Collective Translation as Forking (分岔)

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What does it mean to write a book as if it were software, and how does this extend to its translation? Since 2021, together with a Taiwanese working group, we have been producing a Chinese translation of *Aesthetic Programming: A Handbook of Software Studies*, a free and open-source book first written in English by Winnie Soon and Geoff Cox in 2020 (for timeline, see Figure 1).[2] In the spirit of software studies, the book addresses the cultural and aesthetic dimensions of programming from its insides, as a means to learn to code (using p5.js) and to understand the importance of programming as a cultural practice that can develop discussion of issues that are still relatively under-acknowledged in technical subjects, such as gender, sexuality, race, and the legacies of colonialism.[3] Concerning its translation, the hegemony of the English language resonates here, too, as the default language of global academia, business, and programming alike, effectively suppressing other languages and marginalized voices. When it comes to cultural translation, some obvious further issues arise related to appropriation, and we have strived for more equitable practices in acknowledgment of the need for epistemic justice.

In this article, we first introduce the published book as a computational object open to re-versioning and outline our approach to writing it on GitLab, a web-based software control management system, which allows for forking and merge requests. In free/libre and open-source software (FLOSS) culture, more than one programmer contributes to writing and documenting code. Contributors might be unknown and are able to update or improve the software by forking—making changes and submitting merge requests to incorporate updates—in which the software is built together as part of a

1. The sequence of authors is determined by the number of strokes in the Chinese surname. No hierarchy of contribution is intended.
2. Winnie Soon and Geoff Cox, *Aesthetic Programming: A Handbook of Software Studies* (London: Open Humanities Press, 2020). Note that the authors were born and raised in Hong Kong and the United Kingdom, respectively, and this registers a postcolonial context acknowledged in the biographical entry for the book (297). The book is available in multiple formats: a git repository, dynamic website, downloadable PDF, and printed book. See https://gitlab.com/aesthetic-programming/book (git repository); https://aesthetic-programming.net/ (website and link to downloadable PDF); and http://www.openhumanitiespress.org/books/titles/aesthetic-programming/(printed book).
3. For an elaboration of software studies, see https://mitpress.mit.edu/series/software-studies/#.

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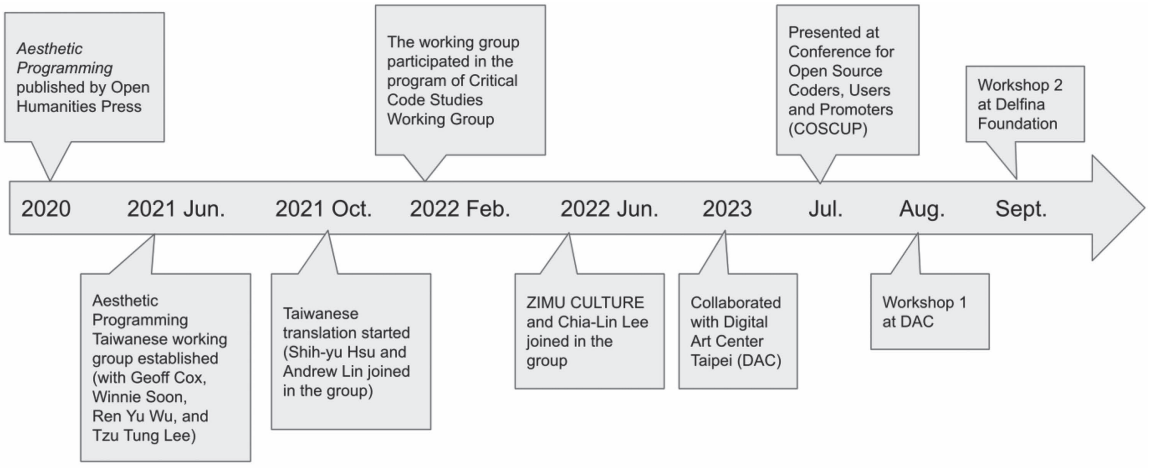

Figure 1. A short timeline of the *Aesthetic Programming* Taiwanese working group events, from its inception in 2020.

community. To merge, in this sense, is to agree to make a change, to approve it as part of a process of collective decision-making and with mutual trust. The authors of the book were curious to write a book in this manner, reflecting the subject matter of software directly and extending the concept of forking in ways that challenge the normative workflows and logics of academic publishing and its reputation economy.[4]

In the following sections, we elaborate on the challenge of translating this book in keeping with this analogy to software and describe two participatory workshops in Taipei and London that made it possible for others to contribute in ways analogous to forking. Part of the purpose was to engage the politics of translation more broadly, brought into focus by translating text that is both conceptual and technical and by shifting from the English language to Chinese in the specific context of Taiwan (see Figure 2) and its ongoing colonial struggle with mainland China.[5] The point was not to finalize or agree on a preferred translation of the book in the workshops but to explore what issues arise in opening up the process to a broader group of people when setting out the task of translation in parallel to software practices. The workshops thereby served to open up alternative ways of working and suggest some possible ways forward in translation practices sensitive to cultural context. We conclude the article with the

4. A further, more general example would be to acknowledge the conventions of the Chicago style guide and the preference for US spelling of words, exposing a further political layer to academic publishing.

5. As an aside, it is interesting to note that an open-source ethos has been extended to a democratic model at the level of government by the free software programmer and the Minister of Digital Affairs of the Republic of China (Taiwan), Audrey Tang (唐鳳). See Eric Steuer, "Open Minds Podcast: Audrey Tang, Digital Minister of Taiwan," *creative commons*, July 13, 2021, https://creativecommons.org/2021/07/13/open-minds-podcast-audrey-tang-digital-minister-of-taiwan/.

Figure 2. Translation of the index page of *Aesthetic Programming* (https://aesthetic-programming.net/zh-tw/).

stated need to address the conventions of both publishing and translation that remain out of step with intersectional, queer-feminist, and anti-colonial practices, and which in turn remind us that there can be no original source of knowledge or authority over ideas. We speculate on how this resonates with the task of translation as a collective practice of re-use that is attentive to epistemic justice and knowledge equity. In keeping with queer-feminist practices which challenge patriarchal and colonialist hegemony, collective translation as forking can challenge some of the traditional academic conventions we take for granted.

Book as Computational Object

Like the production of meaning which is continuously negotiated through the act of reading, no books are fixed, and even once published, they remain works in progress. In this case, the book is a computational object and in the preface of *Aesthetic Programming* is described as being "stuck in an endless loop of its own becoming."[6] To take this further, if books about software are considered to be *like* software, then they are not

6. Soon and Cox, *Aesthetic Programming*, 21.

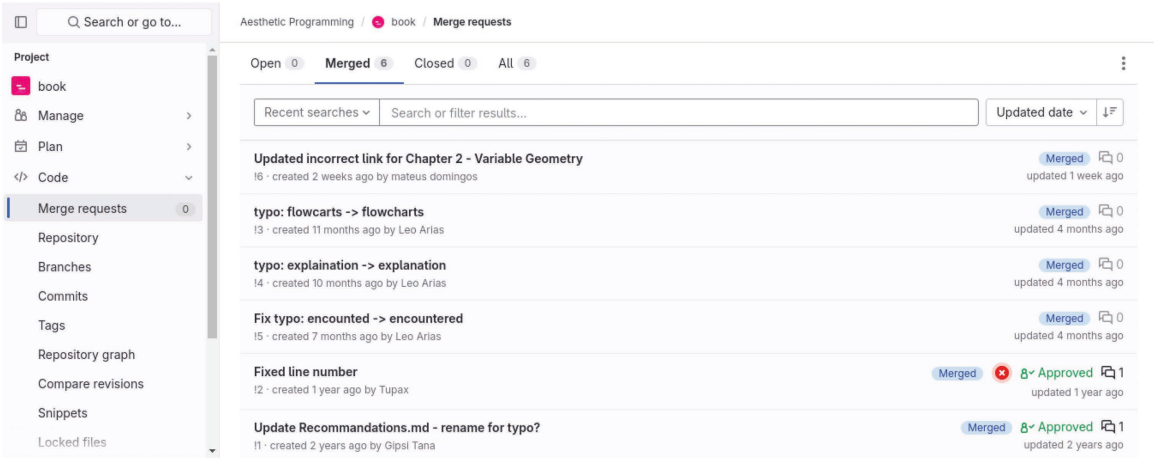

Figure 3. Merge requests from the git repository of *Aesthetic Programming*.

only objects to be read but also to be acted upon, necessarily shared, rewritten, and reworked by others. In this spirit, all the contents of *Aesthetic Programming* are offered as an open resource, to encourage readers and writers to fork copies and customize their own versions of the book, adding different references, examples, reflections, and new chapters, open for further modification—a kind of translation across time and space. This is common practice in software development, as described, particularly in the case of FLOSS in which developers place versions of their programs in version control repositories (such as GitLab) so that others can download, clone, and fork them. To reiterate the point, when someone forks a piece of software, they transform it in some way, perhaps customizing it for their own needs, perhaps improving upon the original design by adding additional features (see Figure 3).

