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## KIM SO-WŎL'S *CHINDALLAEKKOT* (AZALEAS) AS AN IMMERSIVE ENVIRONMENT

By WAYNE DE FREMERY and KIM JUSUB

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According to English poet Sir Philip Sidney's well-known *Apology*, poetry is meant to instruct and delight. In the spirit of this assertion, our ongoing experiments algorithmically detect patterns in vernacular Korean poetic texts and manifest them creatively in digital environments. Our aspiration is to deepen the discussion of vernacular Korean poetry by enabling engagements with Korean poetic texts that privilege image over discourse, if only temporarily. The aim is to see, quite literally, what Korean poems can be in order to deepen discussions of what they are or might mean. This project extends the authors' previous work by attempting to visualize an entire book of poetry in immersive space as a forest rather than envisioning individual poems as two-dimensional trees. Taking liberties with the theme of the conference where this work was presented for the first time, sensibility and landscape in Korean literature and film, we explore Korean literature *as* landscape.

The performative/deformative processes of computing described here include programmatic morphological linguistic analysis and L-Systems procedural modeling. Specifically, we map the bibliographic and linguistic codes of Kim So-wŏl's canonical *Chindallaekkot* (*Azaleas*, 1925) into three-dimensional digital space to create interactive paintings from Kim So-wŏl's "speaking pictures," to borrow again from Sidney. This is done by expressing linguistic elements in Kim's poems (nouns, adjectives, verbs, adverbs) and their structural bibliographic elements (stanzas, lines, white spaces) in the grammar of L-systems in order to create commands that (re)render Kim's poems visually as trees.

Keywords: Korean Poetry, Immersive Environment, Procedural Modeling, Textual Editing, Kim So-wŏl

## INTRODUCTION<sup>1</sup>

In this article we detail ongoing experiments to create a new, immersive edition of Kim So-wŏl's canonical book of poetry *Chindallaekkot* (Azaleas). The first print edition, according to its colophons, was printed as two alternate issues on December 23, 1925. Only one of these issues was widely known to scholars until recently: the Hansŏng Tosŏ issue of *Chindallaekkkot*, so named to distinguish it from the recently rediscovered Chungan Sŏrim issue. Since *Chindallaekkot*'s initial publication, hundreds of books and critical papers have been written about Kim So-wŏl and his poetry, securing an iconic position for him and his book in Korean cultural history. Books and papers written about Kim So-wŏl since the 1980s, when scholarly interest in the poet became truly frenetic, were composed based on a facsimile edition of the Hansŏng Tosŏ issue of *Chindallaekkot* created by publisher Munhak Sasang in the mid-1970s. We know this because, for reasons that are unclear, the editors at Munhak Sasang doctored the images of their copy-text, introducing small, but not insignificant, changes to the text of the Hansŏng Tosŏ issue of *Chindallaekkot* that can be traced through every significant critical edition of Kim So-wŏl's poetry produced after 1980.<sup>2</sup>

This brief textual history of *Chindallaekkot* suggests the reasons for our new edition and the technologies we employ to create it. Despite the mass of scholarship about Kim So-wŏl, the material texts and modes of production that present and reiterate So-wŏl's verse have gone essentially unseen, which means that how Kim's texts have been physically iterated through time has been left untheorized. The ways in which the language of Kim So-wŏl's poetry may evoke the natural environment and, in particular, the emotional vistas of the author and his era have been described at length in the critical discourse about Kim. However, the human technologies of print that have articulated Kim's language and the ways in which these technologies have transformed his poems through time have been overlooked. To foreground these transformations and consider how we might productively "socialize,"<sup>3</sup> to borrow a term from bibliographer and literary critic

<sup>1</sup> The authors would like to thank the organizers of Sensibility and Landscape in Korean Literature and Film, the Seventh Keimyung International Conference on Korean Studies, held in Taegu, South Korea for inviting us to present an early version of this article. The authors would also like to thank Seyoung Kim for her assistance programming elements of *Chindallaekkot* as an immersive environment. This work was supported by the Sogang University Research Grant of 2012.

<sup>2</sup> See Wayne de Fremery, "How Poetry Mattered in 1920s Korea," (PhD diss., Harvard University, 2011).

<sup>3</sup> By "socialization," McGann means editorial attempts to imaginatively reconstitute or approximate the literary and aesthetic horizons of literary texts when they are reiterated in new

Jerome McGann, this modern classic using today's technologies, our immersive digital edition of *Chindallaekkot* rearticulates the physical structures of *Chindallaekkot*'s printed iterations and the language of its poems in immersive digital space.

Our reproduction of Kim So-wöl's book foregrounds these transformations by presenting an intentional and calculated (literally) misreading of Kim's classic. As the bibliographer D. F. McKenzie describes, every iteration of a text is a "misreading" of its antecedents, which is to say that the fine details of a text's physical presentation changes every time it is reproduced, influencing the ways that it can be interpreted. Agreeing with theorists such as Bruno Latour and Adam Lowe that the interpretation of a work of art can be aided by experiencing it in a form that is utterly distinct from its previous iterations, our misreading of *Chindallaekkot* aims to enable new interpretive opportunities by presenting Kim So-wöl's book as it has never been: a visual performance in a theater-like space performed by the calculations of a computer. McGann, along with Lisa Samuels, Stephen Ramsay and Johanna Drucker would call what we have created a "deformance," a critical term they use to suggest the critical fecundity of thinking of interpretive acts as both performative and (de)formative. Appropriating this term, our radical "deformance" of Kim's poems as trees is orchestrated to bring the historical manifestations of *Chindallaekkot*, which are also presented in the environment, into view by juxtaposing what Kim So-wöl's texts can be with what they have been.

Below, we describe the techniques used to create our sylvan visualizations, such as the tools we used to programmatically analyze the linguistic morphology of Kim So-wöl's poems and model the environment's woodland. This is followed by a description of what is presented to viewers in our immersive digital edition, as well as how we prepared the copy-texts used to algorithmically manifest our forest. A more detailed discussion of our motives and future aspirations concludes the paper.

