



After all, who invented the airplane? Multilingualism and grassroots knowledge production on Wikipedia



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ABSTRACT

The English-language Wikipedia article on the airplane states that Clément Ader 'attempted to fly', whereas 'the Wright brothers invented and flew the first airplane'. The French-language Wikipedia, in turn, points to France's pioneering role in aviation – which contrasts with the emphasis placed on Portuguese-speaking aviators in the Portuguese-language entry. Paradoxically, in each language, the airplane has a different inventor. Through online ethnography, this article explores the multilingual landscape of Wikipedia, looking not only at languages, but also at language varieties, and unpacking the intricate connections between language, country, and nationality in grassroots knowledge production online. Advocating for an attention to how multilingualism online involves more than 'Google Translate-ing' content, this study challenges conventional views of user-generated content platforms as unproblematically global and multilingual.

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1. Introduction

It may seem fair to assume that anyone reading this article knows who invented the airplane. Yet a glance at Wikipedia challenges this assumption. At the time of writing, the article about the airplane on the English-language Wikipedia states that Clément Ader 'attempted to fly' and Alberto Santos Dumont 'made what was claimed to be the first airplane flight unassisted by catapult', but it was 'the Wright brothers [who] invented and flew the first airplane'. In turn, the article *Avion* on the French-language Wikipedia narrates this story differently: it opens with how Gabriel de La Landelle coined the word *aviation*, which points to France's pioneering role in this field. These two approaches contrast significantly with the Portuguese-language article on *Avião*. The latter emphasizes Santos Dumont's achievements based on a journalistic source that claims this pioneer did more for aviation than the Wright brothers. Paradoxically, in each language, the airplane was invented by a different person.

Wikipedia is defined, on the platform's main page, as 'a multilingual free online encyclopedia written and maintained by a community of volunteers through open collaboration and a wiki-based editing system' (Wikipedia 2024a). Aiming to produce a 'summary of all human knowledge' (Wikipedia 2024a), Wikipedia covers a broader range of topics than print almanacs, general encyclopedias, and subject-specific encyclopedias. Yet, its most striking feature is the approach contained in its catchphrase: 'the free encyclopedia that anyone can edit' (Wikipedia 2024b).

Available online, free of charge, and permanently editable, Wikipedia serves the purposes of democratizing knowledge and distributing authority over knowledge production beyond restricted expert networks, as well as of challenging the

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neoliberal obstacles posed by unaffordable learning materials and university degrees that are not always within one's reach. At the same time, Wikipedia's open-source functioning and multilingual stances raise a series of questions about accuracy, collaboration, and the *modus operandi* of this form of multilingualism in practice. After all, why would the airplane have a different inventor in each of Wikipedia's language versions? Most importantly, what does this tell us about who can acquire and produce knowledge online, in which languages, and aimed at which target audiences? Ultimately, what is the role of translation – if any – in this multilingual setting?

Through a primarily ethnographic standpoint, in this study I address a topic that is occasionally studied by linguists and translation scholars, but one that is frequently left aside in global media studies: the prominence of multilingualism in grassroots knowledge production online. More broadly, I look at how languages and language varieties play out in platforms based on user-generated content. On the one hand, the bulk of scholarship on knowledge production focuses on institutionalized scientific expertise (see Latour 1999; Lawson et al. 2021), casting aside less institutionalized spaces of knowledge production such as networked media. On the other hand, several influential works concerning language use on social media portray multilingual content online as a matter of word-for-word translation (see Ensslin 2011; S Lee 2021; Fu et al. 2023). This article, in turn, takes the Wikipedia entries on the airplane in three languages as an entry point to argue that co-producing knowledge in online platforms frequently involves recreating historical and scientific facts anew from different antecedents and sources for each language. As a multilingual arena that decouples knowledge production from scholarly expertise, Wikipedia fosters peer production that intricately intertwines language, country, and nationality.

This article begins by analyzing how the architecture of Wikipedia presents this online space as global and multilingual. I then contrast this architecture with how the effectively global and multilingual uses of this platform face numerous obstacles – such as users' limited language skills and preferences for references in one language over others. To carry out this research, I propose trace ethnography as an approach that combines ethnographic and archival research methods to understand ordinary language use on digital platforms. Subsequently, by unpacking the Wikipedia articles on the airplane in English, French, and Portuguese, I discuss how nuances in language use portray, for instance, 'claims' and 'attempts to fly' as opposed to facts. By bringing language varieties side by side with languages to the debate, my proposed approach includes examining articles that, following Wikipedia's guidelines, can only be edited in certain language varieties, such as American English versus British English, and Brazilian Portuguese versus European Portuguese. In this way, I refrain from considering languages as self-contained, discrete units,¹ and analyze language variation and skills as gatekeeping mechanisms that limit who can produce certain forms of knowledge online.

With the broader goal of advocating for an attention to language matters in global media studies, I argue that fully understanding grassroots knowledge production in online settings requires us to foreground how multilingualism online implies more than simply 'Google Translate-ing' content. Contributing to growing scholarship on language politics, multilingualism, and open collaboration projects, this study argues for a comprehensive understanding of how digital media, despite being frequently recognized as intrinsically global and multilingual, revolve around everyday situated perceptions of language, country, and nationality.

2. The birth of multilingualism in an online encyclopedia

Wikipedia was created in 2001 by Jimmy Wales and Larry Sanger as a twenty-first century attempt to materialize the modern dream of cataloguing the entirety of human knowledge (Reagle Jr 2010; Tkacz 2015). As Wikipedia's multilingual policies acknowledge (Wikipedia 2024a), this comprehensive approach would not be possible in a monolingual platform format. The quest for a wide-ranging reference work dates back to forerunners such as the Chinese-language *Yongle Dadian*, the French-language *Encyclopédie*, and the English-language *Encyclopaedia Britannica*, which set the tone for the systematic classification and cataloguing of knowledge (Yeo 2001). In recent decades, the development of digital technologies enabled several online encyclopedic projects, among which Wikipedia stands out for its collaborative, open-source character. Waiving the requirement for expert contributors, Wikipedia seeks to challenge the hegemony of expert knowledge production, circulation, and access.