In the case of *Aesthetic Programming*, the invitation to fork the book the way we fork software was taken up by scholars Sarah Ciston and Mark C. Marino through the addition of chapter 8.5, sandwiched between chapters 8 and 9 (see Figure 4).[7] In their related article "How to Fork a Book," they clarify that the chapter "does not remedy a lack in the book, but adds its own insights, following the 'yes-and' ethos of its collaborating first authors."[8] This adding and modification of (original) content is unusual in translation and academic publishing but is relatively common in software, so we were curious to explore how the concept of forking in software practice might inspire new

7. See the fork of the repository, and the newly written chapter "8.5 Talking Back," available at https://gitlab.com/sarahciston/book/-/tree/main/source/8.5-TalkingBack.
8. Sarah Ciston and Mark C. Marino, "How to Fork a Book: The Radical Transformation of Publishing," *Medium*, August 19, 2021, https://markcmarino.medium.com/how-to-fork-a-book-the-radical-transformation-of-publishing-3e1f4a39a66c.

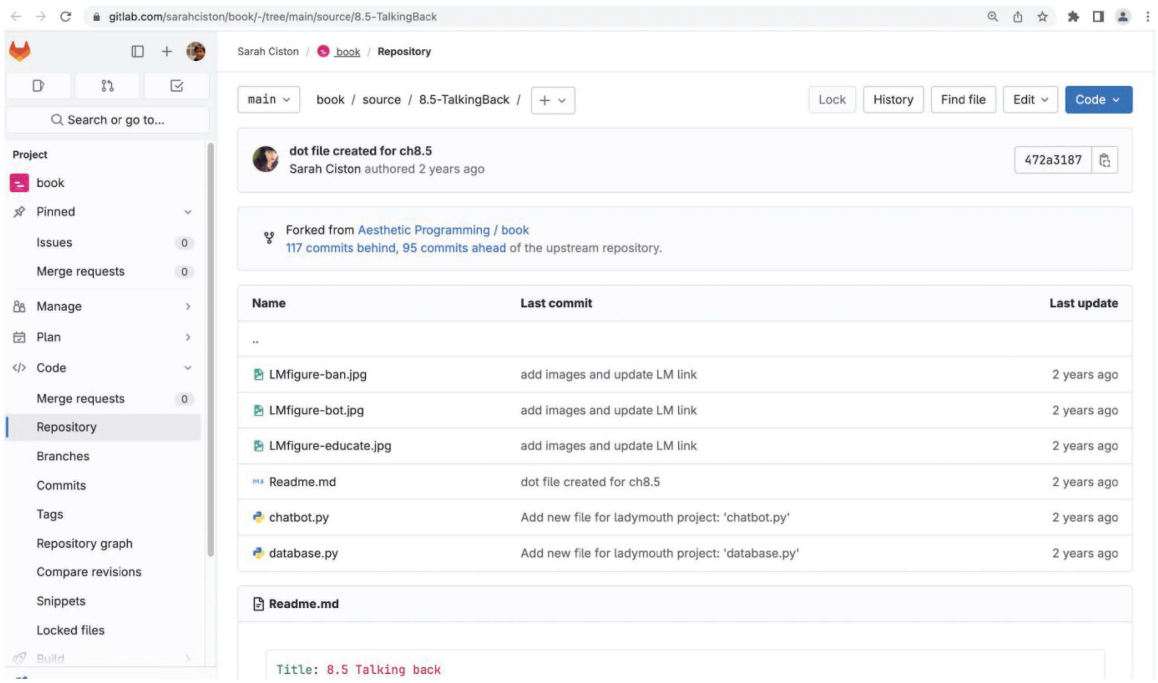

Figure 4. Screenshot of chapter 8.5 titled "Talking Back."

practices. By encouraging new versions to be produced by others, the book set out to challenge commercial publishing conventions and make better use of the infrastructures through which we produce and distribute ideas. Clearly the wider infrastructures are especially important to understand how alternatives emerge from the need to configure and maintain more sustainable and equitable networks for publishing and how writing and indeed rewriting can be best supported to allow for its re-use.

Our approach resonates with the ethics of "A Transversal Network of Feminist Servers," a collaborative project formed around intersectional, feminist, ecological servers whose communities exchanged and extended knowledge to draw attention to the material conditions of serving data on servers and across networks.[9] It's clear that to consider the administration and affordance of the apparatus through which the work is served is a necessary reflection for any computational and communicative activity. "Are you being served?" as the collective Constant put it (see Figure 5), is a similar initiative which raises the question of whom or what is being served, through whose or what server, and under what conditions of servitude.[10] When it comes to books, this emphasis stresses the need to be more attentive to the wider material systems and technical

9. A Transversal Network of Feminist Servers, https://atnofs.constantvzw.org.
10. Constant, "Are You Being Served? (notebooks)," *Verbindingen/Jonctions* 14, https://calibre.constantvzw.org/book/17.

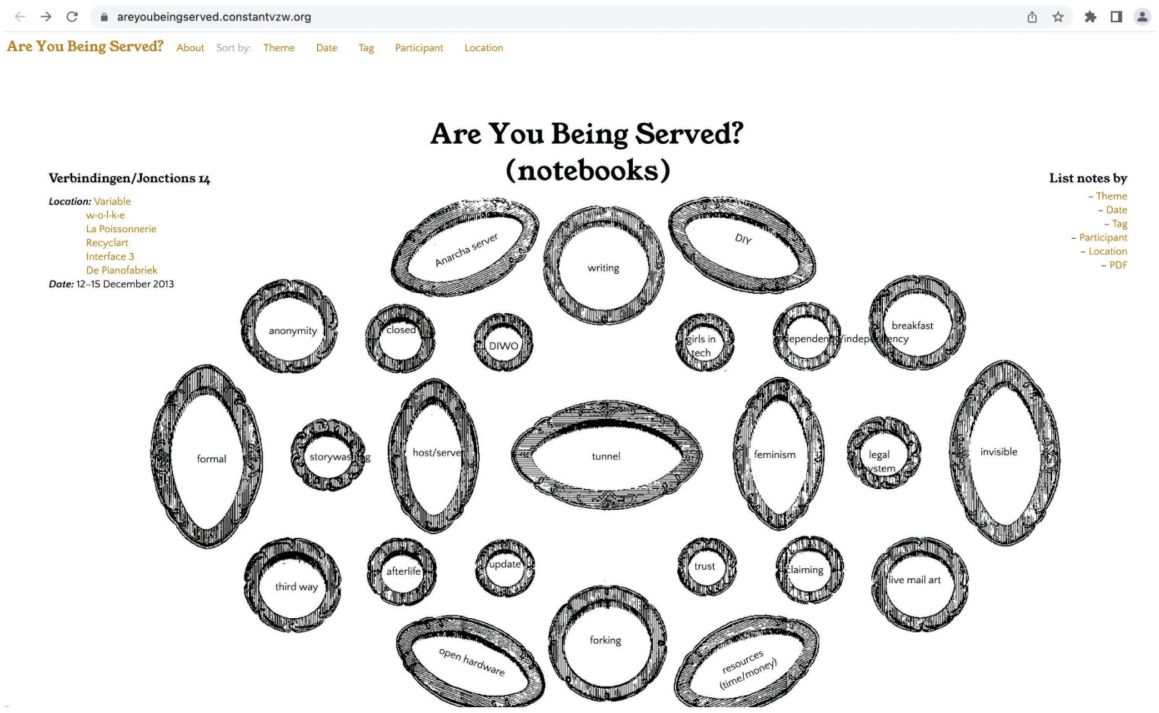

Figure 5. Screenshot of the workshop "Are You Being Served?" in 2013, hosted by Constant.

infrastructures for publications.[11] The book then is not a fixed object, or a universal pedagogic resource in this case, but rather is a situated and adaptive assemblage, with the potential for extension and customization, which includes its openness to translation across other languages, communities, and political contexts. It is a computational object distributed through machinic assemblages, composed of its various parts, operational across relational—and *translational*—data, infrastructures, and languages.