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forms, such as new editions. See Jerome McGann, "The Socialization of Texts," in *The Textual Condition* (Princeton: Princeton University Press, 1991), 39–46.

## MODELING *CHINDALLAEKKOT* AS AN IMMERSIVE FOREST<sup>4</sup>

A technical description of how we transform the poems in *Chindallaekkot* into a forest will help clarify the abstract description just presented and set the stage for a description of what viewers experience in our immersive reproduction of Kim's work. *Chindallaekkot* is modeled as a forest through a number of interrelated processes. These processes might be summarized as follows: Text files corresponding to individual poems are read, then compiled, then drawn. That is to say the language in the files is scanned by software that reads it for linguistic content. Then, during the compilation process, the texts of the poems are re-written based on the results of these linguistic analyses into a series of commands for drawing the poems as trees. These instructions are then rendered as an image during the drawing phase. We employ the grammar of Lindenmayer-systems to compile and render the trees in our forest. The linguistic analysis is performed by Komoran (v. 1.12) by Shineware;<sup>5</sup> the coding has been done in Processing 2.<sup>6</sup>

Lindenmayer-systems, or L-systems, bear the name of the man who initially developed them in 1968, Aristid Lindenmayer. The aim of these systems is to define complex objects by means of reiterating simpler ones. An L-system is comprised of a collection of symbols that are restated by a formal grammar, a process known as "rewriting," in order to iterate complex bodies. Alvy Ray Smith adapted L-systems to computer graphics in 1984 and, since then, the technique has been used frequently to model objects such as plants and trees.<sup>7</sup> Understanding L-systems in more detail will help to elucidate how we grow trees from the fertile language of Kim So-wöl's poems.

L-systems function by means of substitutions. For example, in the following expression, F[+F]F is made to substitute for F.

<sup>4</sup> Much of the discussion presented here appears in Wayne de Fremery and Jusub Kim, "Algorijüm kiban modelling ül iyonghan si sigakhwa pangböp yön'gu" (Experimental visualizations of Korean poetry using procedural modeling), *Journal of Digital Design* 13, no. 4 (2013): 61–70.

<sup>5</sup> Komoran is a software library for morphological analysis written in Java. It is freely available online. See Chun-su, Komoran [software], version 1.12, <http://shineware.tistory.com/category/Project>, accessed August 22, 2013.

<sup>6</sup> Ben Fry, Casey Reas, et al., Processing [software language/ development environment], version 2.0.2, <http://processing.org>, accessed August 22, 2013.

<sup>7</sup> David Ebert et. al, *Texturing & Modeling: A Procedural Approach*, 3rd ed. (Morgan Kaufmann, 2003), 307–309.

$$F \rightarrow F [+F] F$$

If  $F$  is the initial variable and the function is run twice, it becomes,

$$F \rightarrow F [+F] F \rightarrow F [+F] F [+F [+F] F] F [+F] F$$

When alphabetic symbols are assigned geometric values, shapes can be drawn algorithmically according to the rules defined by the variables. For example, if the symbols in the function above are given the values below, and the function is run twice, it produces an image that looks like the branch of a tree.

$F$ : draw “\_” to the right of current position  
 $+$ : turn clockwise 45 degrees  
 $[$ : save current position  
 $]$ : return to last saved position

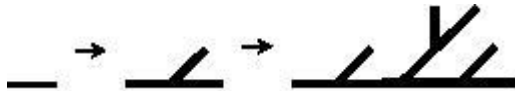


Figure 1: Using L-Systems to Draw a Branch

The botanical metaphor we employ when visualizing Kim So-wöl's poems was chosen because, using L-systems, the intricate structures of his poetry can be productively associated with similarly complex assemblages. Although it is not the only metaphor that can be imagined,<sup>8</sup> stanzas, lines, phrases, words, vowel quality, etc. can all be mapped to the branches of a tree, its leaves and their colors. The botanical form enables us to suggest the patterns found in Kim So-wöl's poetry without resorting to the less interesting graphic idioms of the sciences, such as pie charts, bar graphs, and radial diagrams, which dominate information visualization techniques. We hope that examples from previous work that describe how we suggest the form and content of poems, as well as their relative literariness, with our visualizations will help illuminate our basic technique.

Figure 2 helps to illustrate how the basic morphology of the trees we present is created from the coded bibliographic form of a poem. The image below is of a poem by Chŏng Chi-yong (1902–1950), a contemporary of Kim So-wöl, called “Hosu 1” (Lake 1) that we have reiterated as a tree using the text of the poem

<sup>8</sup> We are also considering an architectural metaphor. L-systems can also be used to draw buildings. However, we have not yet had the opportunity to explore how the poetry of Kim So-wöl or other Korean poets might be articulated as a house or cityscape.

presented by Kwŏn Yŏng-min in his *Chŏng Chi-yong si: 126 p'yŏn tasi ilkki* (The poetry of Chŏng Chi-yong: Re-reading 126 poems).<sup>9</sup>