However, allowing anyone to contribute knowledge has produced three significant consequences. First, Wikipedia's online format enables its content to be permanently editable, mimicking the fickleness intrinsic to human knowledge. Second, the high number of editors involved shifts what counts as knowledge (Jenkins 2006: 254), turning the editors' personal interests into potential encyclopedic content. Thus, in addition to canonical philosophical/scientific topics, Wikipedia contains detailed entries on relatively obscure historical figures and places in the world (Rosenzweig 2006), as well as one article for each of the nine seasons and 180 episodes of the TV series *Seinfeld* (1989–1998). Third, such a broad understanding of authorship and encyclopedic-worthy knowledge garnishes the democratization of knowledge with concerns over content reliability (Burke 2012), as well as over the gender and geographical biases of the encyclopedia's editors (Fichman and Hara 2014; Ford and Wajcman 2017).

Wikipedia's several language versions developed quickly, with Wikipedias in German, Catalan, and French getting off the ground two months after the launch of its initial version in English (Wikipedia 2024c). The interweaving of multilingualism,

¹ Such a perception assumes that languages are discrete and countable units that can be classified according to ISO 639 codes. For the related concept of *Einzelssprache*, see Tomasz Kamusella (2021: 189–190).

multiscriptalism, and knowledge production on Wikipedia features in the project's logo, an incomplete terrestrial globe composed of puzzle pieces. While the pieces missing from the top of the globe portray human knowledge as a work in progress, the glyphs from different writing systems inscribed on each piece illustrate the multilingual makeup of this encyclopedia.

As of August 2024, Wikipedia has 331 language versions, with certain topics more comprehensively covered in one version than in others. Additionally, each language version has its own volunteer administrators² and editors, who possess a certain degree of autonomy to develop and reinforce the version's working principles in relation to the policies set out by the Wikimedia Foundation.

In recent years, several scholars have explored multilingual practices in online spaces in general (Danet and Herring 2007; Ivkovic and Lotherington 2009), as well as in chat rooms (Siebenhaar 2006), social media platforms such as Twitter and Facebook (Vessey 2016; Wirz et al., 2018), translation software (Ramati and Pinchevski, 2018), volunteer-based translation spaces (Jiménez-Crespo 2017), and streaming platforms such as Netflix (Shagrir 2019). Yet languages tend to only be flagged as an issue worthy of attention when those other than English are at stake, a fact which sidelines English as an outsider – as the 'norm' to be contrasted with its multilingual 'deviations' – in debates about multilingualism online. Furthermore, a frequently overlooked element that remains to be considered is how language varieties and skills impact multilingualism online – and Wikipedia appears to be a productive gateway for such consideration.

In this regard, Astrid Ensslin (2011) aptly lays out how Wikipedia's multilingual policies are inscribed in the website's architecture. Even though such policies encourage multilingualism, several of Wikipedia's templates, plugins, and editing tools are only available in English. Alongside assuming the familiarity of editors with the Latin alphabet, Western coding conventions, and English-based programming languages, this also implicitly operationalizes English as the encyclopedia's underlying meta-code. As such, Anglo-conformity remains prevalent and inscribed in the user interface as a practical necessity for content creation.

Analyzing updates on fast-developing and news-breaking topics, Mengyuan Fu, Kunhao Yang, and Yuko Fujigaki (2023) examine the Japanese-language Wikipedia article on microplastics to discuss translation and language barriers when the language of Wikipedia differs from that of the key scholarly sources covering the concerned scientific findings. While Ensslin (2011) stresses limitations to the applicability of Wikipedia's multilingual policies by examining how core features on the platform are not translated from English into other languages, Fu et al. (2023) highlight how scientific findings originally published in English are not immediately translated and made available to wider Japanese-speaking readerships.

Beyond media studies, translation scholars have considered how much and what kind of content is translated between different language versions of Wikipedia (Massa and Scrinzi 2013; Shuttleworth 2017). Along similar lines, but through a qualitative approach, Henry Jones (2018) unpacks the editing process of the English-language Wikipedia article on Paris, France. Jones highlights how, despite the article being written in English, most of its references are in French – which is perceived by its editors as a way of keeping it more updated and supported by authoritative sources produced by French-based journalists, historians, and demographers. Accordingly, most of the English-language references in the article about Paris were used to support the section on tourism, and not the ones about the city's history or statistics.

Researchers have occasionally taken wars as entryways to examine 'edit wars' in this online encyclopedia. In this sense, Mykola Makhortykh (2018) looks at the online politics of memorialization of the 1943 Battle of Kyiv. While the vocabulary and indexing of the Russian-language Wikipedia article on this battle align with the Soviet narrative of the 'Great Patriotic War', the Ukrainian-language article on the topic focuses on the fatalities and suffering the battle caused. Thus, Makhortykh argues that each language version of the article emphasizes given national narratives of the same historical event – such that the version in Ukrainian reflects the assumed Ukrainian nationality of the editors behind that article. Relatedly, José Gustavo Góngora-Goloubintseff (2020) compares the pictures and vocabulary used in Wikipedia articles written in English and Spanish on the 1982 Falklands/Malvinas War to discuss Wikipedia's neutral point of view (NPOV) policies. By considering how the editors use terms such as 'invasion', 'conquest', and 'occupation', Góngora-Goloubintseff unpacks how the article in Spanish attributes the invasion of the islands to the United Kingdom, while the English-language entry portrays Argentina as the invader. Regardless of their contributions to the topic of translation on Wikipedia, ultimately, Makhortykh's and Góngora-Goloubintseff's claim that knowledge production and translation are not neutral only partly advances the purpose of this research.

Looking at multilingualism on Wikipedia is more than a matter of showing that the encyclopedia's content appears tailored for its target readerships in different language versions. It entails fleshing out how speech communities and certain forms of knowledge are (re)produced through translation – or lack thereof – on online open collaboration projects. To consider this, I take on board Jones' (2018) proposal of considering translation on Wikipedia not only as a matter of transferring content from one language into another or of turning 'original' writing into translated text. Rather, Jones approaches translation as a process that involves both transformations in written words and other forms of linguistic-epistemological transformations.

Confronted with this issue, what role does translation play in grassroots knowledge production online? How can there be different historical and scientific facts for different speech communities – that is, for speakers of a given language who recognize such a language as a group-forming element that binds them together (Duranti 1997: 72–83)? These lines of questioning enable us to grasp how languages and language varieties help shape contrasting historical narratives.

² Administrators, stewards, and similar roles are performed by editors who are elected by their fellow editors.

