
Phytophallogocentrism: Developing a Posthuman Aesthetics through Barthes, Bose, and Woolf

Chiu-Hua Su

ABSTRACT

In *The Philosopher's Plant*, Michael Marder describes Jacques Derrida's philosophy of the plant as "phytophallogocentrism." Appropriating Derrida's logic of the supplement, Marder adds the affix "phyto" to phallogocentrism to designate a thinking pattern that grows like a plant on the margin of the rigid edifice of Western metaphysics. In this article, I extend this concept of phytophallogocentrism to foster an aesthetics of posthumanism through an interfolding of photography and plants. Both associated with light, photography and plants respond to light mechanically, unlike the humanist tradition which has long associated light with reason. Both the mechanicality involved in photo-making and a plant's life point to an "optical unconscious," which we may say offers a handful of dirt for the seed of a posthuman aesthetics to grow. In this article, I draw on Roland Barthes's view of photography and Jagadis Chunder Bose's studies of plants to bring to light the zig-zagging conceptual bond between the two prefixes, "photo-" and "phyto-," and the three affixes, "-graph," "-trope," and "-troph." I then read Virginia Woolf's *The Waves* in light of what I consider to be her phytophallogocentric move. I argue that the phenomena of life presented in the novel are phototrophic and that the text itself is photo-tropic.

KEYWORDS Roland Barthes, photography, plant studies, Jagadis Chunder Bose, Virginia Woolf, posthumanism

Ex-position, Issue No. 40, December 2018 | National Taiwan University
DOI: 10.6153/EXP.201812_(40).0010

Chiu-Hua SU, Associate Professor, Department of English, Soochow University, Taiwan

Introduction

This study aims to continue my decade-long concern with posthumanism in the light of media archaeology. Posthumanist scholars such as N. Katherine Hayles and Cary Wolfe draw contemporary readers' attention to how information technology has altered the way we conceive ourselves. Rooted in poststructuralism, their methodologies weigh the importance of language in the construction of our imago. On the other hand, featuring the predecessors of digital media, media archaeology investigates technological development in the production and distribution of discourse networks. In recent years, I have tried to incorporate studies of early telecommunication technology into the discussion of posthumanism, arguing not only that our "posthuman condition" can be traced back to the nineteenth century, when the use of electricity was yet too immature to be effectively deployed, but also that the idea of human subjectivity had already been undermined even before the emergence of the new media.

In *What Is Posthumanism?* Cary Wolfe defines the term "posthumanism" as a criticism against "the fantasies of disembodiment and autonomy, inherited from humanism itself" (xv). This seminal work includes animal studies and media studies. Even so, Wolfe asserts that it is not enough for a posthumanist to decenter humans as a site where evolutionary, technological, biological, and cultural forces intersect. More important is to investigate how humanist "aspirations" and "values" are "undercut by the philosophical and ethical frameworks used to conceptualize them" (xvi). With this in mind, Wolfe carries on the project to question "normative subjectivity" through the perspectives of "nonhuman animals and the disabled" (xvii). Along similar lines, I want first to enlarge the scope of posthumanist concern from animals to plants with the purpose that the traditional hierarchy of the Great Chain of Being can be undermined. Considering that Western metaphysics has erected an anthropocentric edifice where humans as animals with self-consciousness are placed above all other embodied nonhumans, which presumably have no or little rational faculty, plants whose position is between the animal kingdom and lifeless minerals have strong potential to challenge the long-established structure.

This study was sponsored by Taiwan's Ministry of Science and Technology (MOST 105-2410-H-031-034). The original version of this paper was presented at the "Grand Narratives, Posthumanism, and Aesthetics" conference at the University of Aarhus, March 2017. I benefited greatly from the comments and questions that followed my presentation. I also acknowledge the two anonymous reviewers for their encouraging and constructive suggestions. Finally, I thank Judy Mackinnon for her helpful feedback on an earlier draft of this article.

On the other hand, I would like to take a further step by dealing not with normal subjectivity but with an elevated value of humanism: aesthetics. Throughout history people have been unsettled by those nonhumans which show an ability to draw and write.¹ Animals with nimble forelimbs, such as chimpanzees and cats, may be trained to paint, not to mention that elephants sometimes demonstrate an ability to draw by grabbing brushes with the trunk. Although it is still debatable whether these productions can be regarded as artistic creations, and whether these scribbling activities are sufficient proof of animal consciousness, scholars of media studies, I argue, may contribute to a posthuman perspective on art by bringing media technology into consideration. Studies of media history, especially of that in the nineteenth century, may help turn our attention to a transition from writing to inscription, a process that frees the hand from writing tools by introducing machines into the production of discourses.² This article sets out to challenge the traditional concept of art that has been restricted by technologies deemed compatible only with human anatomy. Technologies of inscription, I argue, not only introduce machines into the production of discourses, but also cleave a fissure for nonhuman elements to seep in. It might indeed be reckless to claim that the nonhuman can appreciate the beautiful or can create art, but I believe the aesthetics of the nonhuman merits discussion in an age that relies on mechanical reproduction.

Hence, this article is an experiment. Given that Western metaphysics is ocular-centric and puts special importance on light, I would like to address light as an agent in art creation. Firstly, I will investigate one of the earliest inscription technologies that deploy the mechanism of the *camera obscura*, photography. I will first argue that, in *Camera Lucida*, Roland Barthes's special treatment of photography helps reveal it to be an art which is drawn by the hand of light. The tactility of light allows at least parts of the print to escape the human photographer's intention when he clicks the shutter. The *punctum* therefore can be regarded as a trace of light's fingerprint, disclosing certain information that cannot be prearranged and

¹ Beside the instances of animal painting, there are cases of nonhumans showing the ability to write and draw. For instance, Europeans of the eighteenth century witnessed a frenzy of automaton-making. Those which drew the most attention were three automata created by Swiss watchmakers Pierre and Henri-Louis Jaquet-Droz: the Writer, the Draftsman, and the Musician (Kang 103-45). These automata demonstrated the abilities which had been jealously possessed by humans.

² By "freeing hand from writing tools," I mean the subversion of traditional concept of art or literary creation by new inscription machines such as the typewriter, gramophone, and camera. While traditionally the creator, usually male, grabs a brush or pen in order to accomplish his work, these new technologies reduce the manual work to the simplest movement of clicking or pressing on buttons. For example, in *Discourse Networks 1800/1900*, Friedrich A. Kittler expounds how the typewriter is a milestone invention of writing which has turned writing from a continuous process from brain to paper to a production of discrete word clumps mediated by machines. Because the early models of typewriter were difficult to operate, male writers usually hired female typewriters to help them write.

may only be detected through an angle that diverges from Eurocentrism and logocentrism. On the other hand, I will try to challenge the triad of pen-phallus-power by engaging Jagadis Chunder Bose's plant writing. As an Indian-born botanist who received scientific education in British India in the late nineteenth century, he invented instruments to record the lives of plants. The machines he used are not unlike the experimental devices the Victorian inventors used to record the human voice, the gramophone. Through a pen inscribing on the paper the electronic waves received from the detectors attached to the plants, Bose's instruments enable plants to write. I thus argue that Bose's instruments of inscription, by transcribing the inaudible speech of plants into visible wave patterns which are termed as "plant autographs," have blazed a trail for a posthuman aesthetics to develop.

In brief, inscription technologies have allowed nonhuman participation in the creation of art and literature and thus have opened spaces, albeit odd, for a posthuman aesthetics to brew. Based on this premise, I will appropriate Jacques Derrida's logic of the supplement in my discussion of Barthes's *Camera Lucida* and Bose's plant writing to imagine an aesthetics which centers upon the sun but diverges from the human. In what follows, I will introduce phytophallogocentrism and extend this concept by interfolding plants and photography.