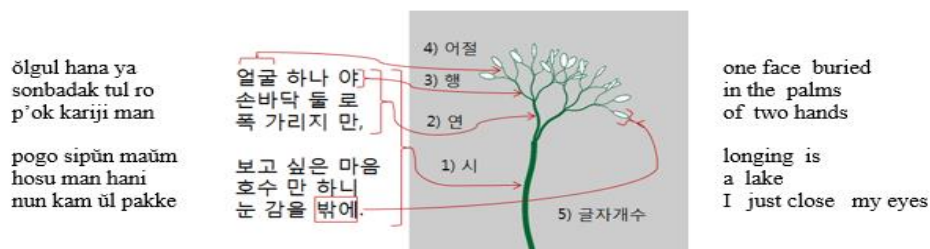


Figure 2: *Hosu 1*

As is seen in Figure 2, the structural morphology of the poem—which is to say the bibliographic structures of the text, especially the white spaces that determine stanzas and lines, as well as the glyphs that suggest units of linguistic meaning—can be easily mapped to the morphology of a tree. The two stanzas of Chŏng’s poem are suggested by the two large branches growing out of the tree’s trunk. The order of the stanzas is expressed by a left-to-right arrangement of the branches, and the lines of each stanza, in a similar arrangement, are expressed as smaller branches. The number of linguistically meaningful units in a line, as defined by white space in Kwŏn’s germinative text, determines the number of leaves that grow from branches that correspond to the lines in Chŏng’s poem. Three leaves on each branch, organized left-to-right again to suggest their order in the originating text, grow from each branch. Finally, the thickness of the leaves is determined by the number of glyphs in each linguistic unit. For example, in the last line of the poem, the leaf that corresponds to the single glyph “눈” (*nun*, eyes) is half as thick as the leaves that correspond to “감을” (*kamul*, close) and “밖에” (*pakke*, only), each of which comprises two glyphs.

Just as the morphological structures of a tree can be used to express what might be thought of as the coded bibliographic structures of Chŏng’s poem, the leaves of the trees can be colored to express morphological aspects of the poem’s linguistic content. To visualize aspects of a poem’s linguistic content chromatically, we first use Komoran to identify and count morphological elements of the linguistic poems, such as parts of speech. We then map the result to chromatic elements, such as saturation and brightness. Nouns and particles, for example, because we associate them with solidity,<sup>10</sup> are mapped to low saturation levels.

<sup>9</sup> Kwŏn Yŏng-min, ed., *Chŏng Chi-yong si: 126 p'yŏn tasi ilkki* (The poetry of Chŏng Chi-yong: Re-reading 126 poems) (Seoul: Minŭmsa, 2004), 325.

<sup>10</sup> These assumptions are our own and can be productively debated.

Verbs and adjectives, because we associate them with description and motion, are associated with high saturation levels. To determine the hue of a leaf, values returned by Komoran for various parts of speech in a given linguistic unit, as defined by the white space of the instigating text, are averaged and associated with a shade of green. For example, in the image of the second stanza of Chŏng Chi-yong's poem below, the nouns “마음” (*maūm*, heart) and “호수” (*hosu*, lake) are expressed as a completely desaturated green or, in other words, as gray. In contrast, the verbs that comprise the construction “보고 싶은” (*pogo sipūn*), are expressed as two highly saturated green leaves.

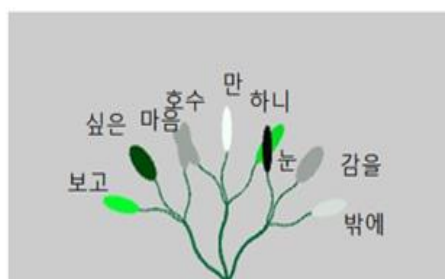


Figure 3: Colored Second Stanza of Chŏng Chi-yong's "Lake 1"

Parts of speech	Saturation (0-1)
Substantives (Nouns, pronouns, numerals), particles	0
Predicates (Verbs, adjectives), adverbs, interjections	1
Other	0.5

Table 1: Saturation Values and Parts of Speech

Vowels in *han'gŭl* have, since King Sejong developed *Hunmun chŏngŭm* in the fifteenth century, been associated with the philosophical concept of *ūmyang* (yin-yang, 陰陽). Consequently, certain vowels are associated with *yang*, or brightness; others are associated with *ūm* (yin), or darkness.<sup>11</sup> We use these associations to suggest the relative sonorific brightness of linguistic units in the poetic texts we reiterate. To do this, we create values for the relative brightness of vowels found in a linguistic unit, average them for that unit, and use the value to determine the

<sup>11</sup> Young-Key Kim-Renaud, ed., *The Korean Alphabet: Its History and Structure* (Honolulu: University of Hawai'i Press, 1997), 280.



brightness of a leaf's color. For example, as is seen in Figure 3, leaves associated with “보고” (*pogo*) and “하니” (*hani*) are brightly colored. Those associated with “눈” (*nun*) and “싫은” (*sipūn*) are darkly colored.

Vowel	Brightness (0-1)
—(ū), †(ō), †(u), †(yō), π(yu), †(wō)	0
‡(a), †(o), †(ya), †(yo), ‡(wa)	1
Other	0.5

Table 2: *Vowel Color and Brightness*

These techniques we have described so far can be used to reiterate any informational text. Attempting to suggest the relative literariness of the poems we rearticulate, we borrow a metaphor from Jerome McGann. He writes, “Whereas ‘noise’ is always a form of corruption for a channel of information, it can be exploited in literary texts for positive results. The thicker a description, so far as the artist is concerned, the better.”<sup>12</sup> To suggest the relative “thickness” of poetic description presented in the vernacular Korean poems we re-present repetition, which would be noise in an information channel, as the relative thickness of a tree’s trunk and branches. We do this using the function below, where repetition,  $S$ , is defined for each linguistic unit,  $j$ :

$$S_j = \frac{1}{n} \sum_{i \neq j} \text{dist}(\text{linguistic unit } i, \text{linguistic unit } j), 0 \leq \text{dist}(\cdot) \leq 1$$

$n$  = the number of linguistic units in a poem – 1

$\text{dist}(\text{linguistic unit } i, \text{linguistic unit } j)$  = degree of similarity with other linguistic units.

The similarity between linguistic units,  $\text{dist}(\cdot)$ , is calculated using Levenshtein distance, as is frequently done to determine similarities among character strings.<sup>13</sup>

<sup>12</sup> Jerome McGann, *The Textual Condition* (Princeton: Princeton University Press, 1991), 75.

<sup>13</sup> Gonzalo Navarro, “A Guided Tour to Approximate String Matching,” *ACM Computing Surveys* 33, no. 1 (2001): 31–88.