This approach to translation references the work of Bruno Latour (1987, 1999) on the inscriptions that turn the world's materiality into scientific facts. Following an expedition of pedologists and botanists in the Brazilian Amazon in 1991, Latour (1999) examines the process through which scientists turn plants from the forest into specimens in a laboratory, then specimens into numbers, diagrams, and other forms of quantifiable data – and, finally, data into words in a published paper. Through these steps that transform one element into another, we lose sight of the forest's natural environment but gain scientific knowledge of it. From this theoretical standpoint, I argue that such inscriptions involve not only the transformation of the world into words but also the displacement of meanings between forms of knowledge – in a process that, on Wikipedia, hardly relies on translation from one language into another.

To analyze these issues, I carried out long-term ethnographic fieldwork on Wikipedia in 2022–2024, examining articles on the airplane, as well as articles that were once stages of 'edit wars' – continuous and fast-paced sequences of editions, re-versions, and re-editions of the same excerpt (Chhabra et al., 2020; Fians 2024a). The rationale for my focus on the airplane owes to how this topic reveals diverging portrayals in each of the three languages under discussion, such that these Wikipedia entries provide fruitful territory for considering the links between languages and historical knowledge.

In addition to encyclopedic articles, Wikipedia also houses metapages for each article, such as the pages titled *Talk* (where editors discuss improvements to the article's content), *View source* (with the content in source code), and *View history* (a record of every edit and previous version of the article). Even though article authorship is generically attributed to the open collaboration project, these metapages turn Wikipedia into a hypertextual medium, with information that allows us to retrace each edit back to the registered editor or IP of those responsible for them.

My participant observation on Wikipedia enabled me to take the analysis of such metapages as a starting point to follow the traces that editors left behind in the process of content curation. During my trace ethnography – which, following Stuart Geiger and David Ribes (2011), blends elements of archival and ethnographic research methods – I registered as a Wikipedia editor and edited articles in the languages I am proficient in (Portuguese, English, French, Spanish, and Esperanto).³ My contributions were mostly minor edits, fixing spelling mistakes, and adding references, and I only occasionally posted on talk pages. Meanwhile, I was contacted by editors who reacted to my contributions, I contacted other editors, and exceeded the modest number of edits required to gain autoconfirmed rights – while producing further traces in revision histories.

I have opted to use the usernames of the editors engaged in the debates that I analyzed following standard practice in online ethnography (see Pentzold 2017). This is also in line with Wikipedia's research ethics protocol (Wikipedia 2024d), which infers that information in articles, talk pages, and revision logs is voluntarily given and publicly available, released under the GNU Free Documentation License and the Creative Commons Attribution-ShareAlike 4.0 International License.

Opting for an ethnographic-cum-archival approach allows us to unpack the discourse that presents digital media, platforms, and online settings more broadly as intrinsically global, multilingual spaces (see Robins and Webster 1999; Hecht and Gergle 2010; C Lee 2017). Wikipedia's modus operandi consolidates an image of multilingualism, collaboration, and inclusiveness. By contrast, the ways editors effectively engage with this platform reveal that, even if Wikipedia is far from constituting monolingual or nationally bounded spaces online, it is not all-inclusive. In this regard, for instance, on the English-language Wikipedia, British-based editors appear to be significantly more active than their Indian-based counterparts; the second largest Wikipedia version (in terms of article count) is in Cebuano, with most articles created by a bot, rather than human editors (Wikipedia 2024a); and the ban on Wikipedia in Chinese territory implies that most contributors to the Chinese-language Wikipedia are either located abroad or use a VPN (Zhang and Zhu 2011). As we retrace the processes that turn knowledge into words and bytes, it becomes clear that the actual uses of Wikipedia challenge the taken-for-granted perception that peer production online is unproblematically multilingual.

3. Ader, the Wright brothers, and Santos Dumont: the multiple inventions of the airplane

To delve into the three contested inventors of the airplane, it is worth considering the architecture that lends Wikipedia its current functioning. As expected from general encyclopedia entries, the Wikipedia articles on *Airplane*, *Avion*, and *Avião* – in English, French, and Portuguese, respectively – are written in the third person, in an authoritative style, and with vocabulary that aims to convey technical lexicon in an accessible manner to non-specialist readerships.

Created in January 2005, the English-language article on the airplane (Wikipedia 2024f) has been edited over 820 times between its creation and the moment I write (August 2024). In keeping with Wikipedia's manual of style (Wikipedia 2024e), the lead section under the title of the articles contains a concise description of the topic. After this two-paragraph introduction, the 6585-word, 57,279-byte article is composed of seven sections: *Etymology and usage*, *History*, *Propulsion*, *Design and manufacture*, *Characteristics* (airframe, wings, fuselage, controls, and instruments), *Safety*, and *Environmental impact*. While the sections on history and characteristics are the most detailed (with 1118 and 1851 words, respectively), the others are significantly shorter.

In line with Wikipedia's standards, the table of contents appears to the left of the article against a simple, white background. To the right of the article's title, a hyperlink redirects readers to the corresponding article on the same topic on

³ My reading of scholarship was also limited to materials published in these languages.

Wikipedias in other languages. Running alongside the main text are 25 pictures of cockpits, prototypes, early flying machines, and airplanes of all kinds.⁴ The two pictures accompanying the article's introduction – which are usually the ones editors curate more carefully – depict a military airplane and the Wright Flyer, the latter with a subtitle that reads 'The first flight of an airplane, the Wright Flyer on December 17, 1903' (Fig. 1).