In *The Philosopher's Plant*, Michael Marder, appropriating Derrida's logic of the supplement, adds the affix "phyto" to phallogocentrism to designate a new thinking pattern that grows, multiplies, and proliferates on the margin of the rigid edifice of Western metaphysics. According to Marder, phallogocentrism is a term coined by Derrida to describe the Western tradition which favors masculine values and stresses reason, language, logic, vision, and science, over body, feelings, sensations, and emotions. And heliocentrism, "an extreme form of phallogocentrism," is "a plant's banding erect in the direction of the solar erection" (Marder 205). The sunflower's rotation toward the sun is hence regarded as an imitation of the "phallic movements of the sun" (205). Given the above propositions, Marder reminds us that deconstructionists never challenge metaphysics outright but play with the alternative of presence/absence, light/dark, masculinity/femininity to undermine the dichotomous structure which has laid down the foundation of the Western humanistic tradition. Playing with the pun of "photo" and "phyto," Marder suggests that phyto- signifies a plant's peculiar relationship to light, and that to supplement phallogocentrism with phyto-, meaning plant and growth, is to forge an alliance between metaphysics and "vegetal growth" in the hope that the structure will collapse. As he suggests, "plant life deconstructs the metaphysics of presence, forcing its eternally upright phallus to fall" (205).

In a similar vein, I would like to extend Mader's idea of phyto-phallogocentrism by strengthening the association between "photo" and "phyto" on the one hand, and playing with the affixes of -troph, -trope, and -graph on the other. The meanings of the three affixes are closely related. The etymology of "-troph" can be traced to the Greek word *trophos*, which means "to nourish." An organism nourishes itself through transforming outward energy into nutriment that can be absorbed through its own tissues. Vegetal beings, for instance, are photo-autotrophic; that is to say, plants nourish themselves through the transformation of light energy. The process of nourishment involves transference and translation, actions that are also implicated in the word "-trope," which means a figure of speech in literary expressions. It has its root in the Greek word *tropos*, meaning "to turn." Now, considering that the growth of most plants is conditioned by light, that is, they are photo-tropic, can we imagine that plants can express themselves through the turning *toward* and *of* light? While the theory of mimesis supposes that reality and art are mirror reflections to each other, can we envision a kind of writing activated by vegetal beings insofar as it is the bounces and refractions of light rays that provide the condition for writing? This leads to the third affix, "-graphy," which can be traced back to the Greek *-graphiā*, to write. For plants, if the process of nourishment depends on making use of the traces of light, are they capable of phyto-graphy?

In the following sections, I will first try to interfold photography and plants by arguing, on the one hand, that photography, like plants, is photo-tropic and phototrophic and, on the other hand, that plants are capable of phyto-graphy and are energized by being photo-tropic. The mechanical reaction to light, I argue, is the key link between photography and plants. To further elaborate on the mutual folding, I will first investigate Roland Barthes's *Camera Lucida* and Jagadis Chunder Bose's plant studies. In *Camera Lucida*, Barthes diverges from mainstream discussions of photography that associate it closely with the *camera obscura* and with vision. I will show that Barthes's ambition is to challenge the ocularcentric metaphysical tradition through the emphasis of tactility and mechanicality in photography. Today, Barthes's idea of photography, I argue, demands further explorations from the perspective of posthumanism. It reminds one of an early metaphor for photography, "the pencil of nature,"³ indicating that it is not a human painter, but

³ *The Pencil of Nature* by William Henry Fox Talbot is the first book illustrated by photographs published in 1844 (Gustavson 22). In this singular collection, Talbot included his experiment on plant photography by pressing a leaf against a photo-sensitive paper to form an image (Talbot 27). The result, I think, is the very showcase of "the pencil of nature."

a nonhuman one, that draws pictures. Moreover, this metaphor echoes the meaning of photo-graphy, the drawing or writing of light, which corresponds with Marder's argument that plants react not to the light as light but to the "trace of light" (183). That is to say, light leaves traces on plants. Can plants, I would then ask, preserve memories as photography can, if they can be regarded as a medium on which light inscribes? I will thus bring Bose's studies of plants' sensations and memories into discussion. Through his work, I will try to consider plants as beings capable of writing and therefore having the capacity to translate and preserve light for future use, a reminder of photo-troph/-trophe. This capacity of light-eating, therefore, could imply a new way for one to imagine the life of plants. The posthuman aesthetics developed in the first two sections of this article will be corroborated by the reading of Virginia Woolf's avant-garde novel, *The Waves*, in the final section. In recent years, Woolf's immersion in modern media technologies has aroused scholars' interest. It has been noted that she often adopted lenses of new media to experiment with in her literary creations.⁴ My purpose here, however, is not to address how a specific medium has influenced the writing of *The Waves*, but to investigate how the human lives in this novel are the outgrowths of a vegetal base which is nourished by solar energy. The earlier interweaving of photography and plants will serve as the basic lining for the superimposition of plant life and the human characters in this novel.

Roland Barthes on Photography

In this section I take the first step to establish the mutual folding of photography and plants by expounding how the mechanicality and tactility of plants and the camera challenge Western cultures that are ocularcentric and logocentric. I will argue that both plants and photography, being photo-tropes, are paradoxically "blind" to the signifying system of human society. The "blindness" constitutes the "optical unconscious," to use Walter Benjamin's term, that implies a matrix devoid of human consciousness.

In *Camera Lucida*, Barthes, contradicting the common perception of photography as one of the visual arts, highlights its mechanicality and tactility. In the first part of the book, he writes, "For me, the Photographer's organ is not his eye (which terrifies me) but his finger: what is linked to the trigger of the lens, to the metallic shifting of the plates (when the camera still has such things)" (15). The

⁴ See, for example, *Virginia Woolf in the Age of Mechanical Reproduction*, edited by Pamela L. Caughie, a collection of studies about Woolf's close involvement with the new media of her time, such as radio, photography, and the fashion magazine.

making of a photograph, therefore, is composed of the “finger” of the photographer, the “trigger of the lens” by the finger, and the switching of the plates or rolling of the negative films. Barthes has thus drawn our attention to the material conditions of photography. Photography is regarded as an assembly of the human finger, the mechanical construction of the camera, the techniques of operating the camera, the lighting, and the weather, etc. The human and non-human are involved in this photo-making machine. At stake here is that he deliberately downplays the role of the human agent in order to draw our attention to the mechanicality of photography.

The sense of touch is also addressed in the latter part of *Camera Lucida*. Although it is often noted that the model of the *camera obscura* has contributed significantly to the development of photographic technology, Barthes asserts the opposite. As he maintains, “It is often said that it was the painters who invented Photography (by bequeathing it their framing, the Albertian perspective, and the optic of the *camera obscura*). I say: no, it was the chemists” (80). Thus, he puts emphasis on the serial chemical changes induced by light on the surface of film which is coated with “silver halogens” (80). He continues to elaborate on the “touch” of photography: “From a real body, which was there, proceed radiations which ultimately *touch* me, who am here” (80; emphasis added). For Barthes, what is important in the appreciation of photos is not sight, but touch. He suggests that it is the “skin” (81) of light that links the photographed object and the one who views the photography no matter how far apart they are in time and space. He thus likens light to “[a] sort of umbilical cord link[ing] the body of the photographed thing to my gaze” (81). To paraphrase Barthes, light, though impalpable, is an elongated piece of skin, connecting the photographed object and me. Only because of the corporeal passageway could photography be a fold, tucking the spatio-temporal dimension of the viewer into that of the photographed object.

Barthes’s employment of the metaphor of “umbilical cord” here, I would like to argue, hints at the notion of photo-trope. The umbilical cord, as the carnal tissue *transporting* nutrients and waste between mother and fetus, implies a passage of transference, translation, and remediation. When drawing a parallel between the “umbilical cord” and light, doesn’t Barthes have in mind the image of an object translated, transported, and remediated through light? Serving as an intermediary, light, the “carnal medium,” transmits the rays of object to the surface of film, which, after a series of chemical changes, turns into a print whose surface emits rays of light caressing the eyes of the beholder. That is, light takes several *turns* before it touches the eyes of the viewer. In his words: “I am delighted (or depressed) to know that the thing of the past, by its immediate radiations (its luminance), has

really touched the surface which in its turn my gaze will touch . . ." (81). In the same vein, the title of the book *Camera Lucida* echoes the idea that photography is photo-tropic. He rejects the three-dimensional model of the *camera obscura*, as he writes: "It is a mistake to associate photography, by reason of its technical origins, with the notion of a dark passage (*camera obscura*). It is *camera lucida* that we should say . . ." (106). According to Geoffrey Batchen, a *camera lucida* is an instrument which "consists of a three-sided glass prism suspended before the eye of the draftsman, such that a subject and the piece of paper beneath the prism meld together onto the back of the draftsman's retina" (11). The drawing of a picture is made possible by the refractions of light on different reflecting surfaces. It is, indeed, a devious route that light takes to make a photograph.