Therefore, the repetition in a poem,  $S$ , is

$$S = \frac{1}{n} \sum S_j$$

$n$  = the number of linguistic units in a poem

Figure 4, which visualizes the first few lines of the second stanza of Yi Sang's (1910–1937) highly repetitive “Si che-il ho” (詩第一號, Poem No. 1), suggests how the relative literary “thickness” of a poem in our environment is expressed. As can be seen, the trunk and branches of our woody “Poem No. 1” are quite thick.

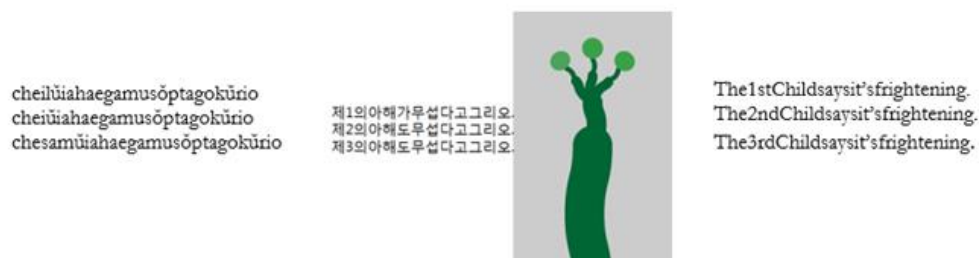


Figure 4: *Repetition and Thickness*.<sup>14</sup>

To summarize the processes involved in creating the trees in our forest more formulaically, the linguistic units of a poem are scanned in order of their appearance then recursively compiled as commands that are rendered as trees. We use rules available in L-system procedural modeling to compile the poems. For example, if  $F$  is the entire poem, when L-system procedures are applied once, branches associated with the poem's two stanzas will be made to extend in alternate directions in a similar fashion by means of the following expression:

$$F \rightarrow F [+ F] \text{ or } F [-F]$$

To compile the poem's linguistic content so that it can be rendered as leaves in the manner described above, saturation, brightness and size are expressed on a scale of 0–9 and encoded as a string. The following would express a leaf with a saturation level of 6, a brightness of 3, and a thickness of 4:

[;634F]

<sup>14</sup> The translation of Yi Sang's poem is by Walter Lew and found in the David McCann, ed., *Columbia Anthology of Modern Korean Poetry* (New York, Columbia University Press, 2004), 65.

Rendering the poem as a three-dimensional image is accomplished by associating the symbols in the compiled poem with geometric shapes and, using Bézier curves, displaying the figure of a tree.

### INSIDE *CHINDALLAEKKOT*<sup>15</sup>

According to Gérard Genette, the paratexts of a book—textual elements such as the title or publisher’s name embedded in the design of a cover or presented in a colophon—act as a threshold controlling one’s whole reading of the text.<sup>16</sup> Whether or not they controlled readers’ entire experience can be debated but the paratextual differences between *Chindallaekkot*’s two initial presentations along with their significant material differences—different covers, title pages, paper—have caused investigators of the two issues to reach different understandings of the book’s significance, suggesting that these differences set the stage for experiencing the poetry in each issue quite differently. The environment we have created is designed to enable viewers to consider how alternate presentations of a text such as these may control the reading experience. These initial presentations of *Chindallaekkot* are not immediately presented to viewers. Instead, in order to suggest that how they were initially made was not inevitable, viewers arrive at them after navigating through a variety of alternate historical descendants of Kim So-wŏl’s book, including our forest, as well as contemporary imagery frequently associated with *Chindallaekkot* and Kim.

Viewers in our environment are first presented with a long stream of images collected by conducting a Google search for “진달래꽃 김소월” (*Chindallaekkot* Kim So-wŏl)<sup>17</sup> and capturing the results. In this way, viewers are presented with imagery frequently associated with Kim So-wŏl’s book today. Visitors who navigate through these contemporary associations are then greeted by the forest we generate from *Chindallaekkot*’s bibliographic and linguistic codes, a presentation of what else the book can be. Navigating through the woodland, users are presented with a number of important historical witnesses to Kim So-wŏl’s text, including *Chindallaekkot*’s initial iterations, to show them what *Chindallaekkot* has been.

<sup>15</sup> A short video that presents the environment is available on YouTube at the following address: [https://www.youtube.com/watch?v=tJDg6Cuncok&feature=youtube\\_gdata\\_player](https://www.youtube.com/watch?v=tJDg6Cuncok&feature=youtube_gdata_player).

<sup>16</sup> Gérard Genette, *Paratexts: Thresholds of Interpretation*, trans. Jane E. Lewin, Literature, Culture, Theory 20 (Cambridge; New York: Cambridge University Press, 1997), 1–2.

<sup>17</sup> This search was performed during the late evening of October 12. It was done without logging into any Google account prior to performing it. “Safe Search” was enabled. A similar search was performed using the Korean search site Naver. It returned different results. Future versions of our project will incorporate the results of searches performed using a wide variety of search engines.

The “stream” of contemporary images associated with *Chindallaekkot* that greets a viewer when they enter our environment was created using ImageJ (v1.47) software and the Image Montage plug-in created by Lev Manovich, Matias Giachino, and Jay Chow<sup>18</sup> to organize the 637 pictures returned by our Google search. The montage encircles the viewer until s/he navigates “through it” by means of a wireless tracking pad that enables viewers to draw the circling montage “closer.” When the images of the montage are brought so “close” to the viewer that they begin to pixelate and reveal themselves as digital artifacts, these images give way to a view of *Chindallaekkot* as a forest.



