

The Blooming Archive

Yawei Zhao
The Hong Kong University of Science
and Technology (Guangzhou)
Guangzhou, China
yzhao099@connect.hkust-gz.edu.cn

Zheng Yuan
Self-reliant Artist
Nanchang, China
circleartlab@gmail.com

Jiang Ke
Independent Researcher
Shanghai, China
jiangke5168@gmail.com

Zuona Chen
The Hong Kong University of Science
and Technology (Guangzhou)
Guangzhou, China
zchen163@connect.hkust-gz.edu.cn

Jieyu Wang
BGI Research
Shenzhen, China
wjybio@163.com

Anca-Simona Horvath*
The Hong Kong University of Science
and Technology (Guangzhou)
Guangzhou, China
Aalborg University
Aalborg, Denmark
ancahorvath@hkust-gz.edu.cn

Pan Hui*
The Hong Kong University of Science
and Technology (Guangzhou)
Guangzhou, China
The Hong Kong University of Science
and Technology
Hong Kong, China
panhui@ust.hk

Abstract

By inviting audiences to interact with evolving digital orchids — each accompanied by inspectable lineage traces and relational links, represented by real DNA data — this artwork makes orchid biological data legible as a situated encounter. *The Blooming Archive* invites audiences to reflect on (1) how classifications in the sciences of the natural world are produced, and (2) how global trade and asymmetries of power have historically shaped these classification practices. *The Blooming Archive* deals with human–plant relations and aims to spark conversations on how to reconceive the ways in which humans relate to other species and inform more-than-human centered design practices.

CCS Concepts

• **Human-centered computing** → *Interaction design*.

Keywords

More-than-human design, Human-plant Relation, Bio-design, Bio-digital design

ACM Reference Format:

Yawei Zhao, Zheng Yuan, Jiang Ke, Zuona Chen, Jieyu Wang, Anca-Simona Horvath, and Pan Hui. 2026. The Blooming Archive. In *Creativity and Cognition (C&C '26)*, July 13–16, 2026, London, United Kingdom. ACM, New York, NY, USA, 4 pages. <https://doi.org/10.1145/3803784.3809255>

1 Introduction

Across the history of global plant trade, certain plants have not only been transported as ornamental life but also remade as objects that can be seen, compared, priced, and officially described [8]. What becomes “known” about a plant is therefore never only a matter of living nature, but is shaped by who gets to collect, document, and circulate it. In this way, practices of collection influence global trade, and together they have effects on classificatory systems for the living natural world [2]. Among traded plants, orchids offer a particularly revealing lens on these evidentiary politics [4]: long entangled with collection, desire and commercial value (together with scientific description), they make visible how authority and evidence have historically shaped what plants are allowed to become [2, 9, 10].

The history of plant trade is also connected to colonization, as exotic plants found in colonies became collectibles for elites [10]. In this context, *The Blooming Archive* invites audiences to reflect on (1) how classifications in the sciences of the natural world are produced, and (2) how global trade and asymmetries of power have historically shaped these classification practices.

The artwork represents a human–plant encounter oriented toward learning rather than one based on mastery or control of the natural world [3, 5, 7]. Audience members are invited to engage with digital representations of orchid variations as the primary



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.
C&C '26, London, United Kingdom
© 2026 Copyright held by the owner/author(s).
ACM ISBN 979-8-4007-2583-8/26/07
<https://doi.org/10.1145/3803784.3809255>

mode of engagement. In doing so, *The Blooming Archive* invites audiences to reflect on how humans might relate to another living species, fostering biophilia and care for the natural world.