I thus argue that photography, like plants, is *phototropic* and *phototrophic*. Photography is also a *photo-trope*, a light turning process. As a poet turns reality into figures of speech, light turns the objects photographed into two-dimensional images. Meanwhile, doesn't Barthes's trope of the umbilical cord coincide with *photo-troph*, when *-troph* means food and nourishment? If it is light, the umbilical cord that provides nourishment to the film and transports radiations from the object to the gazer, why not call this process *photo-troph*, a function which reminds us of the fact that photography feeds on light like plants do? In what follows I will try to stress the plant-photography interfolding by arguing that plants, transforming the energy of light for future use, can also be considered as a medium. As the technologies of memory—such as writing, painting, and photography—are a way to measure time and lay down the foundation of history, plants can also serve as a collective memory bank. With that in mind, I will first elaborate on how photography, as a "clock for seeing," keeps memories whose meanings may spill over the frame that has been prearranged by the human photographer.

In *Camera Lucida*, Barthes reminds us of the connection between the camera and timepieces: "I love bells, clocks, watches—and I recall that at first photographic implements were related to techniques of cabinetmaking and the machinery of precision: cameras, in short, were clocks for seeing" (15). As a mnemonic device, the camera not only keeps records of the That-has-been but also places us in a larger time scale, making us resonate with times which extend beyond the individual lifespan. He ponders, "perhaps in me someone very old still hears in the photographic mechanism the living sound of the wood" (15). What I would like to point out here is that the mechanical lineage makes photography *metrics* and *matrix*. First, the connection of cameras with "techniques of cabinetmaking and machinery of precision" indicates the features of exactitude and precision that are

not only required in a camera's mechanical construction and design but also acquired in the photographed images. It is because of the exactitude and precision that photography is qualified to be a metric which man uses to measure time. In addition, photography harbors collective memories for future use. In other words, photography, photo-tropic and phototrophic, is a matrix from which future generations are to originate. This also resounds with coal-formation, light energy preserved in dead vegetation millions of years ago providing the dynamics for the nineteenth century Industrial Revolution, a topic to which I will return in the next section.

It is important to note here that because of the machine intervening in the photography-making, human agents do not have full control of the memory contents which have been taken down. Barthes deliberately distinguishes photography from history by contending that “[in photography] the historian was no longer the mediator,” and that “the fact was established *without method*” (80). I would like to point out here that for Barthes, it is because the finger which clicks the shutter and the hands which switch the negative plates are *blind*, so to speak, that photography could challenge ocularcentrism, logocentrism, and even Eurocentrism.⁵ The “blindness” of photography suggests that it sometimes eludes language and resists symbolization. While historians' linear writings settle history in its social, cultural, and political contexts, photography certifies fact as fact without the mediation of language. That explains why the meaning of the photographed image may sometimes spill over its frame.

Photography's challenge to ocular- and logo-centrism can further be illustrated by the opposition posed by Barthes between *punctum* and *studium*. While the latter refers to “a field of cultural interest,” the former is an “unexpected flash which sometimes crosses this field [of cultural interest]” (94-96). In *Camera Lucida*, *studium* is the field which “I perceive quite familiarly as a consequence of my knowledge, my culture” (25). Supplying “a classical body of information,” *studium* conveys the messages the photo has to offer, such as the details of a man's apparel, the members participating in the events, the styles of furniture of the epoch. It can be appreciated as “political testimony” or “historical scenes.” By contrast, a *punctum* is what “pricks me (but also bruises me, is poignant to me)” (25-27). A spot which always escapes signification, a *punctum* may arouse the spectator's desire and anxiety. It is not something which can be prearranged by the photographer, nor can it be anticipated in any picture. It provokes “a *satori*,” or “the passage of a

⁵ See, for example, how Barthes considers the photograph of William Casby's face to be a testimony and an accusation of slavery (34-38).

void.” To perceive a punctum is to drop into an unexpected hole of emptiness, for it is a “detail overwhelm[ing] the entirety of my reading” (49).

Here I am not going to delve into detailed discussion of what *studium* and *punctum* are,⁶ but rather highlight the double passivity that constitutes a *punctum*: it is neither the photographer’s intention to set up a *punctum*, nor the viewer’s privilege to seek out a *punctum* in a photo. I thus argue that the double passivity results from the intervention of machine in the creation of image. It is neither the human photographer nor the human viewer that is in full command, but the mechanicality of photography that inaugurates the possibility for the dispersion of meanings in an image. Hence, the posthuman aesthetics of photography lies in its mechanicality. Photography is photo-phallogocentric, considering that the human agent constitutes a great part in photo-making. However, the mechanical construction of the camera and the chemistry involved in the development of a photograph all add something to the phallogocentric image. As I have argued, the interfolding of camera and plant could undermine, however peripherally, the central meaning that is prearranged by the human. It is like a shoot sprouting from the crevice of a wall, waiting for a proper moment to drive its roots into the very fabric of the building, either to entangle itself with it or to collapse it. Photography’s mechanical relationships to light, which may result in the accidental spillage of meanings, make it comparable to plants. Therefore, photography is also phyto-phallogocentric.

In “What Is a Photograph,” Margaret Iversen maintains that Barthes’s discussion of *punctum* could be understood through the idea of the “optical unconscious” that Walter Benjamin puts forth in “A Short History of Photography.” Reading *Camera Lucida* through Benjamin’s conceptualization of shock experience in modern society, Iversen suggests that the “camera’s blind mechanism . . . is similar to the surrealist’s use of psychic mechanism” (61-62). The “psychic mechanism” here refers to automatic writing popular in the early twentieth century which participated in a media revolution where writing is replaced by mechanical inscription

⁶ There are numerous studies dedicated to Barthes’s notion of photography. For instance, one of the earliest studies of *Camera Lucida*, Nancy Shawcross’s *Roland Barthes on Photography* is a book-length study which delineates how Barthes’s idea of photography developed. Reading *Camera Lucida* against the background of its historical, philosophical, and scientific contexts, Shawcross argues that the idea of *punctum* should be understood through modern physics of the early twentieth century, such as the works of Albert Einstein, Max Planck, and Rodulf Clausius (94). In *Photography Degree Zero* (2009), an anthology of essays focused on *Camera Lucida*, there are several important studies addressing *punctum*, including Michael Fried’s “Barthes’s *Punctum*,” Margaret Iversen’s “What is a Photograph,” and Rosalind E. Krauss’s “Notes on the *Punctum*.” Fried understands *punctum* through the idea of “antitheatricalism” (152). Krauss, partly making comment to Fried, partly dealing with questions of translation, notes how Barthes attempts to evade “the fascism of language” (188). Iversen points out how Barthes is influenced by Lacanian psychoanalysis, especially the notions of gaze, desire, and trauma.

and the message is separated from its medium with the introduction of new mnemotechnics such as the typewriter and gramophone.⁷ Iversen here makes an important point which is consistent with my argument that the camera is somehow “blind” to the signifying system of human society. It is because of the mechanicality of camera operation that unpredictable variants in the message transmission, which Benjamin describes as the “imperceptible point” through which the future will identify and find itself, are added (“History” 7). He continues, “Photography makes aware for the first time the optical unconscious, just as psychoanalysis discloses the instinctual unconscious” (7). For Benjamin, what is at stake is that the new technology of picture-making may reveal the latent meanings beyond immediate human consciousness. This corresponds with the proposition Benjamin makes in his seminal essay, “The Work of Art in the Age of Mechanical Reproduction,” in which the mechanicality of photography is considered to revolutionize human perception. It is not that human beings decide which forms of art they will use to express themselves, but that the techniques determine how we see the world. This, I believe, helps illuminate the posthuman aesthetics implied in Barthes’s conception of photography.