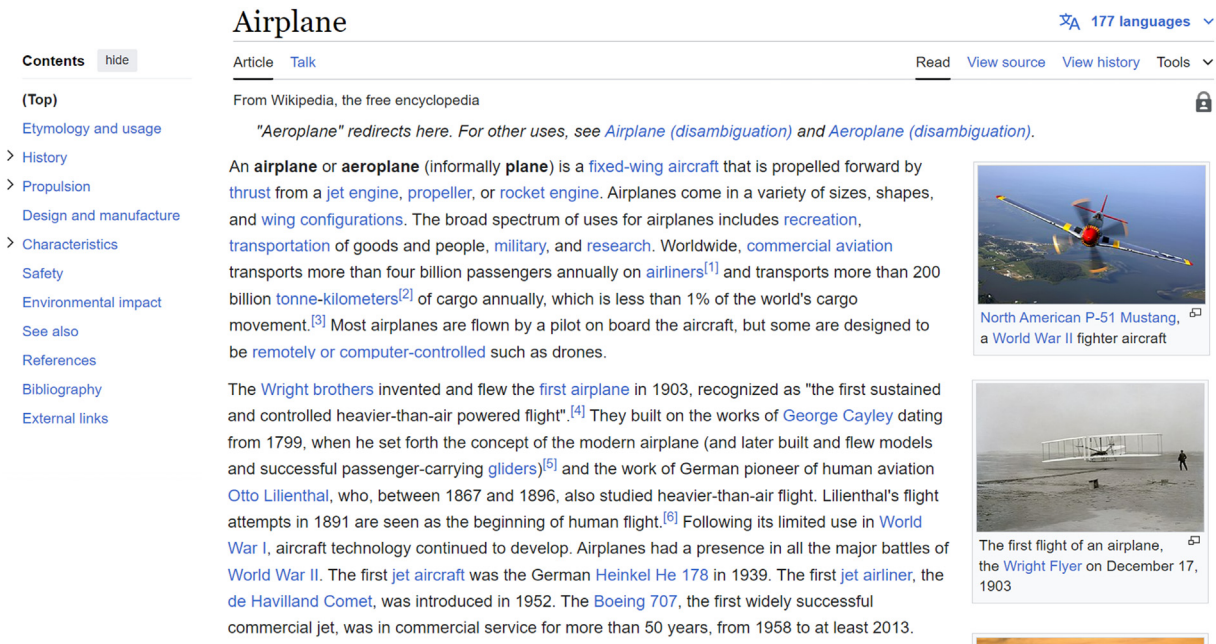


Fig. 1. Introduction to the *Airplane* article, retrieved 06 August 2024. Source: <https://en.wikipedia.org/wiki/Airplane>.

The relative length of and detail contained in the history section reveal this to be a major interest of the editors who co-produced this article. Covering from the mythical flights of Icarus in Greece and Vimāna in India, the article devotes several paragraphs to early powered flights in the late nineteenth and early twentieth centuries, carefully unpacking the invention of the airplane:

The Frenchman Clément Ader constructed his first of three flying machines in 1886, the Éole. [...] On 9 October 1890, Ader attempted to fly the Éole. Aviation historians give credit to this effort as a powered take-off and uncontrolled hop of approximately 50 m (160 ft) at a height of approximately 200 mm (7.9 in). [...]

The American Wright brothers' flights in 1903 are recognized by the Fédération Aéronautique Internationale (FAI), the standard-setting and record-keeping body for aeronautics, as 'the first sustained and controlled heavier-than-air powered flight'. By 1905, the Wright Flyer III was capable of fully controllable, stable flight for substantial periods. [...]

In 1906, the Brazilian Alberto Santos-Dumont made what was claimed to be the first airplane flight unassisted by catapult.

Following the bulk of the article is a list of 67 bibliographical references, links to further readings, and an index of categories to which the article is linked – from 'Vehicles introduced in 1903' to 'American inventions'.

Meanwhile, the French-language article titled *Avion* (Wikipedia 2024g) is significantly shorter than its English-language counterpart, with 3622 words, 30,691 bytes, and 13 pictures, ending with 19 bibliographical references. Divided into three sections – *History*, *Technical aspects*, and *Typology* – the article features a 475-word history section. While the only picture beside the introduction displays the Franco-British supersonic airplane Concorde, the history section opens with an etymological discussion that bolsters France's role in the history of aviation:

The word 'aviation' (from the Latin 'avis', which means 'bird', and the suffix 'atio') was used for the first time by Gabriel de La Landelle, in 1863. [...]

[...] This is what Ader called his aircraft, baptized Éole, in which he took off on October 9, 1890 and then skimmed the ground for 50 m at 20 cm above the runway. However, this event would not be homologated as a flight: the height

⁴ This is how the computer browser displays these elements. Those who access Wikipedia on their smartphone will see these elements organized differently.

reached was insufficient to qualify it as such. Clément Ader's third prototype, the Avion III, flew three hundred meters before a military committee in Satory on October 14, 1897. Another reason for the non-homologation of Clément Ader's flights is that these flights were subject to military secrecy. [...]

In the early years of aeronautics, after the glider flights of the Wright brothers in 1902 and their first motorized flight on December 17, 1903, people did not yet speak of *avion* but of *aéroplanes*. [...] Alberto Santos-Dumont built and flew many balloons and designed the first practical airship. (my translation; original in Fig. II).

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Histoire

Article détaillé : [Histoire de l'aviation](#).

Le mot « aviation » (du latin « avis », qui signifie « oiseau »¹, et du suffixe « atio ») a été employé pour la première fois par [Gabriel de La Landelle](#), en 1863, dans le livre *Aviation ou navigation aérienne sans ballon*, un ouvrage rendant compte des tentatives d'envol de [Jean-Marie Le Bris](#) dans un appareil plus lourd que l'air.


Le **substantif masculin**^{2,3,4} « avion » est un dérivé savant du latin *avis*^c. Il est attesté au **xix^e siècle**² : d'après le *Tre sor de la langue fran aise informatis e*³, il a peut- tre  t  cr e en 1875 mais sa plus ancienne **occurrence** connue se trouve dans le **brevet** n  BB 205 155, d pos  le 19 avril 1890 par [Cl ment Ader](#)⁵ et relatif   « un appareil ail  pour la navigation a rienne d nomm  Avion »⁶. C'est ainsi qu'Ader a appel  l'appareil baptis  * ole*, avec lequel il d colle le 9 octobre 1890 puis rase le sol sur 50 m tres   20 cm au-dessus de la piste. Cet  v nement ne sera toutefois pas homologu  comme  tant un vol : la hauteur atteinte  tait insuffisante pour le qualifier de tel.

Le troisi me prototype de Cl ment Ader, l'*Avion III*, effectue un vol de trois cents m tres devant un comit  militaire le 14 octobre 1897   [Satory](#)⁷. Une autre raison   la non-homologation des vols de Cl ment Ader est que ces vols  taient soumis au **secret militaire**.


  la m me  poque [Otto Lilienthal](#), gr ce   des prototypes qui  taient r alis s   partir de structures de bambou entoil es de coton, pouvait planer jusqu'  400 m tres en se lan ant du haut d'une colline haute d'environ vingt m tres. Le contr le de la machine se faisait par des d placements du corps comme pour les deltaplanes pendulaires contemporains.

