.g. unemployed people, school children and pensioners) (WMF, 2011). Ninety-two percent of editors have good IT skills, but only 36 percent of the survey participants have programming skills or the ability to develop applications (WMF, 2011). These figures show that there is a large diversity of age, educational qualifications, and skills among Wikipedians.

However, the Editor Survey points out that there is a large discrepancy between the number of male and female contributors. According to estimates, nine out of ten editors are male; in the Indian Wikipedia, this number is even higher – 97 percent of editors are male (WMF, 2011; Khanna, 2012). Several other surveys seem to confirm this picture.

- UNU-MERIT survey (2010): The Wikipedia Survey conducted by the United Nations University (UNU-MERIT) reports that around 13 percent of contributors are female.
- WMF survey (2011): The Wikimedia Foundation's Editor Survey estimates that some 8.5 percent of contributors are female.
- Clubhouse study (2011): "WP: Clubhouse?" by the University of Minnesota (US) reports that women comprise around 16 percent of new contributors (Authors: Lam et al.)
- MIT/NU survey (2013): "The Wikipedia Gender Gap Revisited" by the Massachusetts Institute of Technology and Northwestern University reviews current statistics and suggests a correction, estimating the number of female Wikipedians at around 16 percent (Authors: Hill, B. M.; Shaw, A.).

The Editor Survey 2011 is based, however, on a survey of 5,073 users, who account for only 0.4 percent of all editors, according to Wikipedia statistics from 2011. The discrepancies in the percentages show that the number of male and female contributors cannot be determined with complete accuracy (see Fig. 1 and 2). The difficulty in compiling precise figures is partly due to the fact that not all users choose to state their gender in the user settings and partly because the data, such as those in the Editor Survey, are based on voluntary self-descriptions, which only a very small number of Wikipedians submit.



UNU-MERIT Survey (2010): 13%
WMF Editors Survey (2011): 9%
The MIT/NU Study (2013): 16%

Fig. 1: Estimated proportion of female contributors according to three different studies.

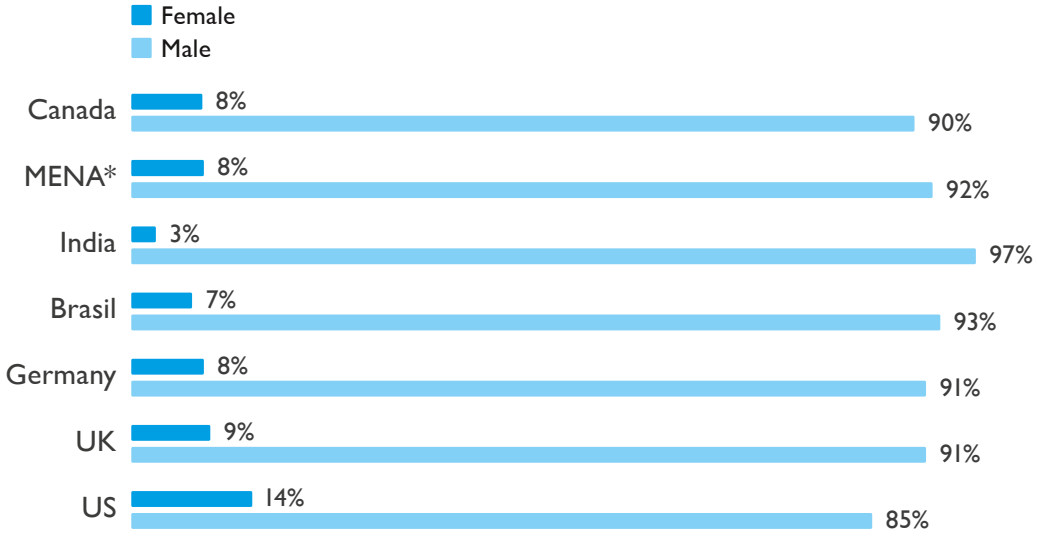


Fig. 2: Estimated proportion of female contributors in the different language versions of Wikipedia. Source: WMF (2012). Nine out of ten Wikipedians continue to be men: Editor Survey.

* Middle East and North Africa

However, Wikipedia is not the only Internet project with a low level of female participation. For example, there are also communities with more male than female active users in social media, such as Google+ and reddit, including social media that have a higher number of female members, such as Facebook und Pinterest (cf. McCandless, 2012). There is also a low level of female participation in FLOSS initiatives and projects (FLOSS stands for free/libre and open-source software or free and open-source software). According to the FLOSS Survey 2012, just 1.1 percent of contributors developing open-source and free software are female (cf. Ghosh et al., 2002) Some people have contested this figure and claim that the number of female users is higher than perceived, as many women choose gender-neutral user names or prefer to remain anonymous. Several FLOSS communities are trying to attract women with targeted outreach programs. Such measures can certainly have a positive impact, as shown by the GNOME Foundation program, for example (see Gnome, 2013).