In sum, being photo-tropic and photo-trophic, photography’s relationship to light is comparable with that of plants. By drawing a parallel between photography and plants, I aim to imagine the sensorial and mnemonic capability that plants might have. Mechanically responding to light, photography leaves room for the non-human touch in the process of picture-making. The outcome may diverge from what has been intended by the human photographer, rendering a handful of dirt for the seed of a posthuman aesthetics to grow. In the next section, through the investigation of Bose’s studies of plants, I further explore the possibility of the photography-plants interfolding.

Jagadis Chunder Bose’s Plant-Writing

Jagadis Chunder Bose⁸ was a Bengali scientist of the Victorian age whose important contributions to modern botany and microwave technology have long

⁷ See, for example, Friedrich A. Kittler’s *Gramophone, Film, Typewriter* for his discussion of how writing has transformed from an expression of individuality to a chain of fragmentized signifiers in the age of mechanical inscription inaugurated by the invention of the typewriter. As to the relationship between the typewriter and automatic writing, see Kittler’s account of Gertrude Stein, who had served as a typist for years before she participated in Leon Solomons’s experiments on automatic writing. Later Stein employed automatic writing in her poetry writing, a fact which can be regarded as a good example of how mechanicality can contribute to artistic creativity (Kittler, *Discourse Networks* 225-29).

⁸ The spelling of Bose’s name varies. I choose the one which is shown in his publications in the early twentieth century.

been neglected. Born in British India in 1858, Bose received colonial education from various European scientists in his hometown and went to England to study natural science from 1880 to 1884. Returning to Kolkata, he started to conduct a series of microwave experiments based on electromagnetic theories popular in the late nineteenth century, such as the studies of Michael Faraday, James Clark Maxwell, and Heinrich Hertz. One of the most salient, and the most controversial, features of his studies is his radioactive research on plants (Nandy 17-88; Mukherjee and Sen 1-3). Combining traditional Indian philosophy, botany of local plants, and Victorian modern science, his studies suggest that plants not only can feel but also can move, however imperceptible the movements are. These findings challenge the Western perspective that plants are only one scale above minerals in the Great Chain of Being, insensitive and inanimate. Additionally, his electromagnetic research on plants and metal is thought to be pioneer studies for the molecular and cellular biology of the twenty-first century (Shepherd 607-19).

Although Bose's electromagnetic knowledge may have been a colonial refraction of European thinking, he invented various new instruments which helped him accomplish something never thought of in Western science—to measure and observe the responses of plants. According to Dulal C. Mukherjee and Dibakar Sen, the instruments he used were extremely sensitive so that he was able to record and detect a plant's infinitesimal movements or minute electric flows undetectable to human researchers before him: for instance, the photosynthetic recorder, the crescograph, the transpirograph, and the magnetic radiometer (4-5). Additionally, V. T. Yadugiri notes that it is Bose's ingenuity that improved "pen-drive," an instrument commonly used in electronic experiments in the Victorian age, to verify a plant's almost indiscernible signals of life (976). It is worth noting that the design and components of the instruments that served as the plants' pen had strong affinity with sound recording machines in the nineteenth century, which was a time when new media depending on electronic waves were in their inchoate stage. The instruments Bose invented were mostly composed of parts that were often used in other media of inscriptions: wires, revolving cylinders with writable surface, electronic radiators, pens, etc. By transforming and inscribing sound signals into waving patterns on a writable surface, Victorian inventors achieved the reproduction of human voice. Surprisingly enough, this yet-to-be-perfected technique of sound-writing was taken over by an Indian-born scientist to endow plants with the power to write. The result is an effect of the uncanny. As a famous motto of Western humanism goes, "*cogito ergo sum*," I think therefore I am. Considering that writing is

proof of one's consciousness,⁹ how shall we understand the fact that Bose's plants can write?¹⁰ In what follows, through the discussion of *Plant's Autographs and Their Revelations* (1927 [1955]) I will show that Bose's plant-writing, also his phyto-graphy, is photo-tropic and photo-trophic. I suggest that plants, like cameras, have a particular relationship to light: the writing of plants' lives (phyto-auto-bio-graphy) sheds light on how phyto-phallogocentrism can be developed.

In *Plant Autographs*, Bose gives an account of how plants write about themselves by showing different wave patterns inscribed through various recorders. The inquiry of these experiments is that, if animal tissue, such as the retina, responds to various stimuli, do plants also respond to any "questioning shock" (3)? Bose applied varying strengths of electronic shocks to plants, first to the mimosa, shrubs that react with observable movements when touched, then to those which barely show any obvious movement, such as palm, dahlia, papaya, and croton. The plants, or the subjects of his experiment, were attached to the instruments that were designed to inscribe the plants' indiscernible reactions on pieces of paper. Bose thus drew a parallel between his experiments' results and writing. As he wrote, if "one's handwriting may be modified profoundly by conditions physical and mental," and if the critical eye can decipher the meanings of "the lines and curves of a human autograph, perhaps the plant can be induced to give us its own *autograph* which would similarly reveal its *internal condition*" (2-3; emphasis added). The phyto-graphs here are phyto-tropes in that they show how the insides of the plants turn out through the recording pens invented by Bose.

The autographs of the plants in Bose's studies, I argue, are phyto-*auto-bio-graphy*, for they are the portraits of the plants' lives drawn by the plants themselves. Through them different phases of the lives of the plants are displayed. Maintaining that the autographs of the plants reveal their "internal conditions," Bose continued to show how plants reacted to electronic shocks when they were asleep or dying, wounded or drugged. The dotted signals, aligning themselves as different patterns

⁹ See, for example, how Descartes makes the distinction between humans and animals in *Discourse on Method*, in which he asserts that human beings have "reasonable souls" (47), which are denied to brutes. The ability to use language, for Descartes, marks the absolute gap between human and nonhuman. Even if birds such as magpies and parrots can utter words, it is impossible for them to speak and listen to us humans with reason. For Descartes, "this proves not only that the brutes have less reason than man, but that they have none" (46). Hence, only humans own the faculty of rational thinking and know how to use language.

¹⁰ In "'Tones from out of Nowhere': Rudolf Pfenninger and the Archaeology of Synthetic Sound," Thomas Y. Levin discusses how various "optical sound systems" competing with one another in the early twentieth century correspond with Derrida's discussion of phonocentrism in *Of Grammatology* several decades later. According to Levin, the seeming hierarchy between authentic speech and fallible writing has been recast by Derrida to reveal that "writing [is] the very condition of possibility of speech" (47). In other words, the origin and presence of speech are authenticated by writing. In a similar vein, I think Bose's plant studies, by showing the visible writing of plants, have verified plants' (non)speech, previously inaudible to the human ear.

of waves, were the evidence Bose offered to show that plants could feel and live. The more intense the shock, the stronger the subject reacted. Accompanying each response was temporary insensibility, whose duration was prolonged as the strength of the shock increased. Additionally, not only could plants live, but they could also die. The famous “death curve” of various plants reveals the spasm of plants’ death struggle. When Bose applied poison or heat to the experiment subjects, a strong “electronic charge” could be observed before the permanent disappearance of response in the plants. That is, death on the plants’ autographs is shown as waves progressively waning after a short period of strong oscillation. Once a critical point is reached, there will be no recovery at all (64-68). In brief, Bose’s phyto-auto-bio-graphy expresses various life phenomena as different wave patterns, while death is manifest as waveless muteness after a severe bout of spasms.