Forking the Book

The use of Git, more specifically GitLab in this case, has allowed authors the opportunity to publish the writing and source code and to formalize its production and distribution as an iterative collaborative process. This makes it possible for others to "version" or "fork" a copy and customize it with different references, examples, critical reflections, and even new chapters (as demonstrated in the earlier example). To clarify the terms, in its simplest sense, one can think of a new version as an iteration/update from the

11. See nate wessalowski and Mara Karagianni, "From Feminist Servers to Feminist Federation," *APRJA* 12, no. 1 (2023), https://aprja.net//article/view/140450.

same source, while a fork produces something quite different and independent of its origin. "Fork" (in Chinese, 分岔) is a technical term in the area of software engineering and refers to the possibility of splitting (dividing in branches) or duplicating a software project, thus allowing other users to modify the code and further develop the software *independently* to create new processes.[12] Some of the forks might want to merge back to the "original," but it is not mandatory, and any decision to do so is up to the new forked community/authors. Moreover, the original authors/software developers hold the responsibility to decide whether to merge back or not, insofar as there are other things to consider, such as consistency. In this way, forking is realized by a third party that is not the same as the original author, nor does its development need to be close to the original purpose. This variation is also one of the key issues that we wish to highlight between software practice and conventional translation practices.

With FLOSS, this means that software can be forked from the original development without prior permission or violating copyright law and software licensing. Hence, in the case of *Aesthetic Programming*, and with all "original" content released on GitLab with a FLOSS license, the book can be forked like a piece of software, able to be split or duplicated without the prior consent of the original authors. To return to the earlier example, Ciston and Marino designed their new chapter with Python programming language, not p5.js, and added new sections such as "Code Confessions" and "Code Commentaries." They explain, "To engage with a book like *Aesthetic Programming* is also to treat it more like software, something to be developed, extended, revised, and reimagined," to challenge a "fixed one-to-many, unidirectional discourse that is static and authoritarian."[13] In a similar way, we want to argue that forking opens up new less authoritarian ways of publishing more broadly, especially with respect to authorship and editioning, as well as offers the potential for alternative translation practices.

To reiterate, the notion of forking that we are adopting for translation practice offers the freedom to not stick to original content and authorship in order to make new branches independently available and open to collective re-use (see Figure 6). In accordance with the spirit of *Aesthetic Programming*, revisions and forks were intended to occur directly on GitLab and under the conditions of use protected by a FLOSS license.

12. The concept of forking can be defined as hard fork and social fork, responding to the production of independent development branches and the contribution to the open-source communities, respectively. See Shurui Zhou, Bogdan Vasilescu, and Christian Kästner, "How Has Forking Changed in the Last 20 Years? A Study of Hard Forks on GitHub," *Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering* (2020): 445–56. One of the notable examples of a fork is the Linux operating system. The Linux kernel was first created by Linux Torvalds in 1991, and nowadays there are many different forks of Linux in various distributions, such as Debian, Ubuntu, and CentOS. Each distribution broadly operates with Linux architecture, configuration, and infrastructure (based on the Red Hat Enterprise Linux), but each also serves for various reasons and agenda. For example, Ubuntu is known for having a more user-friendly interface that made it easier for users to switch from other graphical user interfaces and operating systems like Windows or MacOS.
13. Ciston and Marino, "How to Fork a Book."

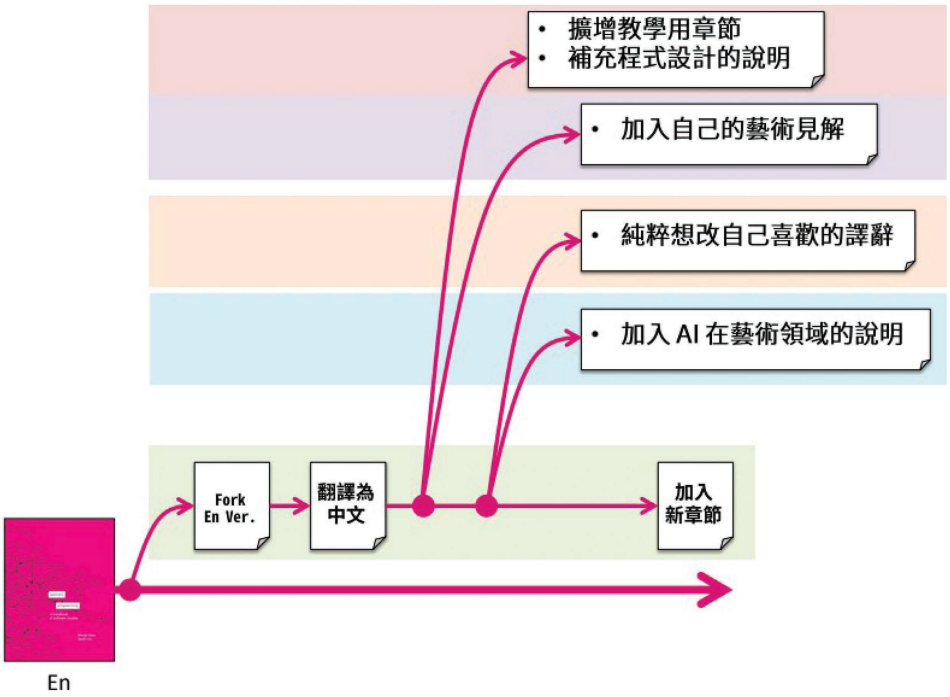

Figure 6. One of the slides prepared by Andrew Lin for the Taipei workshop (2023) to imagine what might be the possibilities of forking a Taiwanese version of the book. This might include adding a new chapter by having supplementary information, self-understanding of artworks, modifying our own way of thinking about specific translation terms, and adding AI in Art.

However, considering the need to engage a broader audience in participatory workshop settings and in a non-Western context, including those without programming backgrounds or familiarity with version control tools, the decision was made to use the real-time collaborative platform HackMD as the primary tool.[14] Developed by a Taiwanese team since 2014, and its situatedness perhaps a good reason to use it in itself, many local groups, technical organizations, grassroots communities, government officials, and NGOs have adopted HackMD as a collaborative tool—for organizing meeting records or discussions related to significant news events and public topics (such as presidential elections and emergency services information when there is a natural disaster).[15] In this

14. HackMD, https://hackmd.io/team/aesthetic-programming?nav=overview. HackMD has released a free and open-source version as CodiMD, https://github.com/hackmdio/codimd, and since 2020 forked as HedgeDoc, https://hackmd.io/@CynthiaChuang/HedgeDoc-a-New-Fork-of-CodiMD.

15. As of 2021, the monthly active users for HackMD is 450,000. See 廣告企劃製作, "HackMD即時文件協作平台 企業數位轉型的好夥伴," *今周刊* [*Business Today*], January 15, 2021, https://www.businesstoday.com.tw/article/category/183015/post/202101140038/; and 林芷圓, "專為開發者而生：HackMD「即時文件協作平台」有何特別之處？" *Business Next*, February 6, 2020, https://www.bnext.com.tw/article/56450/hackmd-real-time-collaboration?.

context, we thought HackMD to be an effective tool to capture the essence of forking (with reference to the orthodoxies of authorship and editioning) and to raise the comfort level of doing collaborative writing and translating together, especially given that not all of us in the team or in the public-facing workshops had experience of software development. While HackMD may be more engineering oriented compared to other user-friendly products like Google Docs or Notion, its user community and support for Markdown align closely with the project's goal to integrate programming (writing code) and writing in general (see Figure 7). While both HackMD and GitLab support versioning, the main difference is that HackMD is much more widely used in Taiwan beyond developers and software communities, and it supports collaborative real-time writing which is also better suited for public-facing workshops.