Gender differences are not limited to the contributor side in Wikipedia; they are also apparent among the readership. According to the UNU-MERIT survey, approximately 79 percent of Wikipedia's readers are male (Glott, Schmidt, and Ghosh, 2010).

Irrespective of the accuracy of these statistics on female editors in Wikipedia, a number of other surveys and reports highlight further differences in male and female editor participation:

- Women edit less than men (see WMF, 2011; Lam et al., 2011).
- Female editors leave Wikipedia sooner than their male counterparts (cf. Lam et al., 2011).

Despite the rising number of new female users, the gender gap in Wikipedia has remained largely unchanged since 2005 (WMF, 2011; Lam et al., 2011).

These reports indicate that there are several aspects to the gender gap phenomenon in Wikipedia. The term "gender gap" denotes the differences in the percentages of men and women involved. The reasons for this imbalance are also discussed in this context (cf. Gardner, 2011b).

3.2 Reasons for low female participation in Wikipedia

The following reasons for the low female participation in Wikipedia have been compiled from the findings of a number of studies (including WFM, 2010; Glott, Schmidt, and Ghosh, 2010; WMF, 2011; Lam et al., 2011; Hill and Shaw, 2011); interviews with male and female Wikipedians conducted as part of the Wikipedia Diversity project; and a large number of individual verbal and written reports from the Wikipedia community, including discussion pages, blog articles, and selected contributions from the book *Alles über Wikipedia und die Menschen hinter der größten Enzyklopädie der Welt* with experiences, reports, and anecdotes from female contributors, readers, journalists, and academics (see WMDE, 2011). In general, our analysis reveals that there are many reasons for the low level of female participation, ranging from availability, personal circumstances, media preferences, and technology to sociocultural aspects including support for new contributors, accessibility, and communication aspects such as the working atmosphere and the tone of discussions in Wikipedia collaboration. These reasons are explained in greater detail below:

- *Lack of time, personal circumstances:* Reports and interviews with individual Wikipedians reveal that a lack of time prevents women (but also men) from contributing to Wikipedia. This lack of time is frequently due to personal circumstances, mainly family and/or work responsibilities, especially for women with children and women of working age. According to the UNU-MERIT survey, just 14.3 percent of the Wikipedians questioned have children, and 33.3 have a partner (cf. Glott, Schmidt, and Ghosh, 2010). According to the WMF Editor Trends Study 2010 and the Editor Survey 2011, lack of time is among the most frequently given reasons for low or no activity in Wikipedia (see WMF, 2010; WMF, 2011). Individual statements have also shown that many people stop contributing to Wikipedia or drop out entirely when they start a family or a new job. However, they may become active again at a later stage. These individual statements need to be examined in long-term studies on individual Wikipedia contributors.

- *Media preferences:* Studies on and reports by female Wikipedians reveal that many women prefer other media activities to editing Wikipedia. They mostly prefer social media, such as Facebook and Pinterest, where the level of female participation is far higher than 50 percent, even reaching 71 percent in the US (cf. Comscore, 2010; Duggan and Brenner, 2013), as well as online and mobile games, where women account for approximately 45 percent of users (ESA, 2013), rising to over 55 percent in the case of social gaming (cf. ISG, 2010). Reasons for the high level of female interest here are social networking and communication opportunities with family, friends, and acquaintances (especially in the case of social networks such as Facebook) on the one hand, and a preference for visual communication (especially on visual platforms such as Pinterest and Instagram) on the other (see Comscore, 2010). According to the international survey Women on the Web, women in most parts of the world spend more time on social media than men do, and mainly do so for the purpose of networking and communicating (Comscore, 2010). The Editor Survey 2011 also shows that among Wikipedians, more women than men use social media, especially Facebook (see WMF, 2011).
- *Technology and usability:* Technical difficulties such as Wikipedia's complex structure with its different types of pages and information and/or standard Editor feature are seen as further reasons that keep women away from Wikipedia (see Gardner, 2011b). Technical problems in working with Wikipedia were reported by just 16 percent of the participants in the UNU-MERIT survey as a reason for avoiding editing (Glott, Schmidt, and Ghosh, 2010). Just 8.8 percent stated that they would be more likely to edit Wikipedia if the technology were easier to use. With switching to Visual Editor users will be enabled to edit Wikipedia pages without having to be familiar with the Wiki syntax. It is hoped that this will lower the barriers for new editors, both male and female.
- *Support and accessibility:* Reports by and interviews with individual Wikipedians have revealed that many women, and especially new contributors, would like more support from experienced Wikipedians. The survey "WP: Clubhouse?" from 2011 shows that women leave Wikipedia sooner than men do, which may be related to the fact that more contributions by female than by male Wikipedians are deleted, especially those by new contributors (cf. Lam et al, 2011). According to the Editor Survey 2011, approximately 43 percent of editors had to deal with their contributions being deleted without further explanation (WMF, 2011). Individual reports by and interviews with Wikipedians emphasize the need for more support and greater accessibility for women in this respect (see Gardner, 2011b). The fact that particular roles in Wikipedia, such as that of administrator, are usually taken on by men is seen as a sign of limited access. The dominance of male groups (ingroups) is mentioned in this context, i.e. the formation of male groups, which can stop women from participating in Wikipedia by deleting their contributions without further explanations or by blocking access (cf. Lam et al., 2011).
- *Atmosphere and tone:* Individual reports by and interviews with Wikipedians mention the prevailing working atmosphere and tone of discussions as important reasons for low female participation in Wikipedia. Women (but also men) stated that they left Wikipedia because they felt personally attacked by other users, were confronted with prejudices and stereotypes, or simply lost their initial drive to edit because of the endless discussions the task involved (see Gardner, 2011b). According to the Editor Survey 2011, around 23 percent of female editors have been subject to harassment in Wikipedia (see WMF, 2011). Women rate the general tone of communication in Wikipedia more negatively than men do. In comparison to the generally high level of satisfaction regarding interaction in the Wikipedia community (satisfaction index), with a Wikimedia Editor Satisfaction Index (WESI) average of 7.65 (out of a maximum of ten points), women are decidedly lower down on the scale (see WMF, 2011). An unfriendly and rough manner, power struggles, vicious verbal exchanges, sexist comments and outright harassment, as well as the general avoidance of gender-sensitive language are among the reasons given for the lower rate of female satisfaction in the Wikipedia community (Gardner, 2011b; Schlesinger, 2011).