For Bose, the waves, either those drawn by the plants or those shown as physical movements, are all “expressions” of the plants’ lives. Endeavoring to give account of plants’ automatic movements, he studied highly sensitive plants, such as *Desmodium gyrans*, *Biophytum sensitivum*, and *Averrhoa Carambola*, which grew abundantly in parts of Kolkata (71-76). By attaching instruments to the plants, he showed that plants have the capacity to store energy and make expression through rhythmic repeated movements afterwards. These rhythmic responses are compared with art creation (79). In his words: “Have we not here a suggestive parallel to a certain phenomenon known among literary and artistic people as inspiration? For the attainment of this exalted condition, it is also necessary to have a previous storage for subsequent effervescent overflow” (79). He also draws attention to the variations of expressions dependent on the materiality of the body, as he continues:

aspirants to this condition might well decide in whose footsteps they will choose to tread—those of *Biophytum*, with its immediate dependence on favorable outside influences and ephemeral activity, or of those of *Desmodium*, with its characteristic of patient and long-enduring accumulation of forces, which afterwards find uninterrupted and persistent expression. (79)

Here, the process of stimulation, storage of energy, and expression are paralleled with how human artists receive inspiration and release creative energy. By doing so, Bose not only levels the hierarchy between humans and plants, held preciously by the humanist tradition, but also implies that the bodies of both plants and humans are media through which energy expresses itself. He goes further to undermine the division between the human and the vegetal, the symbolic and the mechanical, the metaphysical and the physical: “This is variously manifested, now in

the pulsation of the *Desmodium* leaflets, again in the beating of the heart, and elsewhere in echoing sensation and *thought*" (79; emphasis added).

Thus, the idea that plants are photo-trophic and photo-tropic gains another layer of meaning which taps into Derrida's concept of *différance*. In *Physiology of Photosynthesis*, for Bose to understand the relationship between the intensity of light and the oxygen bubbles produced by plants, a specially designed electromagnetic writer is used to inscribe successive dots on a revolving drum (30). He describes the process of photosynthesis as plants feeding on light and carbon dioxide by reminding us of the universal phenomenon of energy transmission and storage. As Bose points out, "All vital activity, whether of animal or of plant, is ultimately traceable to the energy of solar radiation. The animal derives its energy from vegetable food. The plant, by virtue of its chlorophyll, absorbs both solar energy and carbon dioxide and builds up organic matter charged with organic energy" (1). It is important to note here that the idea of eating is referred to as energy transferal. Plants live by eating light and carbon dioxide; by eating plants, animals absorb light energy. As the ultimate food for all lives, light takes several *turns* in different bodies. Bose adds, "To stand before a coal-fire is to bask in the sunshine of the Carboniferous Period" (1). The extension of time and space here reminds us of the metaphor of the "umbilical cord" Barthes employs to describe light. More importantly, the energy of light perpetually differs and defers through various media—plants, coal, animals, etc. Photo-*trophic* and photo-*tropic*, plants, which manifest their capability to write through the various waves in Bose's research and express themselves through rhythmic movements, manifest the *différance* Derrida proposes in *Of Grammatology*.

In *Of Grammatology*, Derrida, contemplating the idea of the "liberation of memory," "exteriorization," and "program" through André Leroi-Gourhan's anthropological studies, deconstructs the binary opposition of life and *technē*, natural and artificial, inside and outside. Appropriating Leroi-Gourhan's notion of the human to argue that we have always already been constituted by the tools we use, Derrida defines "the history of life—of what I have called *différance* [sic]—as the history of the *grammè*" (84). I would like to argue, however anachronically, that this could be regarded as a very early sign of Derrida's posthumanist propensity. He refutes the tradition of anthropocentric thinking that sees language as the trademark of human beings. What is at stake here is the appositionive *différance*, which indicates that life is a continuing process of differing and deferral, a notion which resonates with Bose's conception of plants' life. Also, seeing the history of life as the history of *grammè*, Derrida implies that bodies are media upon which pro-

grams inscribe. In his words: “Since ‘genetic inscription’ and the ‘short programmatic chains’ regulating the behavior of the amoeba or the annelid up to the passage beyond alphabetic writing to the orders of the logos and of a certain *homo sapiens*, the possibility of the *grammè* structures the movement of its history according to rigorously original levels, types, and rhythms” (84). The boundary of the human body and machine, the organic and inorganic, is thus blurred. Here I venture to propose that Derrida suggests *différance* to be the general law, Logos, of *grammè*; as he writes, “one could speak of a ‘liberation of memory’ . . . which, beginning from the elementary programs of so-called ‘instinctive’ behavior up to the constitution of electronic card-indexes and reading machines, enlarges difference [sic] and the possibility of putting in reserve” (84). As a movement of differing, *différance* could be a transfer among different media; as deferral, it would retain memory traces.¹¹

Derrida’s idea of *différance*, undermining the dichotomy between the organic and inorganic, echoes what Bose advances as a common law of nature. Even though he shows that plants are animated rather than unanimated, Bose surprised his contemporaries by repudiating vitalism and stressed that it is the machinery of cells rather than a universal spirit that makes life as it is. Far ahead of his time, he anticipates molecular biology. The waves of his botanical studies showcase the “pulse-throb” of the “*molecular machine*,” which constitutes “living substance” by aggregations (*Plant Autographs* 61; emphasis added). The phenomena of lives, in his words, are the expressions of the “machinery of life,” or “the simplest mechanism not easily deranged” (55). For Bose, there is an ultimate source of life: solar energy, which manifest various expressions through differently programmed bodies. In his earliest research, *Response in the Living and Non-living* (1902), his experiments with electronic responses on plants, metals, and retinas show that traditionally defined organic and inorganic matter have similar responses to electronic stimuli through various waves. Bose thus concludes, “We have seen that amongst the phenomena of response, *there is no necessity for the assumption of vital force*. They are, on the contrary, physico-chemical phenomena susceptible to a physical inquiry as definite as any other in inorganic regions” (*Response* 190; emphasis

¹¹ I am grateful to one of the anonymous reviewers’ kind reminder that terms such as “exteriorization,” “program” and “inscription” need further explanation. However, limited by the length of the article, I could only briefly summarize them as follows. “Exteriorization” is the term used by Derrida to designate the mnemonic technologies people deploy as memory aids. They are generally regarded as exterior because, according to Derrida, the humanist tradition supposes our bodily memory to be pure and authentic. However, due to the limitation of our body (for instance, death), memories have to be exteriorized. The words “program” and “inscription” refer to media technologies that privilege drawing and writing, as opposed to speech. Derridean notions of mnemonic technologies are later elaborated by Bernard Stiegler in his *Technics and Time*, which, according to Cary Wolfe, presents “the prosthetic coevolution of the human animal with technicity of tools and external archival mechanisms (such as language and culture)” (Wolfe xv).

added). The humanistic belief that God is the prime mover, the Universal Spirit, the One, is thus depleted. It is not that, as vitalists claim, the One gives life to everything; on the contrary, as it is implied here, the One might have been constructed retrospectively through exuberant life phenomena. Echoing from afar is Derrida's notion of *différance*, which functions not only as spillage and dispersion but also as constitution of the "origin."

In *The Philosopher's Plant*, Marder describes Derrida's critique of the Western metaphysical tradition as "phytophallogocentrism" in that Derrida has used the metaphor of sun to imply philosophy's privileging of reason, masculinity, and linear writing. According to Marder, Derrida in *Glas* compares the sunflower to Western philosophy: the revolving of the flower with the solar movement parallels the reverence of the Idea held by the masters of philosophy. Derrida's logic of supplementarity, however, deviates from philosophy's heliotrope, for it makes a "distinction between two kinds of heliotropes: the metaphysical sunflower and the post-metaphysical waste of solar, biotic, human, or other kinds of energy" (203). Phytophallogocentrism, therefore, is aimed toward the outgrowths branching out of an anthropocentric mode of thought, and presumably extending beyond metaphysics. Therefore, I suggest that the principle of *différance* be acknowledged in the plenitude of earthly phenomena. In the following section, I will read Virginia Woolf's *The Waves* from the perspective I have developed so far, hoping that a posthuman aesthetics of plants in the text, prominent yet unnoticed, can be appreciated.