After the workshops (which we will go on to describe in a later section), the translated content on HackMD was migrated to the GitLab platform for further development, which required running computer scripts and web publishing tools to generate the Taiwanese version of the website (see Figure 2). We see it is necessary to consider the specific context, especially when using software in cultural settings while maintaining the possibilities for forking. The archives of the translated version also provide resources

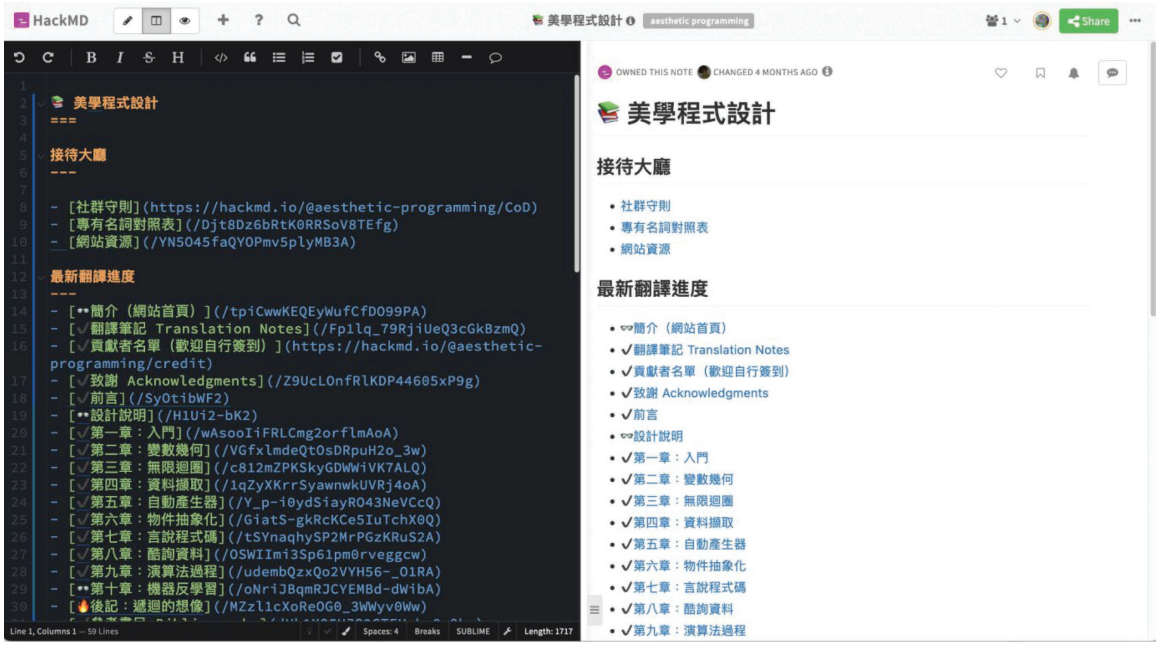

Figure 7. The interface of HackMD for doing the collective translation. It contains the left (code) side and the right (rendered code) as more readable for the general audience. https://hackmd.io/@aesthetic-programming/book.

for possible forks in the future, with this first iteration part of an ongoing collective translation practice that resonates with local knowledge and cultural practices.[16]

The Task of Cultural Translation

Since translation acts as a bridge between two different languages and cultures, there is clearly a political dimension that needs to be acknowledged. Translating from one language also means to transform inherent ideas and rules and be sensitive to cultural connotations, metaphors, and context. Even in its standardized practice in academic publishing, translation can be interpreted in a multitude of ways and is not necessarily a direct translation from the words of author to translator, yet typical translation processes of academic books are rarely developed in collective form or outsourced to wider communities of interest. In Gayatri Chakravorty Spivak's 1992 seminal essay "The Politics of Translation," she explains: "The task of the translator is to facilitate this love between the original and its shadow, a love that permits fraying, holds the agency of the translator and the demands of her imagined or actual audience at bay."[17] As translation itself is a form of reading, the act of translation can be associated with a language that belongs to others; "this after all is one of the seductions of translating" in solidarity with the workings of gendered and racialized agency. Spivak goes on to criticize Western translation strategies that promote immediate accessibility and the "realist illusion," advocating a feminist intervention in order to disrupt meanings that are constructed by the imposition of dominant logics and that disregard other rhetorical inferences.

It is perhaps relatively easy to recognize these issues with the predominant use of the English language which has been repeatedly challenged by postcolonial and feminist scholars such as Spivak for the way it imposes itself as the man-made language of globalization. But this is no less the case with programming languages that also tend to reinforce the hegemony of English as the lingua franca of communication between people and technical systems. Given that *Aesthetic Programming* set out to explore the technical as well as cultural imaginaries of programming from its insides, it follows that its translation into another language could not be thought of as a straightforward technical procedure assigned to any one individual external to the project. Moreover, if one of the provocations of the book was to fork a book (its contents) like software, then it becomes obvious to consider translation as a kind of forking, too, and as an opportunity to modify and collectivize the translation process. In translating/forking the book,

16. See https://gitlab.com/aesthetic-programming/book/-/tree/master/source.zh_TW?ref_type=heads.
17. Gayatri Chakravorty Spivak, "The Politics of Translation," in *The Translation Studies Reader*, ed. Lawrence Venuti (London: Routledge, 2000), 398.

then, it operates as an endless loop, enabling any new iteration as part of a process that can forever renew itself, stuck in a loop of its own becoming, as previously stated. This is all the more important given the inherent difficulty of translating any text into another language while hoping to retain its original meaning, whether desired or not. Take, for instance, the chapter "Infinite Loops," for which we use the *Ouroboros*, from the Greek to express the endless cycle of birth and death, but in an online discussion working group, the notion of renewal in Buddhism is suggested as a more appropriate reference.[18]

Translation is evidently a complex form of cultural reproduction with endless new forms of interpretation and articulation, with new versions that can be attentive to source and context. Suffice to say, and despite the danger of Eurocentrism, we are influenced by texts such as Walter Benjamin's 1922 essay "The Task of the Translator" in thinking about the "afterlife" of the translation processes to open up new modes of thinking and expression that go beyond the presupposition of readers about originality and language.[19] In asking, "Is a translation meant for readers who do not understand the original?" Benjamin proposes that translation is not simply an operation between different languages, but that language itself is generated by a translational process; in other words, everything embodies language because it communicates meanings between things in the world.[20] Taking this approach to translation is not so much the task of translating the meaning literally from one language to another but of identifying the inherent meanings of things in and of themselves.

In the forking of *Aesthetic Programming*, we are curious to consider translation at the various levels of things and their socio-technical operation, recognizing the many layers of translation at work when machines and humans translate instructions in their own terms and as human/machine language. Moreover, we are curious how translation problems resonate more broadly when translating a book about programming that requires precision of language that is operative, both descriptive and executable. The politics of translation might have been well established in general, but what of the specifics of translating a book such as this? In forking *Aesthetic Programming*, the issue of translation arises at multiple levels, across many operative layers of translation when machines and humans interpret instructions and computational things. Clearly there are broader issues here, too, when we think of how translation has been outsourced to machines and neural networks, with the case of Google Translate and its

18. See the comments from the discussion thread on "Translating Aesthetic Programming," as part of Critical Code Studies Working Group (2022), at https://wg.criticalcodestudies.com/index.php?p=/discussion/132/week-4-translating-aesthetic-programming.
19. Walter Benjamin, "The Task of the Translator," in *Selected Writings, Volume 1: 1913–1926*, ed. Marcus Bullock and Michael W. Jennings (Cambridge, MA: Belknap Press of Harvard University Press, 1996), 253–63.
20. Benjamin, "Task of the Translator," 253.

many documented instances of mistranslation. In such cases the algorithm is based on statistical models that are trained on a large corpus of text data and thereby prone to errors and are supplied without important contextual information. The additional worry here is that model-generated material will increasingly be folded into the resulting models, with its context—already remote—further weakened through the "curse of recursion" in which mistranslations become training materials.[21] But we perhaps diverge too far from our core discussion here. Outside of these models, translation remains an opportunity to rethink and extend some of our sources, specific both to the book being translated in our case and to the Taiwanese context in which it is to be made public. We might say that translation has always been a kind of forking.