Dans les premi res ann es de l'**a ronautique**, apr s les vols en planeur des **fr res Wright** de 1902 et leur premier vol motoris  du 17 d cembre 1903⁸ [*source insuffisante*], on ne parle pas encore d'avions mais d'**a roplanes**. En 1908, [Ferber](#), dans une note de bas de page de son ouvrage *L'aviation, ses d buts, son d veloppement*⁹,  crit « Il n'y a pas de mot pour d signer l'a roplane en particulier ; on pourrait prendre le nom cr e par M. Ader ». En 1911, en hommage   [Cl ment Ader](#), le **g n ral Roques**, cr ateur de l'aviation militaire, d cide que tous les a roplanes militaires s'appelleront des avions. Mais ce n'est qu'avec la **Premi re Guerre mondiale** que les mots « avion » et « aviation » deviennent communs.


[Alberto Santos-Dumont](#) construisit de nombreux ballons   bord desquels il vola et con ut le premier dirigeable pratique. La d monstration de son a roplane plus-lourd-que-l'air, le **14-bis**, eut lieu dans le parc de Bagatelle pr s de [Paris](#), avec un vol public, homologuant par l  m me le premier record du monde d'aviation, le 23 octobre 1906.



Un North American P-51 Mustang en vol. Photo prise durant un show a rien dans la base de l'Air Force   Langley, en Virginie ( tats-Unis).



Avion A. Deperdussin



Avions au mus e national am ricain de l'air et de l'espace (Smithsonian Institution),   Washington D.C..




Fig. II. Excerpt of the history section in the *Avion* article, retrieved 06 August 2024. Source: <https://fr.wikipedia.org/wiki/Avion>.

In turn, the Wikipedia article in Portuguese titled *Avi o* (Wikipedia 2024h) features 5399 words, 46,142 bytes, and 21 pictures, and its information is supported by 18 references. Its history section is rather long (1153 words) compared with the other sections of the article. Interestingly, one of the pictures heading the article is of an EMB-314, a light military aircraft designed and produced by the Brazilian manufacturing company Embraer. With references to Portuguese aviators Sacadura Cabral and Gago Coutinho – credited as the first to cross the South Atlantic Ocean by air – and Brazilian aviator Jo o Ribeiro de Barros – the first from the Americas to make an air crossing from Europe to South America – this article also contains information about Portuguese-speaking pioneers. The article's short subheading on early powered flights reveals the controversy over who the pioneer was:

At the beginning of the 20th century, the first flight was carried out in a heavier-than-air machine capable of generating the necessary power to lift itself. However, this is a controversial fact since Santos Dumont is credited in Brazil and several countries as responsible for the first flight in an airplane.

However, in other parts of the world, credit for the invention of the airplane is given to the American brothers Wilbur and Orville Wright, the exception being France, where credit is given to Cl ment Ader; the flights of the latter, carried out on October 9, 1890, however, are ignored by the rest of the world because they were carried out in military secrecy and only revealed several years later (my translation; original in Fig. III).

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Wright Flyer dos estadunidenses Irmãos Wright



14-bis do brasileiro Santos Dumont

No começo do século XX foi realizado o primeiro voo numa máquina mais pesada do que o ar, capaz de gerar a **potência** e sustentação necessária por si mesmo. Porém, isto é um facto polémico, já que **Santos Dumont** é creditado no **Brasil** e em diversos países como o responsável pelo primeiro voo num avião.

Todavia, em outras partes do mundo, o crédito à invenção do avião é dado aos irmãos **Wilbur e Orville Wright** de origem **estadunidense**, sendo a exceção a **França**, onde o crédito é dado a **Clément Ader**; os voos deste, efetuados em 9 de outubro de 1890,^{[6][7][8]} no entanto, são ignorados pelo resto do mundo por terem sido realizados em segredo militar e só revelados muitos anos depois.^{[9][10][11]}

Apesar de não ser reconhecido como o "pai da aviação", o nome dado por Ader à sua invenção, "avion" (avião em francês), é usado em todas as línguas latinas para designar o aparelho mais pesado que o ar.^{[6][7][8][9][10][11]}

Fig. III. Excerpt on first powered flights in the *Avião* article, retrieved 06 August 2024. Source: <https://pt.wikipedia.org/wiki/Avião>.

In English, Ader ‘attempted to fly’ and Santos Dumont made ‘what was claimed to be the first airplane flight unassisted by catapult’, but, ultimately, the Fédération Aéronautique Internationale credited ‘the American Wright brothers’ for ‘the first sustained and controlled heavier-than-air powered flight’. By contrast, in French, the Wright brothers conducted some ‘glider flights’, but it was Ader’s prototype that achieved the never-properly-recognized first flight. More importantly, the French coined the term *aviation*, which placed them at the forefront of this invention. In turn, in Portuguese, the controversy over this invention is recognized, while Portuguese and Brazilian aviators are portrayed as pioneers in long-haul flights.⁵

Paradoxically, none of these accounts on the invention of the airplane can be labeled ‘wrong’. Yet, readers of each language version of Wikipedia leave the article with a different impression of the origins of flying machines. While these pioneers created the ‘same thing’ – the airplane – each created it differently: by coining and popularizing its name, flying with a catapult, flying without a catapult, or having one’s flights validated. As knowledge is not translated from one language into another, but rather drawn from sources in different languages and produced afresh in each language, meanings are lost and reconfigured through more epistemological rather than linguistic forms of translation.

4. Different languages, different worldviews? On translating languages and meanings

Wikipedia has five key principles, referred to as *pillars* (Wikipedia 2024i), which serve as an instructional guide for editors (Tkacz 2015: 100). The pillars apply to all language versions, even though editors in each version have the autonomy to reinforce the pillars in their own ways. Of these pillars, the second is particularly pertinent to our discussion, as it asserts that ‘Wikipedia is written from a neutral point of view’:

In some areas there may be just one well-recognized point of view; in others, we describe multiple points of view, presenting each accurately and in context rather than as ‘the truth’ or ‘the best view’. All articles must strive for verifiable accuracy, citing reliable, authoritative sources, especially when the topic is controversial or is about a living person (Wikipedia 2024i).

Wikipedia is presented as not concerned with truth but with verifiability, based on the premise that, if information is verifiable in reliable sources, it can be considered encyclopedic (Reagle Jr 2010). Therefore, peer-reviewed scholarship and reputable mass media outlets are often preferred as sources, while blogs and self-publications are systematically frowned upon. Despite this, ensuring source reliability is not always straightforward, and editors may occasionally disagree on which is more reliable: a scholarly source in English or a more updated, journalistic source in another language (Fians 2024b; Hu 2024). Additionally, the policies of Wikipedia express a clear preference for sources in the language of the article, as indicated in the encyclopedia’s *Verifiability* metapage (Wikipedia 2024j): ‘Citations to non-English reliable sources are allowed on the English Wikipedia. However, because this project is in English, English-language sources are preferred over non-English ones when they are available and of equal quality and relevance’.