2 Concept

During the Victorian era (roughly from 1840 to the early 1900s), orchids became one of the most sought-after ornamental plants in global trade. The terms “orchidelirium” and “orchid fever” captured the enthusiasm — often bordering on obsession — among European upper classes, who financed explorers to search worldwide for new orchid varieties [1]. In this period, orchids crossed borders in boxes, becoming exotic commodities to be traded and displayed [6]. At the same time, orchids entered London’s glasshouses and institutional collections, where they were catalogued, visually documented, labeled, and named within systems that defined what counted as “discovery” and whose knowledge became official [12]. More than a matter of display, these practices established how orchids should be made knowable — through indexing protocols, naming conventions, and collection records that determined what counted as valid evidence of a “new” variety [11]. In turn, they privileged certain forms of documentation and certain narrators (collectors, elites, and institutions) as the ones whose descriptions and claims of discovery became part of the official record. That logic — visibility and value being shaped by who controls documentation — still echoes in how orchids are studied, traded, and represented today. Rather than claiming that power reshapes nature itself, *The Blooming Archive* foregrounds how power has shaped what counts as nature in practice: the regimes of documentation, classification, and exchange through which orchids become visible, nameable, and valuable. Orchids remain among the most intensively studied and commercialized ornamental plants [4], illustrating how “exotic” plants have been standardized and marketed, and, more broadly, how histories of human dominion have shaped relations with plant and natural life.

Building on this history, our artwork asks what it would mean to encounter orchids otherwise: to let evidence appear as something people can engage with—traces that link form to lineage and to other orchids— and to frame the interaction as an encounter guided by visible traits, not an act of rewriting life at the source.

The Blooming Archive invites audiences to bring forth digital orchids from a shared pool of global orchid images, anchored by an ancestral genomic reference—so each emerging form can be traced through lineage and relation rather than fixed classification. During the encounter, audiences shape the orchid at the level of visible traits (e.g., form and pattern) instead of intervening in the genome itself. Importantly, the interaction is with a representation of orchid variation and its evidence traces, designed to prompt reflection on histories of classification and trade, rather than to invite participants to manipulate life as such. As a new variation takes shape, the work reveals layered traces as part of the orchid record: trait-linked gene sequence segments, relational links to other generated forms, and optional notes or short narratives added during the process.

In this work, the audience’s role is not to control plant life at its source. Audiences guide the encounter at the level of visible traits—what can be perceived, compared, and described—without

treating the orchid’s underlying genome as something to be rewritten. This keeps agency at the level of attention and interpretation rather than biological domination, positioning the orchid as an entity that can respond and unfold within constraints, not a material to be engineered to specification.

At the same time, the digital orchids here are not fixed specimens to be named once and stabilized. They are presented as persistent digital entities—forms that can be revisited, that vary across successive encounters, and whose relations update as the archive grows. Each orchid appears with layered traces that invite inquiry: cues that link appearance to lineage and connect one form to others across an evolving archive. What counts as evidence, then, is not an institutional label, but what audiences can inspect as the orchid takes shape—how it relates to ancestry and how it sits among neighboring forms over time.

3 Development and Execution of *The Blooming Archive*

We implemented this concept in multiple steps. First, we built a custom AI model trained on two complementary data sources: (1) the genome sequence of *Apostasia shenzhenica*, a basal sister lineage to the rest of Orchidaceae, used as an ancestral reference for shared genomic architecture across extant orchids [13]; and (2) a multi-source corpus of orchid images assembled from public collections of botanical gardens worldwide, together with voluntarily contributed personal photographs. In total, the corpus comprises 300 images drawn from 15 botanical-garden collections and community contributions, curated to cover diversity in visual conditions and institutional provenance. In our image collection, we only selected images that are open access or have explicit permission for reuse. This design helps keep each generated orchid traceable to both its genomic lineage and the broader visual record, drawing on multiple botanical-garden archives and extended through voluntary personal contributions rather than relying on any single authority.

The artwork is structured around three coupled components: orchid generation, evidence presentation, and relational browsing. Orchid generation produces new variations in response to trait cues, while keeping each form anchored to an ancestral genome reference so that its lineage remains traceable. The work then moves to evidence presentation, where each generated orchid is accompanied by trait-linked gene sequence segments that can be inspected as sequence-level traces behind the visible changes. Building on these traces, relational browsing places each orchid within the evolving archive by showing links to other generated forms based on shared trait patterns, lineage proximity, and overlapping gene-module signatures. At this stage, the orchid record may also include a name and a short contextual note. A QR code provides access to a revisitable archive entry containing the rendered form, the selected trait cues, the note, and the orchid’s relational links within the archive.