The overall picture emerging from the analysis of surveys, reports, and interviews with individual Wikipedians is complex. A lack of time, technical usability barriers (e.g. navigation, editability), and a variety of sociocultural and communication issues (style of communication, working atmosphere) can, however, definitely be identified as reasons for low female participation in Wikipedia.

4. What does low female participation mean for Wikipedia?

Low female participation in Wikipedia also produces various effects. Internally, it causes problems such as distortions in how knowledge is portrayed, and articles on specific topics, e.g. biographies of women, being underrepresented.

Externally, the low participation of women damages Wikipedia's public image (see Dobusch, 2013).

4.1 Distortions in how knowledge is portrayed

Given that Wikipedia sets high standards for the quality of the content on its pages, the issue of potential links between the unequal participation of male and female editors and the quality of the knowledge produced is especially relevant. Wikipedia is currently investigating systemic bias (see, e.g. Wikipedia: Systemic Bias), which occurs when knowledge is portrayed in a distorted way because certain types of editor (e.g. women, people from the southern hemisphere, non-English-speakers) are underrepresented in Wikipedia articles. These distortions might result in a one-sided view of certain topics, e.g. a focus on military aspects in the portrayal of historical topics, which in turn could be viewed as the reproduction of male-dominated thought and behavioral patterns, or in a lack of certain articles, e.g. biographies of famous female academics, politicians, and authors (Aragon et al., 2012). Furthermore, in discussions about individual Wikipedia articles, a point of view held by an overrepresented group can influence and determine decisions on whether certain topics and sources are relevant. This often happens subconsciously or unintentionally, for example when geopolitical developments are portrayed from a North American perspective.

When gender distorts the portrayal of knowledge, it is known as gender bias. In discussions where far more men than women are present, it is easy for certain perspectives to dominate the proceedings. In addition, if few women participate in Wikipedia, it can mean that fields such as art, philosophy, and religion (Lam et al., 2011), which women prefer to edit, are underrepresented.

These fields will be smaller in scope and less detailed than fields such as history and politics, which are mainly edited by male users (ibid). The study by Lam et al. (2011) also shows that the gender gap does not appear to have changed in the last several years. The previous findings on gender bias, including from the study by Lam et al. (2011), came from research in the English edition of Wikipedia. Research on gender bias in the German edition is lacking for the most part. The scope of the Wikipedia Diversity project did not include primary research of this kind, so it was only possible to carry out eight interviews with male and female German-speaking Wikipedians. The analysis of these interviews shows that the interviewees identify several possible types of gender-based distortion, such as the dominance of certain perspectives and the use of stereotypes in the presentation of content (see list below). The dominance of certain perspectives in Wikipedia is, to a large extent, also attributable to the fact that gender bias was not discovered and debated by academia until only recently. For centuries, male dominance in academia went virtually unquestioned and is reflected today in such things as the availability and selection of research sources.

After evaluating the interviews with male and female Wikipedians from the German-speaking community and the existing studies focusing on the English edition of Wikipedia, we were able to identify several possible types of gender-based distortion:

1. Topics that are more likely to be edited by men than by women are more detailed or larger in scope (Lam et al., 2011).
2. Biographies of, e.g. female academics, politicians, and authors are underrepresented (Aragon et al., 2012).
3. Decisions on categorizing content, e.g. compiling a special list for female American authors, are exclusionary or discriminatory (Filippachi, 2013; Neary, 2013).
4. Certain perspectives dominate, e.g. historical and political content tends to focus on military history, which can be partially attributed to a male-dominated academic culture.
5. Stereotypes are used, for example, female biographies prioritize information that highlights their roles as wives and mothers, which can be partially attributed to unquestioned socio-cultural classifications based on the biological component of gender.

