Recursive Documentary Design and an Awareness of the Mechanism

Wayne deFremery
Dominican University of California, wdefremery@gmail.com

Follow this and additional works at: https://ideaexchange.uakron.edu/docam

Part of the Digital Humanities Commons, Interdisciplinary Arts and Media Commons, Korean Studies Commons, Other Arts and Humanities Commons, and the Sculpture Commons

Please take a moment to share how this work helps you through this survey. Your feedback will be important as we plan further development of our repository.

Recommended Citation
DOI: https://doi.org/10.35492/docam/10/2/8
Available at: https://ideaexchange.uakron.edu/docam/vol10/iss2/8

This Conference Proceeding is brought to you for free and open access by University of Akron Press Managed at IdeaExchange@UAkron, the institutional repository of The University of Akron in Akron, Ohio, USA. It has been accepted for inclusion in Proceedings from the Document Academy by an authorized administrator of IdeaExchange@UAkron. For more information, please contact mjon@uakron.edu, uapress@uakron.edu.
This short essay reflects on “Awareness of the Mechanism,” an exhibition curated by Arthur Clay at ETH Zurich in September 2021 that aimed to suggest the material weight of digital documents. Borrowing its title from the introductory chapter of Matthew Kirschenbaum’s book Mechanisms, the exhibition endeavored to present material representations of some of the mechanistic abstractions used to instantiate digital text. To raise awareness about the cultural significance of the mechanisms that produce digital substance, the exhibition was to present sculpture that lent material heft to some of the abstractions that help to constitute textual representations of a sixteenth-century Korean lyric and modern Korean poems from the early twentieth century in digital environments. Several sculptures were made to suggest the creative opportunities digital technologies provide when we wish to make what is important to us available to the future and its distances. They were also meant to be cautionary objects suggesting how radically our new technologies can cleave the future from the past.

Although the sculptures had been produced, the exhibition space in which they were to be displayed was closed due to the global pandemic. In an ironic twist, it was decided that the 3D printed sculpture would be exhibited digitally by enabling anyone aware of the exhibition to download instructions for creating a small paper “dais” on which a 3D representation of the 3D printed sculptures could be displayed by means of augmented reality technologies. The exhibition space and its objects would leave their locale to be received in the studios of art lovers like the cathedral Walter Benjamin (1968) famously describes in “The Work of Art in the Age of Mechanical Reproduction.”

This essay also documents sculpture that was displayed at the 2023 Annual Meeting of the Document Academy, including its relationship to its doppelgangers in augmented reality and some of the technologies that contributed to formulating its physical presence. The aim is to demonstrate how documentary practices can be designed to account recursively for the diversity of ways that cultural objects can be instantiated and made present. The aspiration is to suggest how recursive documentary practices, practices that successively document how heritage objects have been made and made manifest, can enable cultural memory and reveal the creative ways that we care for what we receive as heritage. I also hope to suggest that recursive documentary practice can help to acknowledge the inevitable losses associated with attempts to make what we have received available to the present and the future by means of our reproductions. While the 3D printed objects that were to be displayed in Zurich were viewable at Document Academy’s 2023 annual meeting, the sculpture’s digital representations in augmented reality as they will have been experienced in September of 2021 are no longer extant. Only a few images captured as the exhibition was being prepared remain to suggest the augmented reality experience. Copies of the digital versions of the 3D models remain. They are stored on various hard drives. And the application from Augmented, an augmented reality solutions provider that facilitated the augmented reality experience, is still widely used. However, references to information outside of the control of the curator and me, but upon which the augmented reality exhibition depends, have been lost. Early theorists of digital preservation called these references “Gödel ends” (Cedars Project Team, 2001) after the logician best known for his incompleteness theorems, Kurt Gödel (1906–1978). By recursively documenting some of the documentary technologies that facilitated the creation of modern Korean poems and a sixteenth-century lyric as digital text that can be represented by plastic sculpture remediated through the technologies of augmented reality, I mean to hint at some of the Gödel ends that facilitate presentations of Korean poetic heritage and how recursive documentation can reveal processes the formulate cultural inheritance, as well as some of what is lost during attempts to re-present what has been received.
On Display