Chinese Translation

Translating into Chinese makes a useful case study in this respect, in all its rich variations across history and geopolitical context. Indeed, the complexity of Chinese language has taken on a metaphoric role in technological discourse, too, such as in Searle's "The Chinese Room" experiment where it stands for the inability of humans and machines to think when using a language that one doesn't understand or is seemingly incomprehensible—thus setting out the limits for AI but at the same time reinforcing occidental fantasies and prejudices.[22]

In the realm of written language systems, Chinese currently employs two primary script systems—Traditional Chinese and Simplified Chinese—yet in spoken language, they are generally interchangeable. The language of translation in *Aesthetic Programming* predominantly utilizes Traditional Chinese, the primary script system employed in Taiwan, Hong Kong, and Macau. Despite the shared script system among these regions, disparities arise in the spoken language due to the predominant languages used in each location, for instance, the frequent incorporation of Cantonese phonetic transliterations in Hong Kong. In the case of Taiwan, following the conclusion of the Chinese Civil War and the subsequent retreat of the Nationalist Party to Taiwan, there emerged a cultural isolation spanning over four decades. Consequently, disparities in Chinese language usage between Taiwan and China not only stem from differences in script systems but also manifest in variations in terminology. However, in the past decade, with the rise of China's economic power and increased cross-strait communication since the

21. Ilia Shumailov, Zakhar Shumaylov, Yiren Zhao, Yarin Gal, Nicolas Papernot, and Ross Anderson, "The Curse of Recursion: Training on Generated Data Makes Models Forget," revised May 31, 2023, https://arxiv.org/abs/2305.17493v2.

22. John R. Searle, "Minds, Brains, and Programs," *Behavioral and Brain Sciences* 3, no. 3 (1980): 417–57, https://doi.org/10.1017/S0140525X00005756.

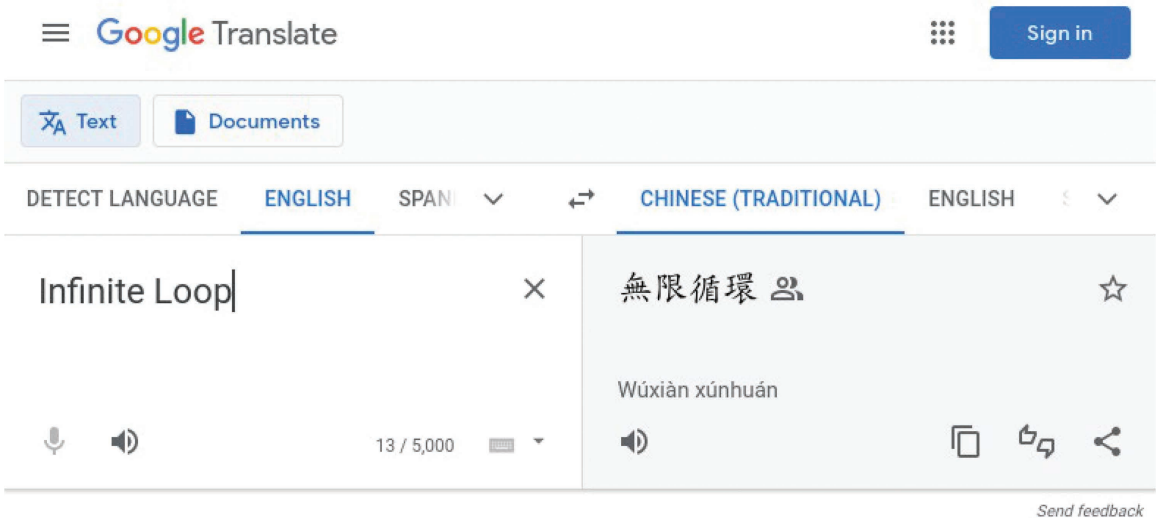

Figure 8. Google translation from English to Traditional Chinese using the example "Infinite Loop."

1990s, linguistic exchanges between Taiwan and China have become more frequent. Nonetheless, these exchanges have also sparked discussions regarding identity and its associated implications.[23]

In Google AI language translation, we have found that many of the translated Chinese words, and technical terms follow the style of mainland China even though the words are selected in Traditional Chinese characters (mostly used in Hong Kong and Taiwan). This is also confirmed by Google, in which the same training dataset is used for both Traditional and Simplified Chinese translation given the many similarities between them.[24] However, many terms, in practice, are used differently between Hong Kong, mainland China, and Taiwan, prompting reflection on their implications, as for example, "Infinite Loop" translated as 無限循環 or 無窮迴圈 (see Figure 8). Aside from the technical and aesthetic challenges, this raises the question of how the Chinese language model enforces particular hegemonic worldviews that occlude differences. With all the variants of Chinese language, how is this tied to expressions of colonial

23. Taking the report from Taiwan's data journalist media READr in 2021 as an example, popular Chinese terms have become widespread among young people in Taiwan. READr targeted the popular forum Dcard among Taiwanese college students, scraping 3.91 million forum posts accumulated over nearly eight years, and analyzed the top 15 most frequently used Chinese terms. The report, accompanied by interviews with students, teachers, and media professionals, found that the main sources of these terms were Chinese IP dramas that gained popularity since 2015, fan communities, Chinese online shopping platforms, social media apps, and so on. Taiwanese media, driven by the pursuit of traffic, also followed this trend and incorporated Chinese terms into their news reports frequently. See 廖元鈴, "中國流行語滲透台灣？從 Dcard 數據窺見年輕人網路用語趨勢," READr 讀+, April 12, 2021, https://www.readr.tw/post/2836.

24. Julie Cattiau, who works for Google, confirmed the use of the same language model in one of her interviews. See Chris, "神奇的 Google Translate, 背後到底蘊藏哪些機器學習科技?" TNL Mediagene, May 3, 2017, https://www.inside.com.tw/article/9231-google-translate-machine-learning-taiwan.

power that resonate with the use of English? Given the rich variations of Chinese, between Mandarin and Cantonese, for example—and Indigenous languages such as Amis, Atayal, Truku, Pinuyumayan, in a Taiwanese context—we are curious how we might be sensitive to language diversity that challenges the Western centrism of programming in English and more.

In the technology industry of Taiwan, the majority of technical terminology is commonly employed in English during communication among engineers. This linguistic practice is attributed, in part, to the prevalent use of English-language textbooks in higher education within the fields of electronic and information engineering in Taiwan. Another contributing factor is the prevailing misconception that Taiwan, in order to play a significant role in the globalized landscape, must adopt English as the primary medium of communication. This inclination can be perceived as stemming from Taiwan's historical reliance on the military-industrial complex of the United States since 1949, wherein the use of English symbolizes successful integration into the mainstream global system. Notably, and despite never having been colonized by an English-dominant nation, there persists a subset of political figures in Taiwan advocating for bilingual national policies in Chinese and English, often overlooking Indigenous languages and the languages of the growing population of Southeast Asian immigrants.