These findings must be examined further in representative research in the German edition of Wikipedia, while also taking into account several key issues such as the characteristic features of the gender-based category system, the use of the generic masculine and the social reproduction of gender inequality (e.g. traditional power structures and role stereotypes) in Wikipedia.

4.2 What Wikipedians think about low female participation

In spring 2013, as part of the analysis phase of the Wikipedia Diversity project, we conducted semi-structured, problem-centered interviews with eight male and female Wikipedians. The questions focused on the reasons for and the consequences of low female participation in Wikipedia.

Overall, we obtained many valuable insights into how Wikipedians feel about the low number of female participants. Respondents felt that the rough tone used in discussions, rigid structures, and verbal attacks by other Wikipedians were the main causes of the problem. Both male and female Wikipedians stressed that the way people currently communicate in Wikipedia is having a negative impact. One of the main things to come to light in the interviews was the desire for a friendlier atmosphere and for people to treat each other with respect. Within the context of collaboratively producing knowledge for Wikipedia, two key issues concerning communication and quality came to light:

1. Communication within the Wikipedia community needs to improve and be the focus of critical appraisal.
2. People need to be made aware that having female authors involved in Wikipedia will boost the quality of the processes and products of Wikipedia's knowledge work. Regardless of whether they were male or female, respondents repeatedly focused on the way Wikipedia authors treated each other. They mentioned established structures and hierarchies within the Wikipedia community, and pointed to the exclusionary, even aggressive style of communication used among Wikipedians. As well as the constant references to and criticisms of communication as the reason for the current drop in author numbers, respondents said that women tend not to participate because they don't have the time. The following quotes explain this point in more detail:

"WP articles are mostly written at night. Women have less time on their hands, as they're still the ones most likely to look after the kids. You need staying power for WP – it's a Sisyphean task, what with all those discussions and that culture of communication. People use an impolite tone in WP. It's very direct and it takes some getting used to. Without women, the system just reproduces itself. It's a vicious circle – women feel that they're being ignored because they're not part of it."

The Wikipedians we interviewed have a number of expectations as regards shrinking the gender gap in Wikipedia. They felt that having more women involved would achieve a much-needed increase in the variety of topics contained in Wikipedia. Respondents said that having variety in the topics was a mark of quality, and stressed that different viewpoints were an indicator of "better, more complete products".

As well as noting the importance of including female biographies, the respondents highlighted the need for expanding the viewpoints contained in existing topics. Their main concern, however, was not about having "more female topics written by women." Instead, they were interested in bringing to existing articles different angles and narratives that were not considered as relevant in the past. These might include different definitions of "work", or presenting more sociocultural, rather than military, viewpoints on historical events. The following quotes reflect the Wikipedians' opinions:

"Different viewpoints make for a better, more complete product. A homogenous group cannot answer the question that asks for a holistic view of the world. At the end of the day, the breadth of topics is a mark of quality – one that can be raised if more women get involved."