Figure 5: *Contemporary Images Associated with Chindallaekkot*

The forest surrounding the viewers is generated through an algorithmic reading of the poems in *Chindallaekkot* and organized into sixteen “groves” that correspond to the sixteen sections of *Chindallaekkot*’s initial instantiations that organize its 126 poems. For example, the ten poems that appear in the section “To My Love” (Nim ege), which begins the historical presentations of *Chindallaekkot*, are presented as a “grove” of ten trees. Like the poems in the colonial-era instantiations of the book, the “groves” are arranged so they can be read from right to left if a reader is inclined to follow the order of poems suggested by the book’s initial publication. Arranged in this way, the groves can also be read by visitors to the environment as a kind of table of contents that, like similar tables in printed books, suggest the character of the different regions of *Chindallaekkot* as a forest. A grove with many unsaturated leaves, for example, would suggest a group of poems that contain a comparatively large number of nouns.



Figure 6: *Segment of Chindallaekkot as a Forest*

<sup>18</sup> Wayne Rasband, ImageJ: Image Processing and Analysis in Java [software], version 1.47, <http://rsb.info.nih.gov/ij/>, accessed October 10, 2013; Lev Manovich, Matias Giachino, and Jay Chow, Image Montage plug-in, July 13, 2013 version, <http://rsbweb.nih.gov/ij/plugins/image-montage/index.html>, accessed October 10, 2013.

Choosing a grove and navigating toward it with the cordless touch pad, the user will be “enveloped” by the trees of the selected grove when trees in other groves escape the viewer’s peripheral vision as s/he moves closer to a grove of interest. Once inside one of *Chindallaekkot*’s groves, the trees that comprise it will be arranged from right to left in the order in which the poems were initially organized in initial witnesses of *Chindallaekkot*. For example, if the user were to enter the title section of the book, “Chindallaekkot,” s/he would be presented with fifteen trees corresponding to the fifteen poems in the section. The tree on the far right would correspond to “Kaeyöul üi norae” (The stream’s song), the first poem in this section. The tree that corresponds to “Sanyuhwa” (山有花, Mountain flowers), the final poem in the section, would appear on the far left.

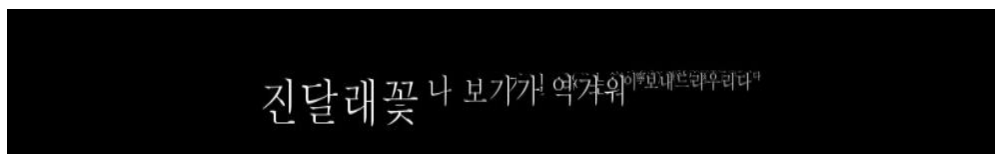


Figure 7: Title Section of *Chindallaekkot* as a Grove

Navigating toward an individual tree of interest, the user will be introduced, for the first time, to an iteration of the verbal text when the visual image of the tree begins to pixilate. For example, within the title section of *Chindallaekkot*, if a user were to enter the linguistic text of the title poem of the collection, “Chindallaekkot,” s/he will be greeted by the title of the poem and then the lines “Na pogi ka yögyöwö / kasil ttae e nün . . .” We anticipate that the user will feel as if s/he is walking into the flow of the verbal text that generated the tree, which, as described below, is based on a 2007 typographic transcription made by Kwön Yöng-min of *Chindallaekkot*’s initial witnesses.



Figure 8: “*Chindallaekkot*” Drawn as a Tree

Figure 9: *Flowing Text of "Chindallaekkot"*

Progressing through the Kwŏn text, those exploring the title poem “Chindallaekkot” in our environment will be led to the historical antecedent of Kwŏn’s text, the poem in the Munhak Sasang facsimile upon which all scholarly anthologies of Kim So-wŏl’s poems are based. Navigating through the Munhak Sasang facsimile and deeper into the environment, the viewer will be presented with a visual simulacrum of the poem as it is presented in the alternate issues of *Chindallaekkot* from the Japanese colonial period. For visual reference, the viewer will also be presented with images of the cover, title pages, and colophons of the alternate initial witnesses of *Chindallaekkot*. If a viewer maneuvers yet deeper into the environment, s/he will reemerge in the grove of trees that corresponds with the poem’s position in the book.

Figure 10: *Initial Witnesses of "Chindallaekkot"*

To explore other trees in a grove, the viewer can navigate “into” them with the touchpad. To investigate other trees/poems in other “groves,” the user can “zoom out” of one grove with the touchpad and into another. Users can also zoom “all the way out” to the presentation of contemporary images associated with Kim So-wŏl and *Chindallaekkot*.

## OUR COPY-TEXTS

There are ten extant copies of Kim So-wŏl’s *Chindallaekkot* that date to the Japanese colonial period. The remarkable generosity of a number of individuals and organizations including Ōm Tong-sŏp, Ch’oe Ch’ŏr-hwan, Yŏ Sŭng-gu at Hwabong Mun’go, Kim Chŏng-hyŏn at the Appenzeller-Noble Memorial Museum, Kim Chae-hong at the Han’guk Hyŏndaesi Pangmulgwan, and the family of Kim Sŏng-hun have made it possible for one of us, Wayne de Fremery, to examine six of these books. These include two copies of what have, since

August 2010, come to be called the Chungang Sörim *p'anbon* or Chungang Sörim *pon* (中央書林[版]本) and four copies of the Hansöng Tosö *p'anbon* or Hansöng Tosö *pon* (漢城圖書[版]本).<sup>19</sup> This recently developed naming convention derives from the different distributors (*ch'ong panmaeso*), Chungang Sörim and Hansöng Tosö, respectively, listed in the colophons. There are three additional copies of the Hansöng Tosö *pon* currently housed in private collections that have not been examined by the authors, as well as one additional copy of the Chungang Sörim *pon*. The Chungang Sörim *pon* is housed in the private collection of Yun Kil-su and is discussed by Kwön Yöng-min in the August 2010 *Munhak sasang* article announcing the rediscovery of the second issue of *Chindallaekkot*.<sup>20</sup>

The poetry in the Hansöng Tosö issue is presented on a rough, natural-colored, ground-wood paper that complements the warm colors of its title page and cover. The hand-lettered title and simplistic representation of azalea flowers on the cover of the Hansöng Tosö *pon* also suggest a certain warmth and romantic earthiness. Alternately, the poetry in the Chungang Sörim issue is presented on a more refined, noticeably whiter, *mojaji* paper that coincides with the cool colors of its title page and the minimalist, imageless presentation of its cover.