Virginia Woolf's *The Waves*

Although Woolf has never been an acclaimed nature writer, vegetal life spreads through her works like a tapestry. She had a special liking for gardening. In 1919, she and her husband Leonard bought Monk's House in the village of Rodmell. The house thus became a cozy residence rich with plants, for both took great pains, and pleasures, to foster the plants in the yard (Zoob). Also, her autobiographical writings are usually richly adorned with experiences in the natural world. For instance, in "A Sketch of the Past," she not only gives accounts of her loving mother and sister but also recollects the time spent in the wilderness of St Ives. According to Woolf, she and her siblings were so much immersed in the green world that her father's friend, C. B. Clarke, a botanist, once commented, "All you young botanists like *Osmunda*" (74). As *Osmunda* is a fern flourishing in southwestern England, young Stephens' kindred spirits¹² with the local flora is foregrounded.

¹² Virginia Woolf's maiden name is Adeline Virginia Stephen.

In what follows, I discuss the posthuman aesthetics of plants in Virginia Woolf's *The Waves* through the idea of photography-plant interfolding I have developed.¹³ First of all, it is noteworthy that the lives presented in this novel defy any clear distinction of category, species, or individual, to such an extent that the bodies are amorphous. I will argue that the amorphous bodies illustrate how lives can be photo-trophic. Similar to what Bose suggests in his plant studies, the vegetal life in *The Waves* is capable of transmitting and retaining memories. I will thus investigate how plant and human merge together, and how the photo-trophic life could gesture toward a posthuman aesthetics.

To begin with, the singular structure of *The Waves* should be addressed. There are nine "interludes" which suggest the passage of time and the progression of the characters' lives. Each interlude is followed by a cluster of interior monologues issuing from the six main characters.¹⁴ Structured so that an "interlude" describing natural lives and the changing of the tidal waves is appended to each chapter, the book seems traditional. However, readers who are accustomed to reading the opening exposition as the background of the story may find it difficult to delineate any coherent plot through the gathering of the monologues. I thus suggest that the novel should be read contrariwise. If the descriptions of the greeneries are treated as "props" for human stories to happen in a traditional reading strategy, it shall be read here through the logic of supplementarity that Derrida proposes. In other

¹³ In recent years, the posthuman tendency of in Woolf's works has been noted by Woolf scholars. For instance, in *Virginia Woolf and the Materiality of Theory*, Derek Ryan places Woolf in dialogue with contemporary theorists who are often categorized as posthumanists, such as Rosi Braidotti, Donna Haraway, Karen Barad, and Jane Bennett. In a chapter entitled "Quantum Reality and Posthuman Life: *The Waves*," Ryan examines the materiality of life in the novel and interprets it as a posthuman ontology of life. Some may also read this novel against the backdrop of media technology; see note 14 for further explanation.

¹⁴ My argument here is indebted to J. Hillis Miller's article, "The Waves as Exploration of (An)aesthetic of Absence." In this article, Miller argues that the unique style of this book should be distinguished from the technique of stream of consciousness Woolf excels at. The sentences of these soliloquies, for one thing, are mostly complete, while a stream of consciousness novel usually juxtaposes disparate fragments. He also notes that it is sometimes difficult to assign monologues to their proper speakers, even though each character is portrayed with a specific personality. Sentences and imagery may appear from one's monologue to the others'. It is as if, Miller deduces, "these soliloquies are collected in some memory bank where they go on happening and can be recovered and shared" (667), and that "each soliloquy . . . would be like a wave gathering and then crashing on the shore, or perhaps contain a number of waves" (662). He then tries to explain these mysteries in the narration of *The Waves* and concludes that Woolf may have presupposed "a vast impersonal memory bank that stores everything that has ever happened, every thought or feeling of every person" (668). He compares it to the internet databank or music and image flow. This memory bank, however, is "absent," because it is not ready to be accessed for every conscious attempt. The sentences and images deposited in the bank may sometimes pop up in the form of monologues, in a way that is involuntary and passive. In the end of the essay, Miller uses an anachronistic but very interesting analogy to describe the anonymous memory bank here by likening it to hypertexts in the internet to be read on devices like the Kindle (678). Following this line of thought, I choose to deal with the posthuman aesthetics that is implied in the amorphous bodies that manifest lives as photo-tropic and photo-trophic.

words, instead of understanding the green world merely as a “background” for human characters to live their fictional lives, one should regard it as the “front” which all the expressions follow. The “inter-ludes,” therefore, may be a misnomer, for they are not episodes between the main plot but the very lining from which individual life rises. More correctly speaking, they are the “preludes” for human life to begin; this means that they precede the human conditionally and chronologically. The reason for the difficulty in identifying the speakers is probably that they are never meant to be identifiable. I suggest considering *The Waves* as Woolf’s experiment in which vegetal life is the main character, indicating an attempt at a posthuman aesthetics that treats human consciousness as outgrowths rather than the center. This attempt, I argue, can be illustrated by the anonymity of the narration and the heliocentrism of the preludes.

Located at the beginning of each section, the prelude presents the changing natural phenomena with the sun’s location in the sky. No specific narrator can be identified in these preludes. Many passages even suggest nonhuman perspectives. For instance, “Perhaps it was a snail shell, rising in the grass like a grey cathedral, a swelling building burnt with dark rings and shadowed green by the grass” (47); “The trees’ shadow was sunk to the dark pool at the root. Light descending in floods dissolved the separate foliage into one green mound” (94). These are extreme close-ups aiming to describe minute details often evading human perception for their insignificance. Sometimes, the perspective of narration soars in the air and dissolves solid bodies into shapes and forms: “The substance had gone from the solidity of the hills. Travelling lights drove a *plummy wedge* among unseen and sunken roads, but no lights opened among the *folded wings of the hills*, and there was no sound save the cry of a bird seeking some lonelier tree” (153; emphasis added). Here the bird melts down to the shape of a “wedge,” which is parallel with “the folded wings of the hill.” Arguably, it is Woolf’s design to present a view that is anonymous; that is, it is impossible for any living human being to see nature with such eyesight. The anonymity of the narration is also illustrated by the monologues bunched between the preludes. It would have been difficult to identify the speaker but for the designations, such as “said Bernard,” “said Rhoda,” or “said Jinny.” Images and lines expressed in one’s monologue may appear in those of another characters.

The mysterious structure of *The Waves*, I argue, is comparable to Bose’s idea of life phenomena as the expressions of solar energy metaphorically manifesting as various wavy patterns.¹⁵ Opening always with the description of the sun’s movement, each prelude gives an account of changing scenery by the sea. The forms of

¹⁵ According to Ashis Nandy, famous among his contemporaries, Bose attracted the attention of important leaders

trees, birds, snails, and insects, firstly dimmed, gradually gain clear outlines as the sun rises high in the sky, so are each life's movements intensified. As the sun starts to descend, so is the activeness of lives. The final prelude opens with the following sentence: "Now the sun had sunk. Sky and sea were indistinguishable" (153). The imageries of lifelessness and death prevail, as the waves of "darkness" rolled over "wrinkled skin of the turf, enveloping the solitary thorn tree and the empty snail shells at its foot" (154). The once lively phenomena are annulled by the devouring darkness. These preludes show a propensity for helio-centrism. They are effectuated by the movements of the sun. The natural phenomena, such as the fluctuations of the ocean, the lives of birds and insects, the changing of the trees in the course of a year, the room lit and darkened by the sunlight, and also the main characters' life span all showcase the intensity of the sun's radiation. The nine chapters begin from the childhood of the six characters, progress through their maturity, and head toward impending death. It seems that all human characters grow, flourish, wither, and fall, as plants do. Monologues like bouquets of flowers are bundled between preludes. There are no cushioning narrations between the monologues, which makes it difficult to identify who the speakers are. Lines bubble out one against another, as if denying individuation. I think this can be regarded as Woolf's gesture of de-anthropocentrism. Human characters can hardly claim to have thoughts and memories in their minds. Instead, these lines are like vegetal outgrowths revolving along the sun's radiation.