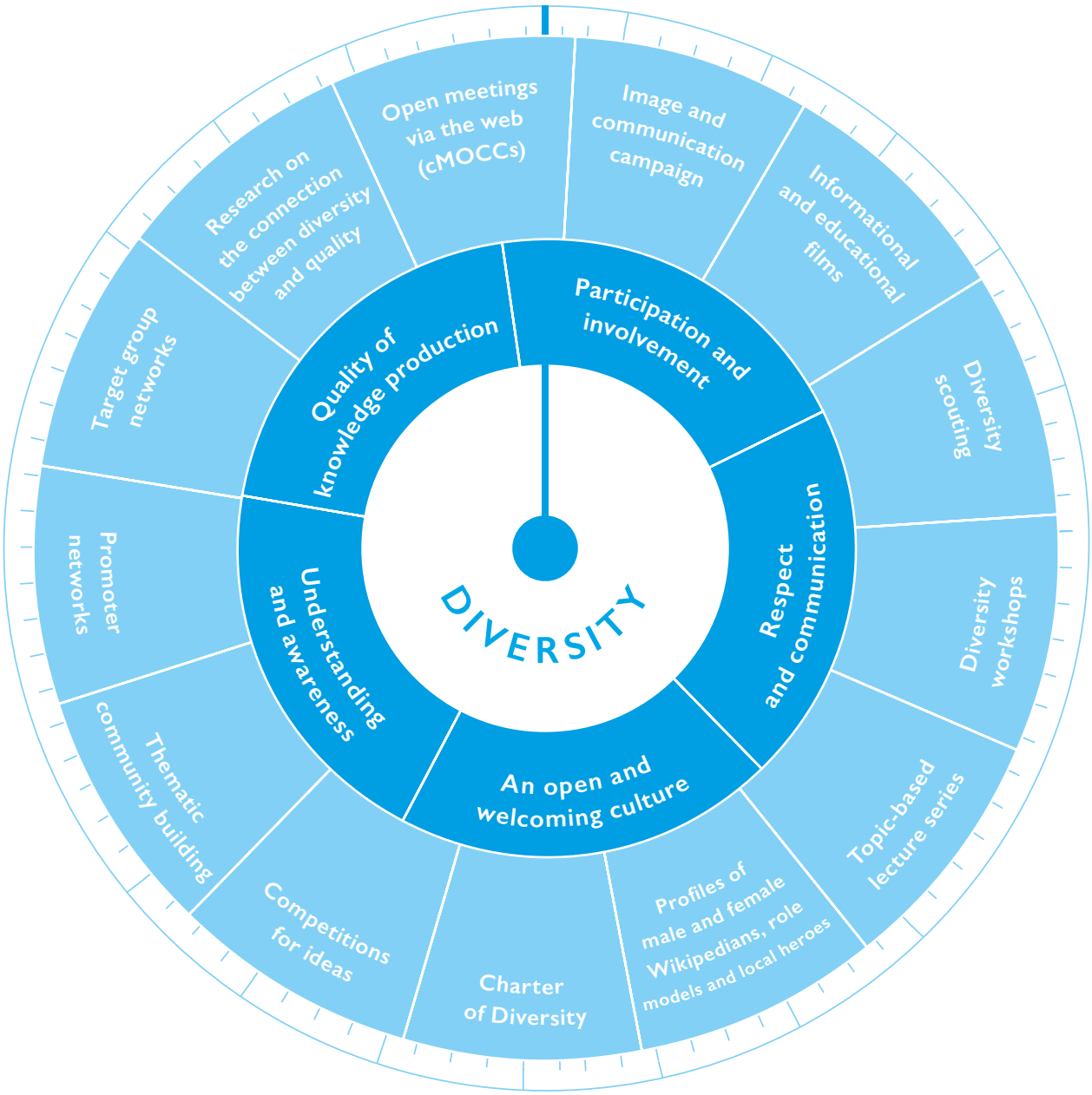
"Having more women on board will also stir things up and perhaps lead to an awakening. We're very complacent. We're resting on our laurels and the project is stagnating at the moment. It's not that authors are disappearing as such, but we are seeing a trend towards fewer and fewer people having to keep their eye on more and more articles for things like errors, vandalism, and attempts to manipulate the content. The more women we have, the more motivated everyone will be. If the ratio evens out a bit, then the community might make more of an effort and gradually become more open."

In conclusion, we can say that higher female participation would benefit the Wikipedia community as follows:

- The breadth and diversity of topics would expand.
- Existing topics would develop, in particular through the inclusion of new viewpoints and angles.
- The atmosphere and the quality of community life would improve (e.g. the tone would become friendlier and more respectful, criticism would become constructive, and conflicts would be dealt with in a more professional way).
- Wikipedia's image would improve and the project would become more attractive to new editors (male and female).

Ganz (2013) identifies communication culture as a decisive factor in determining whether people prefer to consume passively or decide to take an active part in shaping content.

5. The Compass of Diversity



5.1 Key action points for Wikipedia Diversity

As part of the Wikipedia Diversity project, we have identified five key action points for promoting gender diversity.

1 Understanding and awareness

This action point focuses on developing understanding and awareness of diversity in the Wikipedia Communities. We need to raise awareness and educate people on the topic so they can reflect on their own attitudes and actions and develop new strategies for dealing with individual differences. Our main goal in raising awareness of diversity is for Wikipedians to approach individual differences as something to be appreciated. Knowledge of diversity is an important element of diversity competence. It includes things like knowing about different dimensions of diversity (such as gender, age, national origin, educational background, and health), role diversity (such as users, reviewers and administrators) epistemological diversity (such as selection of sources, scope and depth of content development), and knowing about different ways of approaching diversity with a positive mindset (not immediately discounting differences perceived as strange, becoming aware of the effects of how we talk, and questioning our own stereotypes). In addition to knowing about diversity, diversity competence also includes diversity-relevant thoughts and attitudes, such as developing self-awareness and reflecting on our own sociocultural background and its influence on how we think and act, plus being open and interested in individual differences.

2 An open and welcoming culture

A second essential element of diversity is having a more open and welcoming culture at Wikipedia. Being open lays the foundation for building a culture of respect where every participant's expertise and know-how is recognized and used without reservation. Being open to diverse perspectives and ways of living results in an inclusive work environment and a positive attitude toward change. To have a welcoming culture, people need to be willing to open up to perspectives, experiences and ways of living that seem strange. They also need to be willing to value uniqueness instead of expecting conformity. In the context of the debate on integration in society, the term „welcoming culture" is used primarily for new immigrants. At Wikipedia, the term mainly refers to how we receive new arrivals, and it means welcoming new Wikipedians and recognizing their importance in our community. And yet recognition and appreciation are needed not just for new participants but for all of the people who are active in Wikipedia. „Culture of mutual recognition" is a fitting term here - it expresses our desire to recognize the differences that exist among Wikipedians who have already been active in Wikipedia for a while.