The digital images of the two initial issues of *Chindallaekkot* that appear in our environment are of *Chindallaekkot* copies held in the private collections of Öm Tong-söp (Hansöng Tosö issue) and Ch'oe Ch'ör-hwan (Chungang Sörim issue). These copies were initially scanned by Somyöng Publishing at a resolution of 600 dpi and color corrected by Haingraph, a printing company in Seoul. The title page of the Ch'oe Ch'ör-hwan copy of the Chungang Sörim issue is not original and has been replaced in our environment with an image of the title page of the Chungang Sörim issue housed at the Seoul Poetry Museum.<sup>21</sup> The Öm copy of the Hansöng Tosö issue of *Chindallaekkot* is missing pages 159 and 160. Images of these pages that appear in our environment were captured at the Appenzeller-Noble Memorial Museum, where a copy of the Hansöng Tosö issue is housed.<sup>22</sup> Images of the Munhak Sasang facsimile of *Chindallaekkot* that appear in the

<sup>19</sup> The circumstances of my examinations of these six copies of *Chindallaekkot* varied. Consequently, the depth of my investigation of each book was not uniform. In some instances, I was able to spend considerable time with a specific copy and allowed to photograph the entire book. In other instances, time only allowed a cursory investigation and/or I was not permitted to photograph more than the cover, colophon, and a few pages of the body.

<sup>20</sup> Kwön Yöng-min, "Kim So-wöl üi sijip 'Chindallaekkot' üi tu kaji p'anbon" (The two issues of Kim So-wöl's collection of poems *Chindallaekkot*), *Munhak sasang* (August 2010): 18–27.

<sup>21</sup> These images were captured on August 5, 2010 by Wayne de Fremery at 300 ppi with a Nikon D100. The images have been color corrected and sharpened using Photoshop.

<sup>22</sup> These images were captured on June 28, 2010 by Wayne de Fremery at 300 ppi with a Nikon D100. The images have been color corrected and sharpened using Photoshop.

environment were created by photocopying the copy of the facsimile held at the Sogang University library and scanning the photocopies at 600 dpi with a Fujitsu ScanSnap s1500 sheet-fed scanner. Because copies of initial printings of *Chindallaekkot* are so rare, the Munhak Sasang facsimile remains the primary witness utilized by readers who wish to view the “original” text of *Chindallaekkot* despite the fact, mentioned previously, that the creators of the Munhak Sasang facsimile altered their copy-text in a number of places.<sup>23</sup>

The text used to algorithmically create our virtual forest is based on the *hyŏndaeŏ* (contemporary language) presentation of Kim So-wŏl's poems found in Kwŏn Yŏng-min's 2007 *Complete Poetry of Kim So-wŏl*. We use Kwŏn's text in order to solve a technical problem and modify it in an attempt to honor the coded visual characteristics of *Chindallaekkot* as it was initially presented. At present, it is quite difficult to perform accurate computer-based morphological analysis of Korean texts from the early twentieth century. The variety of orthographic conventions from early twentieth century Korea, many of which are idiomatic—*Chindallaekkot*, the title of the book, for example, is spelled differently in its two initial issues—confound today's computer-based tools of morphological analysis. Therefore, to enable the computer-generated linguistic analyses of Kim So-wŏl's poems that facilitate the algorithmic drawing of our trees, we require a germinative text that transcribes *Chindallaekkot*'s initial orthography into a contemporary idiom. Kwŏn's 2007 anthology includes just such a transcription. His *hyŏndaeŏ* presentation of the texts modernizes the spelling in So-wŏl's poems and repunctuates them, keeping punctuation marks such as periods and commas but altering the direction that the text is read (left to right horizontally as opposed to vertically from right to left) and the spaces between words in order to conform with contemporary South Korean orthographic conventions. As discussed above, the basic morphology of the trees in our environment is determined by the empty textual spaces that define a poem's basic structures. The number of stanzas and lines, which are indicated by blank space on a printed page (a hard return in our text files), determines the number of branches in our algorithmically generated trees; the number of blank spaces in a line determines how many leaves appear on a branch. Kwŏn's transliteration delineates Kim So-wŏl's poems so that stanzas and poetic lines mimic *Chindallaekkot*'s initial witnesses but he alters the way that space is deployed between the words and phrases comprising Kim So-wŏl's poetic lines. To account for the way that visual space articulates Kim So-wŏl's poems in early witnesses of *Chindallaekkot* while, at the same time, facilitating the computer-based linguistic analysis we require, the text that generates our trees follows Kwŏn's 2007

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<sup>23</sup> See de Fremery, “How Poetry Mattered in 1920s Korea.”



transcription except that it reproduces the spacing between words and phrases found in the first issues of *Chindallaekkot*. This means, for example, that the penultimate line of the first poem in the collection, “Mõnhuil” (A day long from now), which is presented as “Onül to öje to aninitko” (아니닛고)<sup>24</sup> in the colonial-era witnesses and as “Onül to öje to ani itko” (아니 잇고) in Kwõn’s 2007 *hyõndaeõ* text, is presented as “Onül to öje to aniitko” (아니잇고) in the modified Kwõn text we use to visualize the poems as trees in our environment. Where there is a discrepancy between how the initial issues are punctuated, we follow the punctuation of the Hansõng Tosõ issue.<sup>25</sup>

## DISCUSSION

Bibliographer D. F. McKenzie asserts in his seminal *Bibliography and the Sociology of Texts* that how a text may mean cannot be extricated from the “fine details” of its material presentation and, since the fine details are different with each witness, the history of any book must be a history of misreadings.<sup>26</sup> In this sense, our immersive edition of *Chidallaekkot* is an exaggerated misreading meant to reveal *Chidallaekkot*’s many other misreadings. The diligent medieval scribe has been an enabling metaphor, quelling the sometimes debilitating worries that our misreading of So-wõl’s texts will necessarily be inherently inferior to previous iterations, especially its first witnesses. “Inside the scriptorium of a monastery, all exemplars were facsimiles. No copyist would have said, this is the original, that a mere copy; distinctions were instead based on quality,”<sup>27</sup> as Latour and Lowe write. Challenging Walter Benjamin’s well known assertions about the immobility aura, Latour and Lowe suggest that in monastery scriptoria “The aura was able to travel and might very well have migrated to the newest and latest copy, excellently done on the best of parchments and double-checked against the best earlier sources.”<sup>28</sup> In this sense, the presence of an original can be orchestrated in

<sup>24</sup> This line might be translated as “today and yesterday, I don’t forget.”