Hwang Jini’s “Green Hills and Blue Stream”
Created in 2019, “Hwang Jini’s ‘Green Hills and Blue Stream’, describes the Unicode code points used to represent an eighteenth-century manuscript version of a *sijo* (song lyric/poem) by Hwang Jini,¹ a sixteenth century *gisaeang* (female entertainer) from Korea’s Joseon dynasty (1392–1910). The eighteenth-century manuscript is the earliest extant version of Hwang’s *sijo*. Unicode is a widely used encoding standard that facilitates the creation and distribution of digital text. The Unicode standard does this by assigning numbers, so-called code points, to elements used in the world’s writing systems. The roughly 65,000 code points of Unicode’s Basic Multilingual Plane were mapped to the surface of a sphere. To describe the weave of the network the points create when facilitating a digital transcription of Hwang’s *sijo*, edges were drawn between the code points used to fashion Hwang’s *sijo* as a digital text. The three-dimensional model created by this process was then 3D printed.

![Image of manuscript and 3D model](image_url)

Fig.1. “Hwang Jini’s ‘Green Hills and Blue Stream’. ” *Song of Green Hills* manuscript (1728) containing Hwang Jini’s *sijo* along with 3D model and print. Images by author. With gratitude to the National Hangeul Museum where the *Song of Green Hills* manuscript was photographed.

¹ Korean names and book titles have been Romanized to facilitate the easy discovery of more information about the people and books described.
Kim Sowol’s “Azaleas”

“Kim Sowol’s ‘Azaleas’,” initially created in 2015, describes the Unicode values used to represent the title poem of Azaleas, a canonical book of modern Korean poetry. The book was initially printed in late 1925, and the poetry it contains has frequently been called traditional and romantic. The logic of representing some of the abstractions that can formulate Kim’s poem as a digital text is distinct from the logic used to produce the 3D print of Hwang’s sijo. Rather than suggesting how its Unicode values form a network, “Kim Sowol’s ‘Azaleas’” describes the sequence of Unicode values used to facilitate a digital transcription of Kim Sowol’s “Azaleas.” Edges are drawn between sequentially located code points used to produce Kim’s poem as a digital text. Rather than something that looks like a 3-dimensional network graph, the result is a shape that looks like a tree. Every code point utilized to create a digital transcription of Kim Sowol’s poem can be used to generate a tree-like shape. In the instance on display at the 2023 Document Academy meeting, as well as the one made available as part of the Zurich exhibition, the code
point associated with the syllable *ka* (가) is used. *Ka* is the most frequently appearing syllabic character in Kim Sowol’s poem. Code points representing characters that precede *ka* are drawn as “roots.” Code points representing characters that follow *ka* in Kim Sowol’s poem are drawn as “branches.” As above, once a 3D model was created, it was 3D printed.

Fig. 3. “Kim Sowol’s ‘Azaleas’.” Title poem of *Azaleas* together with 3D model and 3D print. Images by author. With gratitude to Ch’oe Ch’ŏr-hwan for allowing the author to photograph his copy of *Azaleas*. 
Fig. 4 Downloadable instructions for producing “Kim Sowol’s ‘Azaleas’” as an augmented reality experience and image of the augmented reality experience being tested.

Yi Sang’s “Poem No. 4”

“Yi Sang’s ‘Poem No. 4’” combines the descriptive logical of “Kim Sowol’s ‘Azaleas’” with additional documentary techniques. Initially created in 2018, it too describes the Unicode values used to represent “Poem No. 4” by the poet Yi Sang (1910–1937). The Korean-language version of “Poem No. 4” was printed initially in mid-1934 as part of a poetic series called “Crow’s Eye View.” Yi Sang’s poetry is often described as modernist and avant-garde. To describe how Unicode facilitates the digital transcription of Yi Sang’s printed poem, as in “Kim Sowol’s ‘Azaleas’,” “Yi Sang’s ‘Poem No. 4’” is produced by representing the sequentially positioned code points that formulate Yi’s poem as a digital text. However, rather than describing the sequence that situates a single code point used frequently in the digital representation of the poem, every code point is situated in the sequence of code points that precede and follow it. The result is something that looks like a forest. The landscape from which the forest grows is created by representing the roughly 65,000 code points of the Basic Multilingual Plane of the Unicode Standard as a plane in three-dimensional space. The technique is similar to mapping the Basic
Multilingual Plane to the surface of a sphere. However, the locations on the plane associated with
code points used to create Yi Sang’s poem as a digital text rise along a z-dimension according to
how frequently they are needed to create a digital transcription of Yi’s poem. Because numerals
are so frequently repeated in Yi Sang’s poem, one region of the plane rises high above the others.