As I have expounded in the previous section, Bose conceptualizes life phenomena as mechanical activities manifest by various wavy movements. According to Bose, "This is variously manifested, now in the pulsation of the *Desmodium* leaflets, again in the beating of the heart, and elsewhere in echoing sensation and thought" (*Plant Autographs* 79). I argue that, with the sunlight as the central trope of Woolf's novel, the undulations of monologues in *The Waves* are tropes of light; that is, they are photo-tropes. In addition, the movements of the tide, the insects, the shell, the bird, and even the human thoughts imply that life is photo-trophic. Lives are exuberant where the sunrays are strong, while the bodies are often amorphous in the shade. For instance, in the third prelude when "the sun rose," the erratic and spasmodic movements of the bird moving among branches are depicted, followed by a passage portraying the superterranean lives in the shade of flowers:

of modern sciences, such as Albert Einstein, Gottlieb Haberlandt, and John Arthur Thompson. Similarly, philosophers such as Henri Bergson, George Bernard Shaw, and Aldous Huxley were also known admirers of Bose (12-13). Although there is no research to demonstrate that Woolf has read or been influenced by Bose's studies, it is reasonable to assume that he was a prominent cultural figure when Woolf worked as a productive writer. Also, the title of the novel reminds readers of the discipline of Bose's studies, electromagnetism.

“Down there among the roots where the flowers decayed, gusts of dead smells were wafted; drops formed on the bloated sides of swollen things. . . . Yellow excretions were exuded by slugs, and now and again an *amorphous body* with a head at either end swayed slowly from side to side” (47; emphasis added). In the region where darkness reigns, the boundary is fragile and porous. It is not just that the mollusks are amorphous, but human bodies may also be amorphous, ever ready to transform into different shapes along the currents of light and wind. Jinny’s monologue exemplifies how the body is easily translated into another form: “Now we lie under the currant bushes and every time the breeze stirs we are mottled all over. My hand is like a snake’s skin. My knees are pink floating islands. Your face is like an apple tree netted under” (14). At stake here are the sensations of colors and touch, rather than a singular entity.

Woolf seems to have a special liking for having individual characters merge with plants. For example, Susan in the time before dawn thinks of herself to be a “field,” which owns the birds flying above, the hare that is almost stepped over by her, and the cow creaking and munching (61). Also, when Jinny joins a party, she “unfurls” like a “fern” (64), and greets other guests like “a plant in the river” which floats along the current but is at the same time “rooted” (65). More noticeable is Louis’s becoming a plant. In *The Waves*, Louis serves as a token of the human world’s special affinity with vegetal life. As Bernard observes, “Louis can contemplate nature, unwinking, by the hour” (23). Louis’s childhood monologue begins by his hiding and disappearing among flowers:

Flower after flower is specked on the depths of green. The petals are harlequins. Stalks rise from the black hollows beneath. The flowers swim like fish made of light upon the dark, green waters. I hold a stalk in my hand. I am the stalk. My roots go down to the depths of the world, through earth dry with brick, and damp earth, through veins of lead and silver. I am all fiber. All tremors shake me, and the weight of the earth is pressed to my ribs. Up here my eyes are green leaves, unseeing. I am a boy in grey flannels with a belt fastened by a brass snake up here. Down there my eyes are the lidless eyes of a stone figure in a desert by Nile. I see women passing with red pitchers to the river; I see camels swaying and men in turbans. I hear tramplings, tremblings, stirrings round me. (7)

Hiding behind petals as if dressed as a harlequin, he and the flowers become one. With his “roots” extending to the depths of the earth, he can feel the tremors and weights of the earth. As the roots go into deep time, memories of ancient Egyptian’s life beside the Nile are recalled.

Woolf's posthuman aesthetics of plants is pronounced in this passage. When young Louis merges into flowers, his leaf-eyes are "unseeing." The metaphor of leaf-eye is soon connected to "lidless [eyes] of a stone figure." Here I would like to point out that the *leaf-eye* and *stone-eye* are eyes that could receive sunlight without the metaphysical preconception that light is comparable to reason. In other words, they are a certain kind of eye which responds to light mechanically while blind to human reason. I suggest, therefore, comparing the leaf-eye/stone-eye metaphor to the camera that Barthes discusses in *Camera Lucida*. Tracing the history of cabinet and watch making, Barthes notes that there is always something in the photograph which eludes human construction. And as I have argued above, this blindness to human reason, thanks to the mechanicality of the camera, has the advantage of evading phallogocentrism. Now, as a plant, Louis's eyes, like the lens of camera, respond to light, tapping into memories that are larger than his individual life span. As he continues his contemplation of becoming a plant, his roots go down to the center where the roots of oak trees are bound together. "Sealed and blind, with earth stopping [his] ears, [he has] yet heard rumours of wars; and the nightingale; [he has] felt the hurrying of many troops of men flocking hither and thither in quest of civilization like flocks of birds migrating seeking the summer; [and he has also] seen women carrying red pitchers to the banks of the Nile" (60). As a plant, he has memory, not only the memory of his own, but also collective memories of his contemporaries and of the ancient time, of the women with a pitcher, of camels, by the Nile.

It is therefore reasonable to argue that Woolf assumes a fundamental vegetal life before the emergence of individual human sensations and thoughts. This is also clear in her autobiographical essay, "A Sketch of the Past," in which she wonders whether certain moods and memories felt with "great intensity" have "an existence independent of our minds." The way for us to tap them voluntarily is yet to be found. But she sees the past as an "avenue," at the end of which are "the garden and the nursery" (67), images which remind us of the "umbilical cord" Barthes uses to describe how the light links up the present and the past. The images of garden and nursery can be linked to the beginning of the essay where she recalls that her first memory is of the flowery world of her mother's dress. The superimposition of a vegetal life and the mother's lap is significant since it could symbolize a primordial green world that gives nourishment to the present, echoing Louis's monologue in *The Waves* in which his roots trace back to the time of ancient Egypt, the cradle of human civilization.

Here I suggest that the backward movement of tracing to ancient times be reversed to see, forward, how present individual thoughts and feelings are nourished

by light, that is, how they are photo-trophic. Considering that vegetal life is treated as the very lining from which individual human life rises, the present feelings and thoughts can be regarded as outgrowths by way of *différance*. What does Louis's monologue have to do with the life of ancient Egypt, if it were not because language is regarded as the trace of experience under erasure? Moreover, what are the meanings of the bundles of monologues, were they not the original vegetal life differing and deferring? In *The Waves*, the individual is but a transient move, and the coherent self is impossible. As Bernard contemplates:

I am not one and simple, but complex and many. . . . They do not understand that I have to effect different transitions; have to cover the entrances and exits for several different men who alternatively act their parts as Bernard. . . . [Y]ou understand that I am only superficially represented by what I was saying to-night. Underneath, and, at the moment when I am most disparate, I am also integrated. (48-49)

Rooted deep in "the garden and the nursery," characters in the novel usually merge into the vegetal life in the dark and gain stronger self-awareness when there is light. Feeling his own "disparateness," Bernard returns to his room, and continues to ruminate, "I . . . turn on the light, and see the sheet of paper, the table, my gown laying negligently over the back of the chair, I feel that I am that dashing yet *reflective man . . . who . . . seizes his pen*" (49; emphasis added). The light brings the reflexive self who uses a pen to write down his thoughts. The six characters' lives, like all the other vegetable and animal lives around them, are phototrophic, inasmuch as their monologues are phototropic.