Adhering closely to this policy, the *Airplane* article draws almost entirely on sources in English and only two of its 62 references are in French. Meanwhile, *Avion* features 15 of its 16 references in French. The Portuguese-language article, in turn, differs from the others in displaying nine references in English, five in French, and only four in Portuguese. Rather than manifesting a seeming lack of publications on airplanes in Portuguese, this points to a matter of language skills and language

⁵ Brent Hecht and Darren Gergle (2010) give an analogous example in which the Spanish-language article on Psychology has a section on Latin America’s contributions to the field that is absent in other language versions.

hierarchies in a context of globalization (Phillipson 1992). As the prestige of a language lends prestige to works published in it (Hüppauf 2004), sources in Portuguese are rarely cited in Wikipedia articles in English, which is not the case when it comes to sources in English or French in articles in Portuguese.

Referring back to Latour's inscriptions (1999), we can see how the invention of the airplane involved a series of transformations. Starting from experiments with the weight of air and calculations of aerodynamic drag, the invention of the airplane also entailed passing from numbers to mechanical considerations about means of propulsion, then to sketches of flying machines on a piece of paper, from sketches to prototypes, and from prototypes to flight attempts. However, the series of transformations does not end here: observations of the attempts, measurements of the distance and height reached by each flying machine, recognition by bodies of experts to validate such attempts, and written reports about these attempts also complement this series. Through several steps, initial considerations on the possibility of flying were turned into effective flights – and these then became texts. Deciding or choosing – or both – which scenario will eventually become text on Wikipedia is what is at stake here, as there is no single, ultimate text about such early flights emerging from the sources in multiple languages that will eventually enable these Wikipedia articles to be verifiable.

Among the references in *Airplane*, one can find the news article '100 years ago, the dream of Icarus became reality' (Benedetti 2003) – which refers to 1903, thus pointing to the Wright brothers' pioneering flight in that year. Another reference backing the *Airplane* article's history section (Gibbs-Smith 1968) endorses a distinction between first achievers and flight-claimants, placing Ader among the latter. Underlining the US' technological advancements, these English-language sources justify the indexation of this Wikipedia entry on a category of 'American inventions'.

The *Avion* article, in turn, draws on sources that turned this invention into text in a different manner. The main source foregrounding Ader's flight is a hyperlink to the French-language website of the French National Institute of Industrial Property, proving that Ader was the first to deposit the patent of a flying machine called *avion*. Meanwhile, the only note about the Wright brothers appears followed by the metatextual commentary 'source insuffisante' ('citation needed').

This partly explains why the *Avião* article places greater emphasis on the controversy at stake, as the Portuguese-language entry incorporates numerous sources in languages other than Portuguese. While the English-language references cited predominantly emphasize the Wright brothers' pioneering flight, all the French-language sources in the article in Portuguese were included to support the statements about Ader. Lastly, information on notorious Portuguese-speaking aviators is absent from the articles on the airplane in the other languages analyzed.

In his analysis of the Wikipedia articles on the Falklands/Malvinas War, Gongora-Goloubintseff (2020) also compares the selection of sources in each article. He found more English sources in the Spanish-language Wikipedia article than Spanish sources in its English-language counterpart. From this, he argues that the predominance of English sources in the article in Spanish did not result in a more balanced or neutral account. However, his point is that the pictures and wording of the two articles violate Wikipedia's neutral point of view (NPOV) policies. My argument, in turn, is that the three Wikipedia articles I examine here reinforce the prevailing views in the bibliographical sources available in each language, which leads Wikipedia editors to – whether deliberately or not – reinforce forms of scientific and journalistic knowledge that prevail within the speech communities they are part of.

Wikipedia thus takes a further step in the series of inscriptions described above: the inscription of knowledge produced by scientists and journalists into grassroots knowledge produced by non-expert, volunteer editors. At each step in this series of inscriptions, the world and the words used to describe it go through further transformations and, in the process, meanings are slightly displaced (Latour 1987; Janicka 2023). This process ultimately turns wings and air into encyclopedic articles in multiple languages – and all these texts are equally verifiable.

Such aspects of grassroots knowledge production online lead us to two tentative conclusions about multilingualism on Wikipedia. First, the three articles analyzed here express how views about historical and scientific events vary along language lines. Considered in tandem, these articles emerge as quasi-textbook illustrations of cultural and linguistic relativism, as Wikipedians contribute to consolidating inscriptions of things and events into knowledge that varies from one speech community to another. Just as a Romantic, Herderian definition of culture posits culture as a discrete and bounded unit equated to nation and language (Eriksen 2001), here languages and speech communities appear partly likened to countries and nationalities. As *Avion* underscores the French origins of aviation and *Avião* emphasizes Portuguese-speaking aviators, grassroots knowledge production online reinforces the ideological framework of one country, one nation, one language (Bauman and Briggs 2003).

Second, whereas the Romantic perception of multiculturalism (cf. Eriksen 1992, 2001) defines cultures as bounded unities and multiculturalism as a mosaic of cultures, multilingualism on Wikipedia gains ground as a mosaic of languages. Mirroring the globe-shaped logo of Wikipedia, the puzzle pieces representing multiple languages can be placed side by side, but they only contribute to the puzzle if they remain as separate pieces. Ultimately, Wikipedia leaves little room for translation from one language into another: once pieces (references in different languages) are assembled to form the same whole (a given article, as in the case of *Avião*), each piece starkly contrasts with the others, such that the resulting puzzle is a controversy, rather than a coherent piece of knowledge.

5. 'This article is written in American English'

On the talk page of *Airplane* (Wikipedia, 2024k), seven of the 29 discussions about improving the article pertain to the portrayal of the Wright brothers as the inventors of the airplane. However, five of these 29 topics – and those remarkably longer

Talk:Airplane


[Article](#) [Talk](#)
[Read](#) [Edit](#) [Add topic](#) [View history](#) [Tools](#)

From Wikipedia, the free encyclopedia

This is the **talk page** for discussing improvements to the **Airplane** article.

This is **not a forum** for general discussion of the article's subject.