3 Respect and communication

Promoting respectful interaction and a positive communication environment is another action point for diversity. If all of our participants recognize and respect diversity and reflect on their own patterns of thinking and acting they can incorporate their diversity competence into their own behavior. Respectful interaction leads to better collaboration and a more positive working atmosphere. For our interaction to be respectful, we need to approach every individual with respect. Approaching people with respect means always treating them in a way that reflects underlying values of tolerance, appreciation and goodwill, regardless of the situation. In addition to approaching them with respect, it is important to develop our own communication skills. This includes becoming aware our own interpretations and judgments, which reveal themselves in the way we communicate and the language we use. To approach other people respectfully, it is particularly critical to question how we judge them and/or their actions. Negative judgments can be perceived as derogatory, threatening or even as personal attacks. By the same token, overly positive judgments can be perceived as false or unwarranted praise although they were only meant to be helpful or encouraging. This is why it is important to become familiar with ways of giving and receiving feedback and to become aware of the effects of your own feedback and that of others. As a general rule, using fair, carefully chosen words that do not have a negative impact on others creates a good environment for respect and positive communication.

4 Participation and involvement

Supporting the involvement of new and existing volunteers is a fourth important pillar for strengthening diversity in Wikipedia. Participation means sharing in Wikipedia and in the various decision-making opportunities and responsibilities Wikipedia provides. It's impossible to be a meaningful participant in a community without the opportunity to make a difference, to make decisions, and to help shape, initiate and change things. Active participation goes hand-in-hand with responsibility, so all members need to be able to influence or have a voice in the community. This means it is just as important to create ways for

underrepresented groups to participate as it is to expand existing structures. Numerous structural and individual requirements are needed if we are to improve participation and involvement for all groups of people. Among them are broader participant rights, greater willingness to participate, better individual decision-making skills, courage to get involved, stronger motivation to collaborate, and new opportunities to act to achieve common goals.

5 Quality and knowledge production

The fifth cornerstone of diversity in Wikipedia is research on the connection between diversity and quality of knowledge production. Quality of knowledge in Wikipedia includes more than just the quality of jointly created knowledge products (such as Wikipedia articles). It also comprises the quality of joint knowledge processes (such as collaboration between multiple authors). At this point we do not know enough about the connection between different dimensions of diversity in Wikipedia. For example, we still need to answer the question of possible connections between sociodemographic diversity among Wikipedia editors and the completeness of Wikipedia articles, or how this kind of diversity might affect the communication climate on discussion pages. To gain new insights on these topics, every Wikipedian can join in as a researcher to help discover connections between diversity and quality of knowledge production in terms of knowledge products and knowledge processes in Wikipedia. They can record their observations, develop and verify hypotheses, and discuss them with other Wikipedians. With such a research approach, the Wikipedia community can work together to raise awareness of the role of diversity in Wikipedia and show how diversity contributes to quality in Wikipedia. In this aspect, the Quality and Knowledge Production action point ties directly into the Understanding and Awareness action point.

To ensure that diversity competence is developed effectively among male and female Wikipedians in the long term and to improve female participation in Wikipedia, we would like to combine the knowledge available within the Wikipedia community with external findings gained from, for example, research and practice on gender diversity. We suggest an approach based on the principles of open innovation – that is, a participative and cooperative approach to developing innovative solutions. The word innovation should be understood here as social innovation rather than product innovation to indicate the development of new structures and practices for promoting diversity. In the next section, we use sketches of measures to present selected proposals for steps aimed at promoting diversity in Wikipedia.

5.2 Diversity measures – concept sketches

In this section, we provide specific concept sketches for selected areas in the five action points. Our hope is that they will offer an impetus for developing social practices and effecting long-term diversity. Wikipedians contribute to Wikipedia with every discussion point, decision, and edit they make. These contributions do not just affect the quality of the final results (such as Wikipedia articles), but also the quality of the processes (such as interaction and communication within the community). However, this requires developing diversity skills within the Wikipedia community, and the basis for this is respectful and positive interaction between community members, regardless of gender, age, background, or other characteristics. We held Diversity Workshops where we worked with Wikipedians to discuss and develop some initial proposals for measures to get this plan moving.

Open meetings on the web (cMOOCs)

To bring Wikipedians together and give them a chance to get to know each other and Wikipedia better and encourage debates and solutions for diversity in Wikipedia, we could plan and execute a series of open seminars on the web along the lines of MOOCs or Massive Open Online Courses. A MOOC is a special type of online seminar that is open to everyone. Lots of people can participate in various ways (like active discussion, passive viewing, sharing content with others or creating content together). We recommend the connectivist type of MOOC, known as cMOOCs (as opposed to xMOOCs or extension MOOCs), which a community jointly holds as a series of open, collaborative online seminars or workshops. cMOOCs emphasize networking and collaboration among

participants. A cMOOC in Wikipedia could be held over the course of several weeks and deal with various aspects of diversity. Each week could focus on a specific topic, such as: How can we better integrate new Wikipedians? How can we resolve conflicts more constructively? How can we encourage respectful interaction in the community? cMOOCs typically feature regular live web meetings (such as Google Hangouts), where experts from inside and outside the community sketch out selected topics and discuss them with participants. We could invite Wikipedians to come to these web meetings as experts who report on their own experiences and current projects. These cMOOCs could be a place to develop everyone's understanding of diversity in Wikipedia, the importance of diversity to the quality of knowledge production, and joint approaches to solutions for greater diversity (especially gender diversity) in Wikipedia. The positive, long-term side-effect of a cMOOC would be the emergence of a community of like-minded Wikipedians who would ideally continue to work on diversity in Wikipedia long after the cMOOC ends.