Human language in *The Waves*, hence, is photo-trophic and photo-tropic, but it does not comply with the phallogocentric philosophy that privileges light as reason, for the relationship between light and plants is different from that between reason and philosopher. The devious and digressive narration of the *The Waves* defies the straightening out of any central meaning. Also, the vulnerability and passivity of the characters are prominent in this novel. Having a close relationship with light does not empower them. They, like plants, feed on light, without making claim to autonomy or identity of their own. Thoughts of death and non-existence prevail in the novel. As Louis said, "my body passes vagrant as a bird's shadow. I should be transient as the shadow on the meadow, soon fading, soon darkening and dying there where it meets the wood, were it not that I coerce my brain to form in my forehead; I force myself to state, if only in one line of unwritten poetry, this moment . . ." (42). The "I" here is only "one line of unwritten poetry," making a

distinction between this moment and the long history which began in Egypt (42). Given life by light, the human character, however ephemeral and fragile, turns what has nourished him into a line of poetry to defy death.

Finally, by indicating that it is the sun that endows life with a substantial body, Woolf seems to echo Bose's proposition that solar energy is expressed through various bodies. In the final episode of *The Waves*, as Bernard witnesses an eclipse of the sun, he describes everything as "shadows": "I, carrying a notebook, making phrases, had recorded merely changes; a shadow, I had been sedulous to take note of shadows" (185). He then begins to doubt whether he, "without a self, weightless and visionless," could proceed in the "weightless world" to record anything "without illusion" (185). When the sun comes back after the eclipse, the world is gradually gaining its body. "Then a vapour as if earth were breathing in and out . . . for the first time" (185). It is as if the colors, one by one, return to the file, "The woods throb blue and green, and gradually the field drinks in red, gold, brown. Suddenly a river snatches a blue light. The earth absorbs colour like a sponge slowly drinking water" (185). The full-round body of the earth recovers at length: "It puts on weight; rounds itself; hangs pendent; settles and swings beneath our feet" (185).

Conclusion

Seemingly mute and motionless, plants have long been an "obscure non-object" in Western metaphysics (Marder, *Plant-Thinking* 20). It is indeed difficult to think about plants, for they are so different from the animated bodies that we are familiar with such as animals and human bodies. Hence, to develop an aesthetics of plants, I believe, is to pose a special challenge to humanism. In this article, the interfolding of plants and photography has been instantiated by way of Barthes's understanding of photography and Bose's research on plants' feelings and movements. Borrowing Barthes's view of photography, I have tried to test the possibility of portraying plants as a kind of medium through which light passes and on which light inscribes. In addition, Bose's pioneering, though long-forgotten, plant studies help us to imagine plants' writing on their own life and death. Reading the undulating waves in Bose's studies, I could not help but wonder: What do plants feel and think when they "write" these wavy lines down? Can we regard these writings as plants' interior being turned outward? How can we decipher these encrypted waves? These might also be questions in the minds of Bose's contemporaries when they read and heard about his plant studies.

Playing with the crisscross combinations of "photo-" and "phyto-," with "-trope,"

“-troph,” and “-graph,” I have tried to magnify the impact of phytophallogocentrism through a reading of Woolf’s experimental writing. Set on the brink of the modern world, *The Waves* reveals Woolf’s interest in new media technologies, especially in photography and film, media with special dependency on light. By applying the notion of phytophallogocentrism to *The Waves*, I have attempted to show how the concept of individualistic life dominating the Western world has been rewritten. Human language and beings, I have argued, can be traced back to a vegetal base from which human bodies emerge. Hence, human language is but photo-tropic whereas thoughts and feelings are photo-trophic. I hope that my attempt here may suggest a new route along with to think about plants, and to conceive a new aesthetics diverging from phallogocentrism.

WORKS CITED

- Barthes, Roland. *Camera Lucida: Reflections on Photography*. Trans. Richard Howard. New York: Hill and Wang, 1981.
- Batchen, Geoffrey, ed. *Photography Degree Zero: Reflections on Roland Barthes’s Camera Lucida*. Cambridge, MA: MIT P, 2009.
- . “Palinode: An Introduction to *Photography Degree Zero*.” Batchen 3-30.
- Benjamin, Walter. “A Short History of Photography.” *Screen* 13.1 (1972): 5-26.
- . “The Work of Art in the Age of Mechanical Reproduction.” *Illuminations: Essays and Reflections*. Ed. Hannah Arendt. Trans. Harry Zohn. New York: Schocken, 1968. 217-52.
- Bose, Jagadis Chunder. *Physiology of Photosynthesis*. London: Longmans, Green & Co., 1924.
- . *Plant Autographs and Their Revelations*. London: Longmans, Green & Co., 1927.
- . *Response in the Living and Non-living*. London: Longmans, Green & Co., 1902.
- Caughie, Pamela L., ed. *Virginia Woolf in the Age of Mechanical Reproduction*. New York: Garland, 2000.
- Derrida, Jacques. *Of Grammatology*. Trans. Gayatri Chakravorty Spivak. Baltimore: Johns Hopkins UP, 1974.
- Descartes, René. *Descartes: Discourse on Method and the Meditations*. New York: Classic Books of America, 2009.
- Fried, Michael. “Barthes’s *Punctum*.” Batchen 141-70.
- Gustavson, Todd. *Camera: A History of Photography from Daguerreotype to Digital*. New York: Sterling Signature, 2009.
- Iversen, Margaret. “What Is a Photograph?” Batchen 57-74.
- Kang, Minsoo. *Sublime Dreams of Living Machines: The Automaton in the European*

**Ex-position
December
2018**

- Imagination*. Cambridge, MA: Harvard UP, 2011.
- Kittler, Friedrich A. *Discourse Networks 1800/1900*. Trans. Michael Metteer and Chris Cullens. Stanford: Stanford UP, 1990.
- . *Gramophone, Film, Typewriter*. Trans. Geoffrey Winthrop-Young and Michael Wutz. Stanford: Stanford UP, 1999.
- Krauss, Rosalind E. "Notes on the *Puntum*." *Batchen* 187-92.
- Levin, Thomas Y. "'Tones from out of Nowhere': Rudolf Pfenninger and the Archaeology of Synthetic Sound." *New Media, Old Media: A History and Theory Reader*. Ed. Wendy Hui Kyong Chun and Thomas Keenan. New York: Routledge, 2006. 45-82.
- Marder, Michael. *The Philosopher's Plant: An Intellectual Herbarium*. New York: Columbia UP, 2014.
- . *Plant-Thinking: A Philosophy of Vegetal Life*. New York: Columbia UP, 2013.
- Miller, J. Hillis. "The Waves as Exploration of (An)aesthetic of Absence." *University of Toronto Quarterly* 83.3 (2014): 659-77.
- Mukherjee, Dulal C., and Dibakar Sen. "A Tribute to Sir Jagadish Chandra Bose (1858-1937)." *Photosynthesis Research* 91 (2007): 1-10.
- Nandy, Ashis. *Alternative Sciences: Creativity and Authenticity in Two Indian Scientists*. 2nd ed. Oxford: Oxford UP, 2001.
- Ryan, Derek. *Virginia Woolf and the Materiality of Theory: Sex, Animal, Life*. Edinburgh: Edinburgh UP, 2013.
- Shawcross, Nancy M. *Roland Barthes on Photography: The Critical Tradition in Perspective*. Gainesville: UP of Florida, 1997.
- Shepherd, Virginia. "From Semi-Conductors to the Rhythms of Sensitive Plants: The Research of J. C. Bose." *Cellular and Molecular Biology* 51.7 (2005): 607-19.
- Talbot, William Henry Fox. *The Pencil of Nature*. London: Longman, Brown, Green, and Longmans, 1844.
- Wolfe, Cary. *What Is Posthumanism?* Minneapolis: U of Minnesota P, 2010.
- Woolf, Virginia. "A Sketch of the Past." *Moments of Being*. Ed. Jeanne Schulkind. 2nd ed. San Diego: Harcourt Brace Jovanovich, 1985. 61-160.
- . *The Waves*. Ed. James M. Haule and Philip H. Smith, Jr. Oxford: Shakespeare Head, 1993.
- Yadugiri, V. T. "Jagadish Chandra Bose." *Current Science* 98.7 (2010): 975-77.
- Zoob, Caroline. *Virginia Woolf's Garden: The Story of the Garden at Monk's House*. London: Jacqui Small, 2013.

**Manuscript received 4 July 2018,
accepted for publication 26 Oct. 2018