In this way, the artwork reframes classification as an open, traceable process rather than a fixed decision: each orchid is encountered through what can be inspected, connected, and carried forward. By making lineage evidence and relational context visible—and allowing it to be carried beyond the installation—the work shifts attention from institutional labels to situated inquiry, and invites

a less possessive human–plant relation in which digital orchids persist as evolving presences within a shared archive.

4 Audience Interaction

The audience interaction unfolds through three consecutive interface stages: trait selection, relational viewing, and archive entry.

The first stage focuses on shaping a new orchid through visible trait selection. The experience begins with a baseline image of the ancestral orchid on the front control touchscreen, together with a set of interactive trait controls and a genome information panel (Figure 1). Audience members adjust visible trait characteristics of the orchid through sliders, including lateral petal, lip, pattern, sepal, and stigma. As the sliders shift, the genome panel updates in real time by highlighting trait-associated sequence segments. These highlights can be expanded to inspect the underlying nucleotide strings, allowing sequence-level traces to be read alongside the changing morphology. Once the audience member confirms the selections, the system generates a new orchid variation according to the chosen trait profile. This generation process may take up to 10 seconds, during which the control interface indicates that the new orchid is being synthesized. The generated orchid is then displayed on both the control and display screens.

The second stage focuses on situating the generated orchid within the evolving archive through relational viewing. Here, the newly generated orchid is displayed together with a relational map that places it in relation to the ancestral orchid and to orchids produced in previous interaction rounds. The orchid is not presented as an isolated specimen; rather, this view emphasizes its position within an evolving archive, allowing the audience to understand each new form through shared lineage cues and its relations to neighboring generated orchids.

The third stage focuses on creating an archive entry that can be carried beyond the installation. Audience members are invited to add a name or a short note to the orchid they have generated, after which the system produces a QR code linking to a re-visitable online entry for that orchid. The online record contains the generated form together with its selected trait profile and its relational position within the growing archive, which audience members can later access on their own mobile devices after experiencing the installation.

Once the QR code is generated and scanned, the front-end interface resets to the initial state for the next audience member, while the archive retains previously generated orchids and continues to expand through subsequent audience participation.



Figure 1: The interfaces of trait selection stage. *Left: the control screen.; Right: the display screen.*

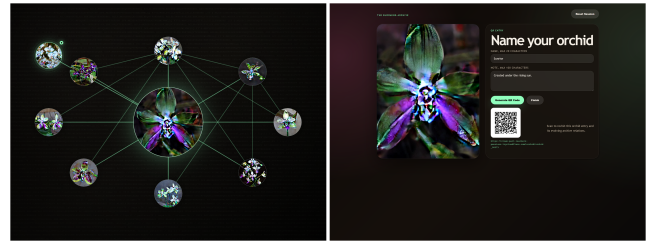


Figure 2: *Left: Interface for the Relational Viewing stage on the display screen. Right: Interfaces for the Archive Entry stage on the control screen.*

5 Documentation

The Blooming Archive is designed as a dual-display installation consisting of a front control touchscreen and a rear display for presenting the generated orchid and its position within the evolving archive. The front screen supports trait selection, trace inspection, annotation, and QR-code generation, while the rear display provides a shared viewing surface for the generated orchid and its relational map.

The installation is intended to support both individual interaction and surrounding observation. In its preferred configuration, the work is presented with a freestanding rear display and a touchscreen mounted on a stand in front. At the same time, the system can be adapted to different exhibition conditions in consultation with the install team and Art Chairs, including variations in display size and spatial footprint, while preserving the core interaction flow across the three stages.

The work therefore does not depend on a single fixed screen format. Larger displays support greater shared visibility of the generated orchid and archive relations, whereas more compact configurations can still maintain the essential experience of trait selection, relational viewing, and archive entry. Figure 3 shows a conceptual representation of the installation layout.

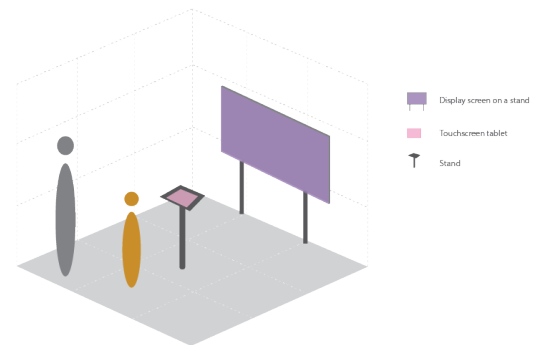


Figure 3: Conceptual installation layout of *The Blooming Archive*, showing the front control touchscreen and rear display.