<sup>25</sup> It should be noted that the process of transcribing So-wõl’s texts into a modern typographical idiom is an interpretive one. In this sense, Kwõn’s reading of Kim So-wõl’s poems has greatly influenced ours.

<sup>26</sup> D. F. McKenzie, *Bibliography and the Sociology of Texts* (Cambridge: Cambridge University Press, 1999), 25.

<sup>27</sup> Bruno Latour and Adam Lowe, “The Migration of Aura, Or How to Explore the Original through its Facsimiles,” in *Switching Codes Thinking through Digital Technology in the Humanities and the Arts*, Thomas Bartschere and Roderick Coover, eds., Kindle edition (Chicago: University of Chicago Press, 2011).

<sup>28</sup> Ibid.

alternate iterations by means of human diligence and the skillful use of available technologies.

We envision our iteration of *Chinallaekkot* as a performance of Kim So-wŏl's text in this sense: one that, by means of careful investigation and re-presentation, allows something of *Chindallaekkot*'s originality to migrate into a digital environment by revealing the book's many material manifestations and historical iterations. The theatrical space of an immersive digital environment at the Shin Y. K. Studio where our edition is mounted, which is organized like a theater-in-the-round, reinforces the idea that we are using today's technologies to replay Kim So-wŏl's poems. The immersive environment in which we enact these performances, along with the admittedly radical ways that we instantiate Kim So-wŏl's poems, encourages readers of Kim So-wŏl's poems, we hope, to move past restrictive notions of origins so that we can evaluate the originality of So-wŏl's poetry anew. It is worth referencing Latour once more to emphasize the liberating potential of relinquishing concerns about any inherent inferiority of copies and thinking about textual (re)production as performance:

So unconstrained are we by the notion of an original that it is perfectly acceptable to evaluate a performance by saying, "I would never have anticipated this. It is totally *different* from the way it has been played before, utterly *distinct* from the way Shakespeare played it, *and* yet I now understand better what the play has always been about! . . ." The genius of Shakespeare, his originality, is thus magnified by this faithful (but not mimetic) reproduction. The origin is there anew, even if vastly different from what it was.<sup>29</sup>

As Latour suggests, interpretation can be aided significantly by experiencing a text in a way that is utterly distinct from previous iterations. This is the generative idea behind presenting Kim So-wŏl's poems in distinctly unfamiliar visual forms. The theoretical groundwork for the idea of productively deforming a text in the service of hermeneutical practice, a key aspiration of this project, has been fruitfully explored by a number of theorists but perhaps most productively for our purposes by Jerome McGann, Lisa Samuels, and Stephen Ramsay.

A fragment of text composed by Emily Dickinson is the locus classicus for recent discussion about critical interventions that radically re-form a text, a procedure these authors describe as "deformance." On a scrap of paper Dickinson wrote, "Did you ever read one of her Poems backward, because the plunge from the front overturned you? I sometimes (often have, many times) have—A

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<sup>29</sup> Ibid.

something overtakes the Mind.”<sup>30</sup> Jerome McGann suggests the usefulness of Dickinson’s critical move,

Reading backward is a highly regulated method for disordering the senses of a text. It turns off the controls that organize the poetic system at some of its most general levels. When we run the deformative program through a particular work we cannot predict the results. As Dickinson elegantly put it, “A Something overtakes the Mind,” and we are brought to a critical position in which we can imagine things about the text that we didn’t and perhaps couldn’t otherwise know.<sup>31</sup>

Our presentation of *Chindallaekkot* aims to create an environment where a similarly radical reconfiguration of Kim So-wŏl’s poems can enable a similar “something” to overtake the mind.

Stephen Ramsay extends the arguments of McGann and Samuels to suggest the use of computational technologies to creatively disorder texts in critically useful ways—a process he calls “algorithmic criticism.” The ideas Ramsay presents in his *Reading Machines: Toward an Algorithmic Criticism* inform our unorthodox visualizations of Kim So-wŏl’s poetry. As with the analog procedures described by McGann and Samuels, the aim of computational “deformance,” according to Ramsay, is to bring readers to a position of critical insight. It is an aim our immersive *Chindallaekkot* shares. “‘Algorithmic criticism’—the term I use to designate a reconceived computer-assisted literary criticism,” writes Ramsay, “attempts to employ the rigid, inexorable, uncompromising logic of algorithmic transformation as the constraint under which critical vision may flourish.”<sup>32</sup> Like Ramsay, we employ the “rigid, inexorable, uncompromising” “logic” of algorithmic transformation to enable critical vision by presenting an unanticipated “vision” of Kim So-wŏl’s poetry. In this sense, the forest of poetry we manifest through algorithmic means is a mode of critical reading that reveals So-wŏl’s poems and the deformative techne of more widely used critical procedures of textual reproduction and exegesis. Recognizing the revelatory, if necessarily

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<sup>30</sup> Quoted in Martha Nell Smith, “Because the Plunge from the Front Overturned Us: The Dickinson Electronic Archives Project,” Dickinson Electronic Archives, <http://archive.emilydickinson.org/plunge1.html>, accessed July 4, 2013.