Our approach to translation includes how to use languages in ways that fearlessly encourage self-questioning and experimenting in yet unknowable ways. For the chapter "Variable Geometry," we add Alexis Pauline Gumbs's poem "In Case You Wanted to Save the Planet"[25] in the annotation alongside Femke Snelting's definition of a circle. The conventional Chinese translation of Euclid's geometry elements (幾何原本) is something seemingly authoritative and certain (see the earlier Chinese translation in ca. 1600 AD by Jesuit missionary Matteo Ricci [利瑪竇], Ming dynasty agronomist, astronomer, mathematician, and bureaucrat Xu Guangqi [徐光啓]),[26] and this only mirrors the phallogocentric genealogy of Chinese translation in the mathematical and scientific field. We have sought alternatives that shed new light on the expression of geometry and other key terms and have sought to question the naming of attributes and functions. Upon the initial gathering of volunteers for the translation of the Traditional Chinese version, several participants found inspiration in the concept of "molecular translation" as articulated by Chun-Mei Chuang.[27] Molecular translation posits two crucial arguments. First, it emphasizes scrutiny of the dynamics involved in elucidating

25. Alexis Pauline Gumbs, "In Case You Wanted to Save the Planet," *Transition* 129 (2020): 46–54.
26. Matteo Ricci (利瑪竇) et al., "Euclides 歐幾里得, Ji he yuan ben 幾何原本" (ca. 1600 AD), Max Planck Institute for the History of Science, https://libcoll.mpiwg-berlin.mpg.de/libview?url=/mpiwg/online/permanent/library/02NT95YF/pageimg&start=21&pn=23&mode=imagepath.
27. Chun-Mei Chuang, 張君玫, 後殖民的陰性情境：語文、翻譯和慾望, 群學出版 [*The Postcolonial Feminine Situation: Language, Translation and Desire*] (Taipei: Socio Publishing, 2012).

the practices of individual translators, as well as considering the broader cultural translation trends within the social and historical contexts within which they operate. Second, it underscores the agency of heterogeneous elements in cultural exchange and translation, acknowledging that concepts are not rigid objects but interconnected with underlying power structures. Consequently, some pivotal questions arise: Why do the volunteers persist in translating *Aesthetic Programming* into Traditional Chinese? What elements should the translation incorporate to resist the prevailing power structures? Moreover, what constitutes the primary influential force within the publishing industry in Chinese software studies?

Collective Translation

For the translation of *Aesthetic Programming*, we forked a copy from the original repository and released the process of translation to others. In keeping with the collective knowledge production model of open-source projects, such as Wikipedia and Wikidata, the Chinese localization of *Aesthetic Programming* was initiated by a group of volunteers in 2021. The primary approach involved those with diverse backgrounds claiming responsibility for different chapters and undertaking the translation process in distributed form. Individual strategies varied, with some opting for direct translation and others using machine translation followed by proofreading and reediting. However, similar to many open-source projects, the initiative encountered stagnation in its first year of implementation. Since 2022, the independent publishing house ZIMU CULTURE joined the project, receiving financial support from the Digital Art Center, Taipei. In response, the core members of the project discussed altering the working methods and setting some tentative deadlines. The publishing house employed a full-time translator, Yi-Hsuan Kuo, as the lead to translate all chapters of the book into Traditional Chinese (excluding the machine-generated "Afterword" chapter in which translation comes together with machine learning). The project's core members then took over copyediting and proofreading, while also publicly releasing the translated drafts on the aforementioned HackMD platform. All readers were invited to participate in the editing process.

In an interview the translator Yi-Hsuan Kuo mentioned that participating in this project was very different from other translation projects.[28] Typically, she has undertaken localization translation for technology companies' products or copywriting projects, and the clients usually do not go into detailed discussions about the content.

28. Yi-Hsuan Kuo, Google Meet interview with Chia-Lin Lee, December 9, 2023.

However, in the case of our project, the core team had close discussions, providing her with a clearer conceptual understanding of the book. For example, in chapter 8, "Que(e)ry Data," there are many concepts related to queer studies, and dialogue with the core team helped Kuo grasp the purpose of this chapter more fully. Furthermore, compared to traditional translation/publishing processes, in which the manuscript is not seen by readers until it has been edited, proofread, and published, this project takes a quite different and more open approach. Whenever the lead translator completed a chapter, the draft was published on HackMD for people to read and freely modify. Kuo sees herself as "someone providing a draft" and "draws the initial shape of the house, so that everyone can make their own changes."[29] In practical terms, Kuo believes that there is still much discussion needed, especially in determining the translation of technical terms. She notes that "more than half of them still require further discussion, and some commonly agreed-upon translations are not very accurate." For example, when the term "code" is used as a verb, people often say "coding" or "寫" (xiě, writing) code; when used as a noun, they directly use "code," or the Chinese pronunciation "扣" (kòu, pronounced similar to "code").

Realizing that terms like this are significantly "lost in translation" in the Taiwanese-Chinese context has informed the organization of two workshops to further explore these issues and attempt to develop some collective translation methods. Translating key terms or indeed any text not only involves finding the best way to recreate its meaning and value in another language but also requires navigating the intersection of two distinct epistemic territories. Our goal for the workshops was to move beyond the one-way street of literal translation and, through translation's cognitive and social activities, establish a two-way or multi-way thoroughfare for individuals engaging with others who possess different epistemologies. This attention to plurality also signals our approach to queer normalized and standardized translation practices. These workshops were designed to be speculative in this way, aiming to explore the coming together of forking and translation and to open up the potential of working in more open and collective forms.

Workshop 1 (Taipei)

When the working group for *Aesthetic Programming* chose the primary translator, members emphasized the need to use workshops to maintain a diversity of perspectives and approaches. Participants in the workshop had the opportunity to embody distinct

29. Ibid.

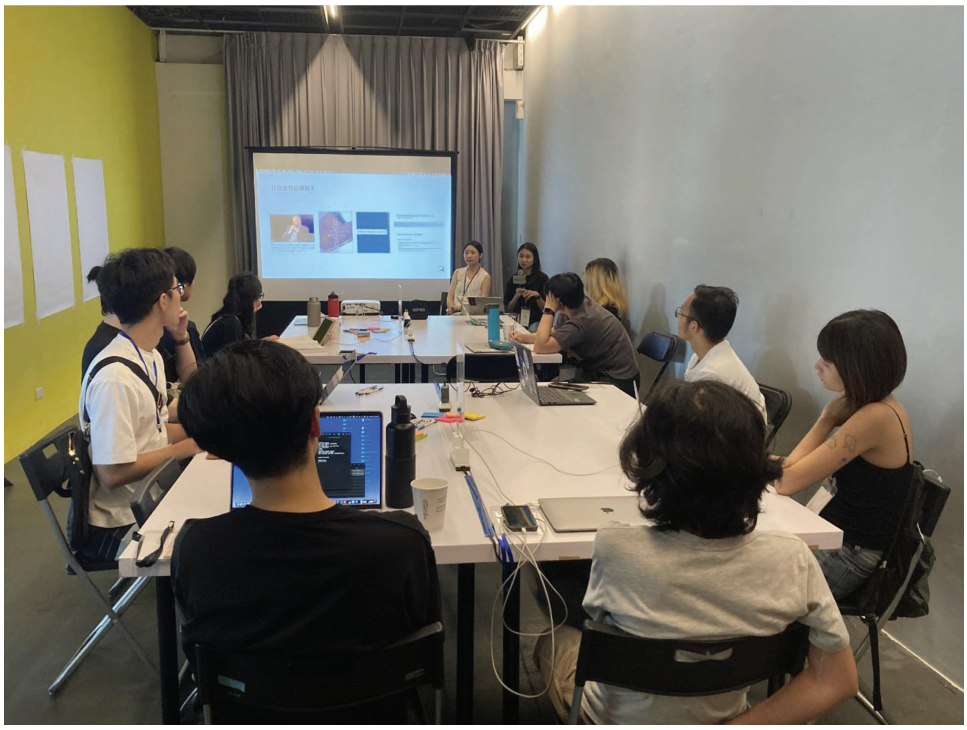

Figure 9. The workshop hosted at Digital Art Center, Taipei, August 3, 2023.

voices and engage in the practice of molecular translation. The first translation workshop in Taiwan took place on August 5, 2023, at the Digital Art Center, Taipei, with more than 10 participants (see Figure 9). The backgrounds of the participants were diverse, including high school teachers, students interested in feminism, and active members of the open-source community. One part of the workshop involved inviting participants to write Chinese translations of several key concepts from the book based on their own interpretations.[30] On the registration form for the workshop, we listed some key terms to be discussed based on the glossary written by the translator (see Figure 10).[31] Participants were asked to select at least three "problematic terms" they would most like to discuss collectively with others. Even if they had not yet read the content of the book, they could choose terms based on their daily usage or situations they had previously encountered. The most popular terms selected by participants were "coding," "sketch," and "fork."

30. This approach had been previously employed in the workshop for the Traditional Chinese translation of Astrida Neimanis's *Bodies of Water*, led by Shih-yu Hsu and Wu Renyu (who was also one of the earliest members of the team). Further details can be found in the presentations of these two members in the Asian Feminist Studio for Art and Research.