<ul style="list-style-type: none"> Put new text under old text. Click here to start a new topic. New to Wikipedia? Welcome! Learn to edit; get help. 	<ul style="list-style-type: none"> Assume good faith Be polite and avoid personal attacks Be welcoming to newcomers Seek dispute resolution if needed 	<p>Article policies</p> <ul style="list-style-type: none"> Neutral point of view No original research Verifiability
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This **level-4 vital article** is rated **C-class** on Wikipedia's [content assessment](#) scale. [\[show\]](#)
It is of interest to the following [WikiProjects](#):

This article is **written in American English**, which has its own spelling conventions (*color*, *defense*, *traveled*) and some terms that are used in it may be different or absent from other [varieties of English](#). According to the [relevant style guide](#), this should not be changed without [broad consensus](#).

Fig. IV. Banners on the talk page of *Airplane*, retrieved 06 August 2024. Source: <https://en.wikipedia.org/wiki/Talk:Airplane#Aeroplane>.

and more confrontational – concern the article's title. As the editor under the username *TraitorBagel* asked in March 2015: 'Why is the title airplane and not aeroplane? Aeroplane is the original spelling, airplane is just a later Americanization. I mean really, reading through wikipedia articles you'd think that bloody Americans invented the English language, it's pathetic'.

TraitorBagel's comment refers to how the article title follows North American instead of British English language usage, which is explicitly acknowledged through the metalinguistic commentary (*Woolard 1998*) that heads the article's introduction: 'An airplane (American English), or aeroplane (Commonwealth English), informally plane, is ...' (*Wikipedia 2024f*). The same attention to lexicon applies to the article in Portuguese, which opens with a remark about how that article refers to both what Brazilian Portuguese speakers term *avião* and what European Portuguese speakers call *aeroplano*. This suggests that multilingualism on Wikipedia is a matter that encompasses not only languages, but also language varieties.

Although seemingly obvious, it is important to underline that the *English Wikipedia* is, in fact, an English-language (or Anglophone) Wikipedia. Yet, as *TraitorBagel*'s allegation of Americanization attests, it is far from being *English*. Unpacking this invites us to revisit the abovementioned conflation of language, country, and nationality.

Wikipedia in Portuguese makes such issues acutely clear. As *Telma Johnson (2010)* analyzes, a high number of disruptive edits on the Portuguese-language Wikipedia between 2004 and 2008 owed to Brazilian Wikipedians 'correcting' the orthography and vocabulary in articles to switch the texts from European to Brazilian Portuguese. Portuguese Wikipedians, despite being fewer in number, occasionally did the same. The resulting edit wars and clashes between these editors culminated in proposals to split the Portuguese-language Wikipedia in two: one in Brazilian Portuguese and one in European Portuguese. When submitted to the Wikimedia Foundation's Language Committee, these proposals were rejected (*Johnson 2010*).

The Wikimedia Foundation favors restricting the language versions of the encyclopedia to languages labeled with ISO 639 codes, which justifies the rejection of the abovementioned splitting proposal. However, the ISO code is not a precondition for the creation of language versions. In this sense, there are two Wikipedias in Norwegian, one for each variety of the language: Bokmål and Nynorsk. Furthermore, in addition to the English-language Wikipedia, there is a *Simple English Wikipedia*, aimed at children and English learners. In alternatively creating and rejecting Wikipedias in certain languages, the Wikimedia Foundation and Wikipedia editors explicitly articulate and produce the encyclopedia's working definition of language.

On the one hand, Wikipedia's architecture fosters ways for each language version to be as inclusive of language varieties as possible. Therefore, despite the title of *Airplane* being spelled in a way that several editors and readers recognize as 'American', the article's first line acknowledges different spellings of the term. Likewise, typing 'aeroplane' in Wikipedia's search box redirects readers to *Airplane*, thus making sure that those accustomed to different orthographies can find the content they are looking for. The same applies to the all-inclusive article titled *Ônibus* (Bus) on the Portuguese-language Wikipedia, which opens with: 'Um ônibus (português brasileiro) ou autocarro (português europeu), camioneta, machimbombo, é ...'

(Wikipedia 2024l), thus listing the terms used for a bus in Brazil, Portugal, Angola, and Mozambique. Other articles reveal attempts to be more inclusive of language varieties in their title, as is the case of *Waste container*. Faced with numerous edit wars, cases of vandalism, and discussions on the title of this article, *waste container* became an umbrella term to encompass both *trash can* (frequently associated with North American English) and *rubbish bin* (British English).

On the other hand, Wikipedia's policies state that articles about a specific country should be written in that country's predominant language variety, considering the anticipated profile of the content's editors and target readership. Hence, the article *Boers* is written in what Wikipedia defines as South African English, and *The Gulf of St. Lawrence* is written in Canadian English. The same applies to Wikipedia in Portuguese: the article on the independence of Brazil is written in Brazilian Portuguese, and the one on Lisbon, in European Portuguese. The French-language Wikipedia appears exempt from such policies on geographical varieties of the language. Accordingly, there is no clear requirement for the use of Canadian French in *Golfe du Saint-Laurent* – the French-language counterpart of *The Gulf of St. Lawrence*.

Such explicit metalinguistic commentaries are provided and reinforced by banners added to the talk pages of certain articles, and are sided by the flag of the country associated with the language variety at stake. Wikipedia's gray (or grey?) area – meaning most articles – can be written in any variety of the language, or even a combination of them. Yet, while the abovementioned articles concern topics of expected interest to certain countries, *Airplane* is written in American English due to the airplane being recognized as an 'American invention' (Fig. IV):

This article is written in American English, which has its own spelling conventions (color, defense, traveled) and some terms that are used in it may be different or absent from other varieties of English. According to the relevant style guide, this should not be changed without broad consensus (Wikipedia, 2024k).

A vote on the talk page of *Airplane* took place in 2018 to end the debate over the article title that TraitorBagel started in 2015. Regardless of TraitorBagel being 'trolling' or raising a legitimate claim, their attention to lexicon was taken seriously by fellow Wikipedians: receiving the vote of 15 editors and several comments from other editors, the motion argued for retitling the article 'Aeroplane'. This drew on editor Burninthruthesky's claim that 'aeroplane' is common to all English varieties, whereas 'airplane' is a 'national variant' (Wikipedia, 2024k). While some editors disagreed, saying that 'airplane' is the most commonly recognizable name for that kind of aircraft, others asserted that 'aeroplane' is the term acknowledged by the International Civil Aviation Organization. Meanwhile, other editors suggested alternative titles, from 'fixed-wing aircraft', which was rejected because airplanes are necessarily powered fixed-wing aircrafts, to 'plane', which was rejected as a colloquialism. Eventually, several editors tried to hinder the vote, claiming that changing the title would require changing the variety of English throughout the text. This would take time that otherwise could be spent on developing the article's content, which should take precedence in an encyclopedic project.