Fig. 5. Yi Sang’s “Poem No. 4” together with 3D model and 3D print. Images by author. With
gratitude to the Harvard Yenching Library for access to a microfilm copy of Yi Sang’s poem
as it appeared in the July 28, 1934 issue of the Chosŏn Central Daily.
Fig. 6 Downloadable instructions for producing ‘Yi Sang’s ‘Poem No. 4’” as an augmented reality experience. No images of the augmented reality experience are extant.

Fig. 7. Hwang Jini’s “Green Hills and Blue Stream,” Kim Sowol’s “Azaleas,” and Yi Sang’s “Poem No. 4” at the 2023 Annual Meeting of the Document Academy.
**Incompleteness**

Much more can be said about the histories of the Korean texts reproduced and the mechanism by which they are reiterated as part of Korea’s cultural heritage, a cultural inheritance that digital technologies help to make available far beyond the Korea’s historical or modern boundaries. More too can be said, of course, about the algorithms and software created to produce these shapes, as well as the 3D printing technologies used to create the sculptures on display. Each poem / song is iconic in Korea’s cultural tradition. Each, in its own way, is something that has been cared for. This is clear because each has been copied repeatedly—in manuscripts and by industrial presses, by professors professing and students studying for exams—and each time remade.

It can be hoped that the objects included in “Awareness of the Mechanism” and presented at the 2023 Annual Meeting of the Document Academy can stand as examples of the diverse and creative ways that we can care for what we receive as cultural heritage. I hope they also suggest the distinct dangers that attend work devoted to reproducing what we inherit. These exhibitions make use of examples from Korea, but the processes that formulate the poems and songs as cultural inheritance are hardly unique to Korea. By documenting and lending heft to the abstractions that formulate our newer forms of copying, the exhibitions aspire to hint also at older forms of cultural production, their mechanisms, and the lost references upon which they depended.

By recursively documenting what has been received as inheritance and the generative possibilities made available by new reproductive technologies, I hope to have suggested how recursive documentary practices can be designed to enable cultural memory. I also hope to have acknowledged the inevitable losses associated with attempting to make what we have inherited available by means of our reproductions. Juxtaposed with their previous iterations, the printed sculptures representing the digital technologies used to reproduce Korean poems and songs suggest the tremendous exploratory possibilities of digital representation. We feel more keenly what is lost, too. The ink that has been used to formulate the lyrics and poems is nothing like the Unicode values that iterate them as digital objects. It would be catastrophic, of course, to consider the printed sculpture to be the poems or songs. Recursive acts of documentation allow us to understand the inevitable incompleteness of any reproductive description and enjoy the quirky completeness of documentary objects when they are not assumed to be representations. New representations can lend dimensionality to what they represent. They can also be experienced for what they are.

Matthew Kirschenbaum (2008) ends “Awareness of the Mechanism,” the introduction to his book about new media, by writing: “Product and process, artifact and event, forensic and formal, awareness of the mechanism modulates inscription and transmission through the singularity of a digital present” (23). The ending of his introduction is a good place to end this description of some of the material objects present at the 2023 Annual Meeting of the Document Academy. How we modulate the inscription and transmission of what we have received as cultural inheritance is how we make inherited objects present again in the singular moments of the future. Recursively documenting how we modulate our inscriptions enables us to know, if always and only incompletely, something about how we have received what we have inherited, the references upon which inheritance depends, and what has been lost.
References