31. The translated sections completed at that time were the preface to chapter 2. The registration form can be found at https://forms.gle/MZXdSc2PZWjjjMBZ8.

Figure 10. Participants' translation feedback on the terms chosen collectively: coding, sketch, and fork.

The process of collective translation began with a discussion of the Chinese translation of "coding." In the Taiwanese context, it is common to directly use the English term "coding" to refer to programming. In Simplified Chinese translations, the terms "编程" (biānchéng) or "编码" (biānmǎ) are often employed. Most participants chose to use "寫程式" (xiě chéngshì) in their translations, which, structurally in Chinese, is less concise, as "寫" (xiě) is a verb and "程式" (chéngshì) is a noun. However, this choice emerged as a consensus among the participants in this workshop. One participant creatively proposed the term "刻" (kè) for programming, adopting a phonetic translation where "刻" sounds similar to "code." The original meaning of "刻" is the action of carving or engraving. The translation "刻程式" (kè chéngshì) can be understood as a response to the aesthetic potential associated with writing code in the spirit of the book.

Similar to coding, the term "sketch" is often directly borrowed from English by users in the Traditional Chinese context. Many participants provided direct translations of "sketch" into Chinese, such as "草稿" (cǎogǎo, draft), "素描" (sùmiáo, sketch), or "草圖" (cǎotú, unfinished drawing). Our focus shifted towards how to translate "sketch" in the context of programming to better align with its original meaning. Some participants expressed the view that programming is more akin to writing a language, suggesting that the meaning implied by "草圖" might not be precise enough. However, others

pointed out that p5.js is a library originally designed for drawing. Given that the fonts for the book were also generated using programming, adopting "草圖" as the Chinese translation may not be entirely inappropriate.

The most significant divergence of opinion focused on the key concept, "fork." Many participants expressed a desire to differentiate between "fork" and "branch." The most common translation for fork in Traditional Chinese is "分叉" (fēnchā), which can be used as both a verb and a noun. One participant suggested using the character "岔" (chà), emphasizing a sense of divergence in paths between different versions, as "叉" might not convey an extension. Two participants proposed "開枝" (kāizhī), believing it conveyed a sense of sustainability and vitality, though there were concerns about it being too close in meaning to "branch." Another participant suggested "複刻" (fùkè), where "複" implies copying or reproduction, and "刻" continues the translation used in coding. It's worth noting that "複刻" traditionally refers to the reproduction of rare or out-of-print works in the Chinese context. This choice introduces a nuanced perspective, connecting to the idea of replicating and preserving, while also maintaining a link to the terminology used in coding.

Workshop 2 (London)

Subsequent to the Taiwan workshop, the team organized another workshop in London, a multicultural city with a large Asian community and a diverse language base.[32] The event, entitled "Aesthetic Programming - Forking Workshop," took place at the Delfina Foundation, a non-profit organization dedicated to artist residencies (see Figure 11). The call for the workshop reached participants through the networks of Delfina, the Creative Computing Institute at the University of the Arts London, and the Digital Art Center in Taipei. The workshop attracted around 25 participants, with over one-third stating that Chinese was not their first language, and involved individuals with diverse abilities in both translation and coding.

Drawing inspiration from the concept of "fork," the workshop participants were encouraged to branch off content into various forms, such as body language, images, sounds, annotations, and so on, *queering* the existing binary between original text and translation, English and its Chinese translation. We selected the chapter "Infinite Loops" for our translation experiment, introducing some of its main ideas and providing participants with two distinct exercises aimed at exploring diverse approaches to translation: "collective bodily performance" and "individual multimedia interpretation."

32. Details of the "Aesthetic Programming - Forking Workshop" can be found at https://www.delfinafoundation.com/whats-on/aesthetic-programming-forking-workshop/. Slides for the introduction to the workshop are at https://hackmd.io/@aesthetic-programming/workshop2_london#/.

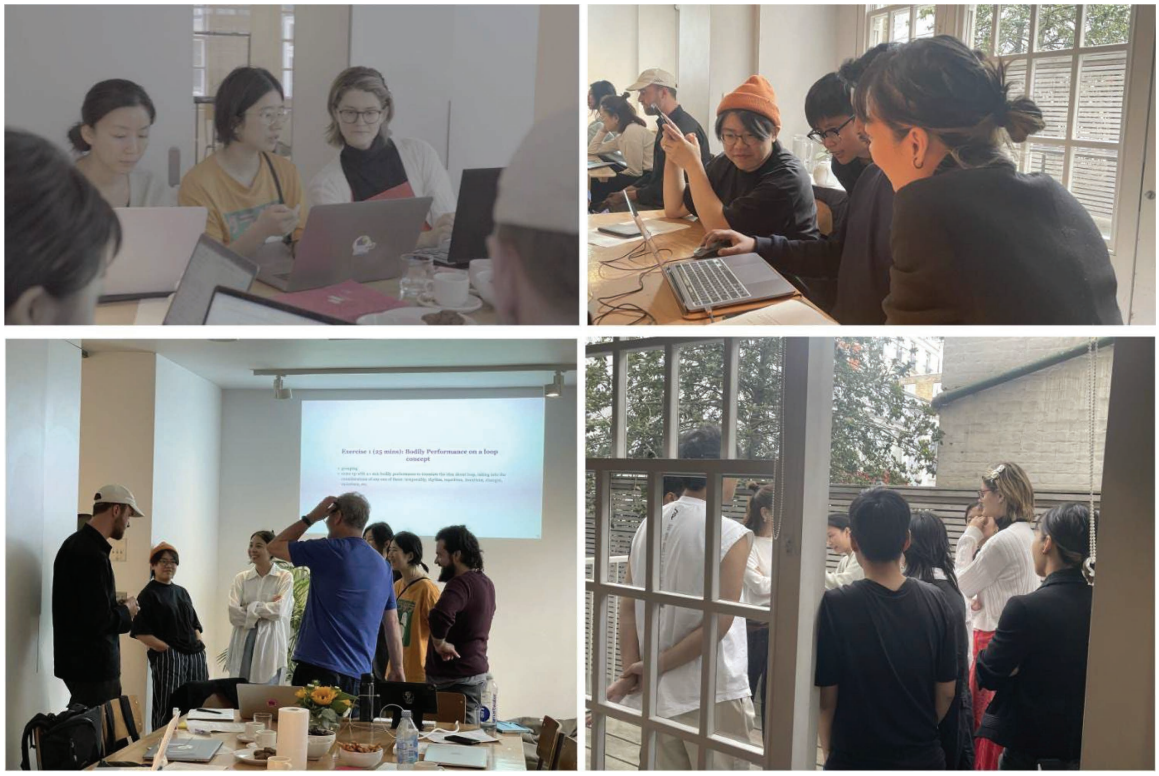

Figure 11. "Aesthetic Programming - Forking Workshop" at Delfina Foundation, London, September 13, 2023.

In the first of these, participants were divided into two groups. Following discussions within their respective groups, they were tasked with creating a one-minute bodily performance to convey the concept of a loop, with elements such as temporality, rhythm, repetition, iterations, changes, and variations to be considered. Translation became a collaborative decision, where the group members invented their own notions of loop and the parameters of the algorithm to set the loop's condition, such as when to halt. The concept of loop was mediated through the participants' collective movement and bodies (see Figures 12 and 13), with others as spectators to witness when the specific conditions were met (as in the case of stopping a while loop). Computational logic was both translated and embodied by the workshop participants.

In the second exercise, participants were directed to immerse themselves in the text, before embarking on an individual brainstorming session at their computers. They were granted the liberty to not only translate but also refine translations, adding annotations, integrating images, sounds, or multimedia that encapsulated their interpretations of the text.[33] During the process, those proficient in either Chinese, English, coding, or using

33. Some examples can be found at https://hackmd.io/@aesthetic-programming/ver2_screenshots.

Figure 12. Group 1's collective bodily performance interpreting "infinite loop" in the London workshop.