Image and communication campaign

To develop a better understanding of diversity in Wikipedia, it would be a good idea to have a diversity and gender diversity campaign in Wikipedia's German language version. Posters with profiles and memorable quotes from active Wikipedians could help make this more visible. It would also be important to focus on presenting images of female and male editors as well as editors with other gender identities (such as LGBTTI). This would generate more robust role model functions for other potential authors and focus on previously underrepresented groups. In addition, it would create a stage for previously „invisible" persons who contribute to greater diversity in Wikipedia (by doing things like supporting new users and mediating conflicts). Launching the campaign with effective publicity, for instance, by introducing these persons at relevant conferences, workshops, meetings or at a press conference, could actively initiate a discussion about women as Wikipedia authors, make them „visible," and challenge common social stereotypes about Wikipedia authors (cf. section 3.1).

Informational and educational films

Diversity Scouting is about finding and describing good practice examples to promote diversity in different contexts, like in Wikipedia, organizations and education. Another way to describe the scouting method is learning by looking. Wikipedia's Diversity Scouting could therefore focus on looking for trends and best practice examples to promote diversity. This could mean things like working with Wikipedians and drawing on their knowledge of things like exemplary ways of dealing with the challenge of diversity. Diversity Scouting can also include consciously going on a hunt for role models or opportunities for how to address and establish the topic in Wikipedia. This could also take place during cMOOCs. We could compile our findings and put them on the web after cMOOC for further development.

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Diversity workshops

Workshops are a great way to quickly get work done on a specific topic in an intensive, cooperative, results-oriented manner. Workshops can be offered in various formats, such as team-building workshops, design workshops, problem-solving workshops, creative workshops, and innovation workshops. With a purpose-driven structure and good moderation, workshops can develop new skills and concepts. For the action point dealing with a welcoming culture in Wikipedia, two focuses are particularly well-suited for workshops whose specific content would be developed by appropriately qualified moderators. The first could be innovation and creative workshops for generating ideas to improve the welcoming culture in Wikipedia, with a focus on openness, tolerance and transparency. The second could be teambuilding workshops on respectful communication that have been specifically designed for administrators, Wikipedia editing teams and/or male and female editors.

Series of lectures on specific topics

Lecture series are special event formats that can be offered on specific topics at universities, for instance, with the goal of promoting discussion about the welcoming culture in Wikipedia and creating more openness to Wikipedia and within Wikipedia. We recommend choosing a specific focus in terms of different diversity perspectives and inviting experts in those areas to give short talks and then open up discussions of those topics with people who are interested in them. Raising awareness of the gender gap and its consequences for quality in Wikipedia should be a priority here. Depending on what is being offered, this could also start with the various factors influencing social developments and how they interact. This could help develop a basic understanding of how various social conditions and belonging to specific social groups each entail different needs and requirements. This knowledge could then be transferred to individual activities within the Wikipedia community, resulting in more mindful interaction.

Presenting profiles of Wikipedians, role models and local heroes

Local heroes is about presenting profiles of people as role models for things like gender diversity. It uses a storytelling approach. Storytelling is a method that aims to record the knowledge that people have gained through their experiences and make it available in the form of stories. It is a way to share experiences and values with others, and Wikipedia can benefit from it too. Understood broadly, stories are a concept for creating meaning (cf. Simoudis 2004). They provide motifs and characters that people can identify with. This enables people to remember stories better than the dry facts they might find in, say, brochures (cf. Thier 2006). The central goal of the storytelling method is a Learning History, which reveals the story of a person's experience. Applied to Wikipedia, the storytelling method could be used to formulate and illustrate diversity-relevant experiences that have not yet been brought to light. Attitudes like these usually do not come to the surface by just asking about them, so it is better to conduct interviews and/or workshops where Wikipedians can share their experiences through stories and anecdotes. These interviews need to be preceded by a planning phase where we set and define the basic direction for the experience narratives and what goals we want the stories to achieve. In the interview phase that follows, we would conduct interviews with various local heroes from the Wikipedia community. To provide the greatest possible variety of experiences, we should conduct these interviews with veteran Wikipedians as well as newcomers, administrators, Wikimedia employees and other groups of active contributors.