Acknowledgments

This work was supported in part by the National Key Research and Development Program of China under Grant No. 2024YFC3307602, and the Guangdong Provincial Talent Program, Grant No. 2023JC10X009.

References

- [1] Sarah Bilston. 2025. *The Lost Orchid: A Story of Victorian Plunder and Obsession* (1st ed ed.). Harvard University Press.
- [2] Geoffrey C. Bowker and Susan Leigh Star. 2008. *Sorting Things out: Classification and Its Consequences* (1. paperback ed., 8. print ed.). MIT Press.
- [3] Donna J. Haraway. 2016. *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press. [jstor:j.ctv11cw25q](https://www.jstor.org/stable/j.ctv11cw25q) doi:10.2307/j.ctv11cw25q
- [4] Amy Hinsley, Hugo J De Boer, Michael F Fay, Stephan W Gale, Lauren M Gardiner, Rajasinghe S Gunasekara, Pankaj Kumar, Susanne Masters, Destario Metusala, David L Roberts, Sarina Veldman, Shan Wong, and Jacob Phelps. 2018. A Review of the Trade in Orchids and Its Implications for Conservation. 186, 4 (2018), 435–455. doi:10.1093/botlinnean/box083
- [5] Anca-Simona Horvath, {Alina Elena} Voinea, and Radu Arieșan. 2025. Bio-Crafting Architecture: Experiences of Growing Mycelium in Minimal Surface Molds. *Sustainability (Switzerland)* 17, 15 (Aug. 2025). doi:10.3390/su17156835
- [6] D. Mabberley. 2025. *A Cultural History of Plants in the Nineteenth Century*. Bloomsbury Academic.
- [7] Michael Marder. 2013. *Plant-Thinking: A Philosophy of Vegetal Life*. Columbia University Press.
- [8] Vibe Nielsen. 2023. The Colonial Roots of Botany – Legacies of Empire in the Botanic Gardens of Oxford and Kew. 38, 6 (2023), 696–712. doi:10.1080/09647775.2023.2269222
- [9] Londa Schiebinger. 2004. *Plants and Empire: Colonial Bioprospecting in the Atlantic World*. Harvard University Press. <http://www.jstor.org/stable/j.ctvk12qdh>
- [10] L.T. Smith. 2022. *Decolonizing Methodologies: Research and Indigenous Peoples*. Bloomsbury Academic. <https://books.google.com.sg/books?id=isioEAAQBAJ>
- [11] Lynn Voskuil. 2017. Victorian orchids and the forms of ecological society. *Strange science: Investigating the limits of knowledge in the victorian age* (2017), 19–39.
- [12] Tim Wing Yam and Joseph Arditti. 2009. History of Orchid Propagation: A Mirror of the History of Biotechnology. 3, 1 (2009), 1–56. doi:10.1007/s11816-008-0066-3
- [13] Guo-Qiang Zhang, Ke-Wei Liu, Zhen Li, Rolf Lohaus, Yu-Yun Hsiao, Shan-Ce Niu, Jie-Yu Wang, Yao-Cheng Lin, Qing Xu, Li-Jun Chen, Kouki Yoshida, Sumire Fujiwara, Zhi-Wen Wang, Yong-Qiang Zhang, Nobutaka Mitsuda, Meina Wang, Guo-Hui Liu, Lorenzo Pecoraro, Hui-Xia Huang, Xin-Ju Xiao, Min Lin, Xin-Yi Wu, Wan-Lin Wu, You-Yi Chen, Song-Bin Chang, Shingo Sakamoto, Masaru Ohme-Takagi, Masafumi Yagi, Si-Jin Zeng, Ching-Yu Shen, Chuan-Ming Yeh, Yi-Bo Luo, Wen-Chieh Tsai, Yves Van de Peer, and Zhong-Jian Liu. 2017. The Apostasia Genome and the Evolution of Orchids. 549, 7672 (2017), 379–383. doi:10.1038/nature23897