The argument of universal terminology versus national variety returned again and again in discussions that ranged from comparing the demographics of the US-Canada population with other English-speaking populations, to claiming that American English is merely a 'local dialect'. Eventually, 'airplane' won. Perhaps relatedly, the Wright brothers also won, and so continue to be acknowledged as the inventors of the airplane on the English-language Wikipedia as I write. The conclusion of these controversies can be nicely summarized by the response of Red Slash to TraitorBagel's 2015 comment: 'First off, English people sure didn't invent the language, either. Only constructed languages have inventors. Second off, while Americans didn't invent the language, I can think of one very relevant large flying machine that they did invent' (Wikipedia 2024k).

The addition of banners to signpost language varieties in articles aims to dissuade editors from perceiving variations in spelling and vocabulary as language mistakes. Nevertheless, producing knowledge in a specific language or language variety also holds broader implications. The decision to title the English-language article about the sea bordering Japan, Russia, and the Korean peninsula as *Sea of Japan*, rather than *East Sea*, has not only sparked controversies but also driven South Korean Wikipedians to no longer contribute to this article (Wikipedia 2024m).

In the end, establishing which terms or language variety will serve as the standard in a Wikipedia article functions as a gatekeeping mechanism that demarcates who is a preferred knowledge producer in certain online spaces. In defining that *Airplane* must be written in North American English and *Earl Grey tea* must be written in British English, Wikipedians delineate the preconditions for other editors to contribute to these topics. Interestingly, requirements related to language skills appear to outweigh the requirement of formal expertise on a given topic.

While producing an open-source encyclopedia, Wikipedians also operationalize their working definition of language. On the one hand, Portuguese-speaking editors regard English and French as prestigious enough to be included in bibliographical references – even though not prioritizing sources in Portuguese challenges the encyclopedia's manual of style. On the other hand, English-speaking editors engage in disputes over whether American English is a 'local dialect' that might lead to the Americanization of Wikipedia or a widely recognized, standard variety that might help universalize knowledge. At times conflating language, country, and nationality, Wikipedians also constantly challenge this conflation, thus reinforcing an approach to languages that helps define authority and authorship while consolidating certain themes as privileged spaces for members of given speech communities.

6. Final remarks: co-producing language through knowledge co-production

This article took the invention of the airplane in three language versions of Wikipedia as an analytical focus to explore how language skills emerge alongside knowledge expertise as key criteria for grassroots knowledge production in online settings.

Fu et al. (2023) demonstrate that the emergence of language barriers, skills, and translation issues can be obstacles when it comes to updating Wikipedia articles that cover the latest scientific developments. Considering that numerous scientific findings are initially published in English, knowledge about these topics is likely to first appear on the English-language pages of the encyclopedia before being translated to update other language versions. From a different perspective, Astrid Ensslin (2011) analyzes how Wikipedia's multilingual policies face limitations due to the de facto predominance of English in the platform's architecture. However, these approaches regard translation from one language into another as a key aspect of updating Wikipedia, which is not always the case. On the one hand, the articles in English and French examined here draw on overwhelmingly monolingual reference lists. On the other hand, the article in Portuguese foregrounds how linguistic translations resulting from the incorporation of sources in different languages also imply problematic epistemological translations, as references from different languages are prone to cater to the speech communities they target.

Additionally, two core features remained to be analyzed: the implications of the use of multiple languages in the encyclopedic production of historical knowledge – which, as rather stable themes, do not undergo fast-developing changes – and how such online spaces of knowledge turn speech communities into epistemic communities (see Cetina 1999). The controversies over the airplane enable us to bring these two issues to the fore.

Backing the invention of the airplane in each language version of Wikipedia, four major events – the coining of the word 'aviation', the first effective flight assisted by a catapult, the first flight unassisted by a catapult, and the patenting of the airplane – were transformed into text in different ways. In each inscription, we lose the concreteness of things such as the airplane and air resistance, yet we gain in terms of what can be calculated, measured, described and, ultimately, verified. Similarly, the processes that inscribed this knowledge – deemed 'scientific' and 'journalistic' – into encyclopedic knowledge – characterized on Wikipedia as grassroots and open-source – also involve losses and gains. These inscriptions, movements, and transformations cannot be conceived without an attention to translation – or to its absence, as in the case of articles that heavily rely on a monolingual bibliography.

Along these lines, the language and language variety used in each Wikipedia article play a part in shaping the content of the article, and thus contribute to whether the inventor of the airplane is said to be from the United States, France, or Brazil, and whether the invention at stake is the airplane or the aeroplane. Because each language version possesses a considerable degree of autonomy, articles and Wikipedias are not simply cut, translated, and pasted replicas of other Wikipedias.⁶ Instead, different language versions entail the work of editors that target readerships from different speech communities. Multilingual editors have access to reliable sources in different languages and thus contribute to the (re)production – in other words, inscription – of scientific and journalistic sources into grassroots knowledge, by drawing on, among other factors, their language skills.

Therefore, Wikipedians are required to be knowledgeable about the topics they edit and able to adhere to Wikipedia's verifiability principles as much as they need to be skilled in the language varieties of the articles they aim to contribute to. Ultimately segmented along language lines, Wikipedia and its multilingualism emerge from an assemblage of languages and language varieties. However, these languages and varieties only work together effectively at the expense of being kept separate. Just as the addition of a significant number of bibliographical references in foreign languages to an article disregards the manual of style, introducing a different language variety into an article is perceived as disruptive.

This attention to multilingualism on Wikipedia has enabled us to better understand how a certain definition of language takes shape in practice through the co-production of knowledge online. While this article aims to contribute to discussions on language politics and multilingualism in the realm of 'global' digital media, additional research is needed to examine how various social media, platforms, and software operationalize languages and how the latter influence user experience. Exploring the significance of this topic does not even require me to venture far. As I type this text in American English in my recently updated version of Microsoft Word, the program constantly underlines 'typos' that contrast with its 'English (United Kingdom)' setting, in a software that distinguishes 18 varieties of English for spellcheck purposes.

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⁶ Shuttleworth (2017) argues that articles which contain lengthy direct translations from one Wikipedia to another tend to be those ones concerning very specific and non-controversial topics, such as lesser-known chemical compounds, Russian geography, or local Chinese TV stations.

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