Charter of Diversity

Developing a Charter of Diversity would be a way to establish an initiative to promote recognition, respect and inclusion of diversity in the culture of Wikipedia. It would be based on a similar project in Wikipedia's English language version (Diversity, 2013). The focus here could be on writing down and establishing a work environment that is free of prejudice. We want all active contributors in the Wikipedia community to be shown respect regardless of their gender, nationality, ethnic background, religion or world view, disabilities, age, sexual orientation and identity. A Charter of Diversity for Wikipedia would thus be a way of spelling out our commitment to maintaining a culture (of communication, etc.) characterized by mutual respect and appreciation for every individual. Secondly, it would represent an agreement to create and maintain the prerequisites for that kind of culture. We recommend putting the quality of the relevant steps into specific language in the Charter of Diversity and clearly defining verifiable goals, requirements, and measures, among other things. A Charter of Diversity for Wikipedia could thus provide an ideal overarching concept for further diversity-oriented action.

Competitions for ideas

The focus here is on collaborative, inclusive idea competitions aimed at improving the communication climate in Wikipedia, with awards going to promising initiatives. This measure would be based on active collaboration with both the Wikipedia community and suitable cooperation partners, whose special qualifications could lead to innovative but practical solutions and ideas for improving the climate within the Wikipedia community. Such cooperation partners could be found at schools, universities, agencies (for communications and PR, etc.) as well as at businesses and organizations. Our collaboration could take place within the framework of projects. Offering prizes would provide motivation for people to come up with creative, innovative approaches to the challenges of developing a better climate within Wikipedia.

Thematic community-building

Theme-centered Group Edits could appeal to various interest groups and entice them to participate in Wikipedia – much like the Women Edit project in Germany (Kompetenzzentrum, 2012). They would give web-friendly women, female Wikipedians and other female newcomers the chance to

talk and get to know each other offline at networking events. These Women Edit events would offer interested participants a way to get a look at the Wikiuniverse and discuss Wikipedia-specific issues in a social setting. Such issues might include things like how women use the web, what names they should use, how they can deal with conflicts, and what knowledge is worth communicating.

This same format could also be used to appeal to other specific target groups and their unique topics. Physics Edits, News Edits and Sports Edits are just a few examples. It seems feasible to incorporate collaboration with universities, research organizations and associations here too. By addressing specific target groups we could also attract experts in particular fields and get them interested in editing for Wikipedia. There are other ways to transfer the Women Edit format to the university context too. One is volunteer side events within the framework of specific major programs, like events focusing on historical, political or economic topics. Another could be offerings that take place as part of the normal curriculum and that go beyond the content found in articles to address the specific technical challenges and aspects of working in Wikipedia. These types of group edits could get female participants interested in Wikipedia authorship and possibly even convert them into long-term authors. Offering them credit points for seminars at the university could be an additional incentive for them to participate.

Promoter networks

Promoters play key roles in a community. Having this position allows them to act as multipliers for their particular fields of expertise. Especially with big challenges like establishing gender diversity in Wikipedia, it is advantageous to integrate, train and support promoters and build networks of promoters. Target groups could include administrators who meet regularly for local Wikipedia social events and talk about practical ways to improve and implement diversity and gender diversity. These knowledge promoters have their own networks, which in turn could enable the transfer of knowledge about diversity and gender diversity in various communities. The ultimate result could be a national network of knowledge promoters.

Target group networks

Networks can facilitate the transfer of knowledge about working in Wikipedia and diversity awareness. Target group networks would be certain interest groups not unlike those for the topic-specific group edits. But in contrast to the group edits, these target group networks would have a long-term character and exist for social networking among like-minded people. They are particularly well suited for recruiting new editors directly and providing assistance to active Wikipedia editors. When new and experienced authors get together, their reciprocal motivation and support can help bring women and other underrepresented groups on board for Wikipedia. One way of doing this would be to address current active Wikipedia contributors to act as representatives for specific target groups and to provide the ones who are interested with targeted organizational and financial support as they build their target group networks. We could create a professional guide on how to do this, which would include detailed information and helpful hints on establishing these networks.

Research on the connection between diversity and quality

At this point we know very little about the possible relationships between gender ratios among editors in the German-speaking Wikipedia community and quality of knowledge production. Knowledge production includes both the process of collaboration (How do discussions take place in single-sex groups and mixed-sex groups of editors? How do they resolve conflicts?) and the results of collaboration (Which Wikipedia articles are written by female editors and which ones are written by male editors? What categories do they create? etc.). Several studies from the United States suggest that subjects that women like to edit may be underrepresented and/or more poorly developed than subjects that men like to edit. However, it is not clear from existing research whether those types of connections exist in other language versions (such as the German version) or whether the findings are simply snapshots of the situation at a particular point in time. Nor do we currently know what other effects and consequences a gender imbalance might have for the quality of knowledge production in Wikipedia. New studies in the context of Wikipedia's German language version need to focus on these questions with active participation from the Wikipedia community in forming and examining hypotheses. It would be a good idea to collect observations from Wikipedians as well as descriptions of possible relationships between diversity and quality of knowledge production. To examine hypotheses, we can use the tools we already have for evaluating knowledge diversity, such as the ones developed in the RENDER project (Render 2014), which enable better filtering of information on the Internet.

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