Figure 13. Group 2's collective bodily performance interpreting "infinite loop" in the London workshop.

the HackMD interface were encouraged to assist others. Some participants explored differences in Chinese translations based on regional variations, such as those used in Taiwan versus those used in mainland China or Hong Kong; others transformed images into a looping GIF through CSS files. Throughout this process, participants invested considerable time in continuous online translating, learning together, and delving deeper into the source texts, as well as contributing additional insights, comments, and updates. Texts from the book metamorphosed into a chimera, a living composition that encapsulated the diverse perspectives and creative contributions of its participants.

An open-source ethos and queer-feminist approach were woven into the translation process and participants' contributions. Individuals with varying language and coding proficiencies disrupted the conventional power dynamics inherent in binary translation, and the workshop served as an experimental platform to address the social and cultural dispossession of people and their histories.

Queering Translation and Forking

In the workshop, we forked the text from *Aesthetic Programming* and collectively retranslated it using open-source platforms that mark the traces of modification. Also, the physical bodily translation of "loop" allowed participants to transcend literal, binary translation, introducing corporal experience into the process. These ideas become our research method to explore the notion of queer translation, mindful of the way that queer politics has informed the way that terms can be reappropriated, as a means to "talk back" to some of the source codes of oppression (the word "queer" is a case in point). The adoption of a slow and decentralized translation process, grassroots collaborations, and transnational participation has not been merely a critical reflection on the normative formations of coding, writing, publishing, and translation, but a deliberate attempt to disrupt prevailing power dynamics, especially concerning dominant forms of authorship and language use. Consequently, we ask, Can we think of forking as a means to account for queer spatial and temporal forms of difference? How can we emphasize the importance of situated knowledge, inherited language politics, and embodied experience as alternative narratives that resist universality, foreclosure, and singularity? How to perform "a queering of the study of software through the application of anti-normative, multiple, and decentered tenets?"[34] And, of course, how to extend this to translation?

34. Daniel G. Cockayne and Lizzie Richardson, "A Queer Theory of Software Studies: Software Theories, Queer Studies," *Gender, Place & Culture* 24, no. 11 (2017): 1590, https://doi.org/10.1080/0966369X.2017.1383365.

Heather Love's work underscores the importance of acknowledging the negative emotions experienced by marginalized groups.[35] The concept of shame is particularly emphasized because it serves as a counterpoint to building "pride," an idealist affirmation that may be appealing to oppressed groups. When delving into the realm of English-Chinese translation, it becomes apparent that the challenges extend beyond linguistic differences, encompassing diverse gender, racial, ethnic, and cultural backgrounds. English boasts 380 million first-language speakers and one billion second-language speakers, while Chinese encompasses 989 million first-language speakers and 199 million second-language speakers. This dominance often obscures the diversity and the unique trajectories of second-language acquisition from each group, which is a journey filled with trials, errors, and emotional intricacies. Effective cross-cultural communication can be a source of pride, whereas the stutters, accent, and linguistic hurdles not only evoke a sense of shame but also imply the asymmetrical power relations deep-rooted in contemporary colonialism. This disparity is particularly evident in the realm of coding. The imbalanced political structure in the technology field is starkly evident in the universal imperative to learn English for coding, contrasted against the glaring omission of Indigenous languages and epistemologies.

Translation acts as a bridge spanning across linguistic rivers, while queer translation disrupts the conventional norms when navigating binary landscapes, marking the cultural possibilities of linguistic amalgamation, creativity, change, diversity, and wonder within languages. It delves into the imprints left by cultural and linguistic transitions, marks that are poignant reminders of the psychological and physical journeys undertaken to render shame obsolete. These marks also signify where centralized systems and conventional nation-building ideologies intersect in the global community. Through queer translation, these experiences archive both the feelings of exclusion and the positive and negative consequences of yearning for, or resisting against, community affiliation. In Michael Warner's conception, queer stands "against the regimes of the normal," evoking a colonial history of insult and violence.[36] By naming and embracing queerness, social outsiders form decolonization alliances. These alliances are not a battle against Chinese or English; rather, they challenge the authoritative imposition of linguistic norms and cultural authenticities. For many individuals, the reality of polylinguistic translation is an intrinsic part of their everyday existence; for example, both Taiwan and Hong Kong are using Chinese characters, while Taiwan comprises 19 Indigenous languages and a variety

35. Heather Love, *Feeling Backward: Loss and the Politics of Queer History* (Cambridge, MA: Harvard University Press, 2007), https://doi.org/10.2307/j.ctvjghxr0.

36. Michael Warner, *The Trouble with Normal: Sex, Politics, and the Ethics of Queer Life* (New York: Free Press, 1999; Cambridge, MA: Harvard University Press, 2000).

of Sinitic languages, and people from Hong Kong mostly speak English and Yue Chinese (Cantonese). In these contexts, the process of translation is not just a technical exercise but a reflection of complex cultural dynamics and social struggles. The prevailing focus of translation often underscores the marking of these linguistic interactions, bringing to the forefront the exclusionary experiences that arise from any deviation from established linguistic norms.

To queer translation, in this sense, emerges as an experimental laboratory for crafting a literary Frankenstein—a reborn political trans body that comprises organic, ethnographical tissues. At the same time, the open-source platforms are left with numerous efforts to reinvent the ties between marginalized experience and the predominant digital sphere of big tech. Queering translation becomes an experiment in redefining national identity, exploring the possibilities of creating, remaking, and even failing an anti-language language and an anti-nationalist nation.

Endless Loop

While the *Aesthetic Programming* book remains purposefully stuck in an endless loop, we propose forking as a becoming of a collective translation practice to queer normative publishing processes. As established in this article, we hope, forking fosters a queer reimagining of form and content that challenges the normative boundaries of publication. Just as authorship of academic texts is rooted in the normativity of production, with associated values of individualism, originality, and authenticity at its core, so, too, translation rarely breaks out of similar orthodoxies. Like us, Eva Weinmayr and Femke Snelting have recently argued for translation to be considered as part of dispersed economies of "re-use," in which authorship is distributed across multiple agents in ways that expose power differences.[37] These collective conditions of re-use are further explored and made explicit in the CC4r license which develops out of other anti-copyright and free culture activism to reject reductive notions of individual or original ownership. To quote:

> Considering the Collective Conditions for (re-)use involves inclusive crediting and speculative practices for referencing and resourcing. To consider the circulation of materials on commercial platforms as participating in extractive data practices; platform capitalism appropriates and abuses collective authorial practice. . . . To consider

37. Eva Weinmayr and Femke Snelting, opening keynote at *Sensing Dissensus*, October 25–26, 2023, organized by European Artistic Research Network (EARN) at HDK-Valand Göteborg, https://evaweinmayr.com/work/hdk-valand-goteborg-opening-keynote-sensing-dissensus/.

> the potential necessity for opacity when accessing and transmitting knowledge, especially when it involves materials that matter to marginalized communities.[38]

We hope it is clear how our collective translation resonates with these principles. In our pursuit of a Taiwanese web version, we have actively tried to engage with contested terms and situations and invited contributions from people from diverse backgrounds, documenting content and technical changes as we go. This collective and iterative approach challenges norms and fosters a shared understanding of translation but admittedly still operates within the extractive logic of capitalist production that tends to prioritize efficiency and value. Our unashamedly *slow* process defies optimization and profitability; suffice to say that many of the core members provide in-kind contributions, and the funding that we received from Digital Art Center, Taipei has been just enough to pay for the translator and workshops.

These tensions between our desire to experiment and the lived reality of precarious production underscore the challenges inherent in intervening with established conventions. Due to limited resources and capacities, we can only split this project into various (yet unknown) phases based on our capacities at any one time, while acknowledging the fact that having more workshops would be beneficial for the ambitions of the translation project more broadly. We have been thrilled to work together over the last two years and witness the first phase of the project come into being, with the web version generated by computational scripts launched as we write at the close of 2023. A printed book version will follow in the new year. By adopting the forking concept to the book's translation, we not only are open to timely updates, but see it as a necessary condition for the project to be re-used and re-imagined by others. The book and its translation can only ever be an unfinished project in this way, just as there can be no original source of knowledge or authority over the ideas contained therein.

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38. See the published version of the Collective Conditions for Re-Use License (CC4r) at https://gitlab.constantvzw.org/unbound/cc4r.

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