<sup>31</sup> Jerome McGann and Lisa Samuels, “Deformance and Interpretation,” Jerome McGann Website, <http://www2.iath.virginia.edu/jjm2f/old/deform.html>, accessed October 10, 2013. This essay has been published in a number of places, including *Radiant Textuality: Literature after the World Wide Web* (New York: Palgrave, 2001) and *New Literary History* 30 no. 1 (1999): 25–56.

<sup>32</sup> Stephen Ramsay, *Reading Machines: Toward an Algorithmic Criticism*, Kindle edition (Urbana, Chicago, and Springfield: University of Illinois Press, 2011).

transformational, potential of artful reiterative critique, we aim earnestly to perform the kind of high criticism Oscar Wilde suggests with pithy irony when he writes, “The highest criticism is that which reveals in the work of Art what the artist had not put there.”<sup>33</sup>

The complex polysemy of literary texts requires, if anything is going to be said about them, procedures that refigure them. The question posed by McGann, Samuels, and Ramsay—one that our immersive figure extends—is what critical procedures are authorized. Ramsay’s argument, which extends those made by McGann and Samuels, is that the inflexible processes of algorithmic textual transformation enabled by computers are as legitimate as more traditional forms of critical praxis, which, through paraphrase or reference to sociohistorical facts/alternate conceptual frameworks, similarly deform a literary text.

Our immersive environment makes the argument that the algorithmic deformative procedures of Ramsay can be taken a step farther to interrogate what McGann describes as the “Masoretic wall of the physical artifact [of a text].”<sup>34</sup> The stability and integrity of the physical text are often taken as inviolable and frequently define the limits of critical interpretation.<sup>35</sup> The basic operational instructions of a text, the rules that govern alphabets and non-alphabetic forms of writing, the ways that characters are arranged in textual space, the structural forms of words, phrases, and other higher morphemic/phonemic units are, according to McGann, “so basic and conventionally governed . . . that readers tend to treat them as pre-interpretive and pre-critical. In truth, however, they comprise the operating system of language, the basis that drives and supports the front-end software.”<sup>36</sup> Playing with McGann’s conceit, we use the grammar of L-systems to, quite literally, rewrite the code of *Chinallaekkot*’s operating system in order present the text as it has never been. Visually juxtaposing this new text run on our new “OS” with those that operate according to the algorithms of print reveals the elemental artifactual forms of *Chindallaekkot*’s historical iterations—ink applied to the flat surfaces of many varieties of paper by various historical critics and typesetters in such a way that we take it to suggest the words, lines, and stanzas of poems—that have been bracketed from critical view but are integral to how *Chindallaekkot* matters.

<sup>33</sup> Oscar Wilde, “The Critic as Artist” in *Intentions*, Project Gutenberg Ebook, transcribed from the 1913 edition by David Price, <http://www.gutenberg.org/dirs/etext97/ntntn10h.htm>, accessed October 11, 2013.

<sup>34</sup> McGann and Samuels, “Deformance and Interpretation.”

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

## CONCLUSION

In a recent article about interface, Johanna Drucker writes, “Like tables of contents, indexes, marginalia, and commentary, an interface performs rhetorically, presenting an argument as if it were a statement of fact, but engages us by presenting options. Go here, follow this, click, point, play, listen, search.”<sup>37</sup> This is true of our *Chindallaekkot*. Like the codex books it re-presents and transforms, our immersive *Chindallaekkot*, by enabling, as well as disabling, certain modes of reading suggests that we need to see the manifest material multitudes of Korean literary works such as *Chindallaekkot* if we are to better understand how they mattered in the past and can matter in the future. Yet, as Drucker, writes in the same article, “Structuring an interface, like writing a book, only launches a probabilistic missive in the direction of a user or reader, whose interpretation produces a reading that is necessarily an act of ‘deformance.’”<sup>38</sup> Looking forward to how users may misread and deform our text, we also have plans to expand and repurpose the immersive environment that we have created.

Although the environment is currently organized to make the argument above, we have plans to add additional data and develop tools that will enable the space to be a more expansive exploratory tool for literary researchers, as well as an even richer learning environment for students, instructors, and the public. Only a fraction of *Chindallaekkot*'s textual witnesses are included in the environment, let alone the hundreds of papers and books about Kim So-wŏl or the bibliographic data associated with all of these texts. In the future, in theory, all of these materials could be included in an immersive variorum edition of *Chindallaekkot*.

Of course, *Chindallaekkot* is only one book and we imagine productively comparing *Chindallaekkot* as an algorithmically generated forest with a similarly generated woodland grown from a book such as Han Yong-un's *Nim ūi ch'immuk* (Silence of love, 1926), another important poetic text from the 1920s, or any other important works from Korea's literary tradition. Indeed, in time, “inclusive immersive anthologies” that display all the extant literary texts from a given period, whether canonical or not, could be created for the environment so that whole eras could be explored as literary ecosystems. Researchers might explore these environments by searching for key words in the texts or, taking advantage of the new ways that the texts are displayed, for trees that are morphologically similar or have similarly colored foliage. As the data in the environment becomes richer and its navigation systems are made more robust, we can hope that experts will be able to lead public tours through its timberlands, university professors and high

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<sup>37</sup> Johanna Drucker, “Reading Interface,” *PMLA* 128.1(2013): 217.

<sup>38</sup> Johanna Drucker, “Reading Interface,” 215.

school teachers will have the opportunity to hold class in particularly interesting groves, and younger school children can be set free to simply play and “maketh matter”<sup>39</sup> from the digital space for their own conceits, having seen “nature never set forth the earth in so rich tapestry as divers poets have done.”<sup>40</sup>

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<sup>39</sup> Philip Sidney, *A Defence of Poesie and Poems*, Project Gutenberg eText, prepared by David Price from the 1891 Cassell & Company edition,

<http://www.gutenberg.org/cache/epub/1962/pg1962.html>, accessed October 11, 2013.

<sup>40</sup> Philip Sidney, *A Defence of Poesie*.

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