Looking in Freshman Lab – A Path to Experiencing the Blossoming of Things? A Two-part Lecture[1]

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The spirit of this lecture—most especially of Part Two—is one of spreading seeds on rich soil.

Part One has three sections. Section One explains the visual thinking of Leonardo da Vinci and the living movement that Chinese ink painters aimed to infuse into their paintings. Section Two could be called "Theophrastus's λόγος pours forth much." Section Three shows how Goethe's intuitive looking discloses the forma*tion* and *trans*formation of the leaf. Part Two walks along the path connecting the approaches of Part One to the blossoming of things.

PART ONE

Section i: Visual Thinking and Living Movement

Before they actually go into the courtyard to look at and sketch magnolia trees, the students read about a way of looking which they can immediately put into practice. The botanist and philosopher Agnes Arber introduces them to an approach known as *pure morphology*. In it, rather than aiming to analyze the shape or appearance of a plant in terms of function, she looks at form contemplatively, "not only in itself, but in its nexus of relations." Looking contemplatively requires engaging "in a "process of mental visualization," or "visual thinking," making use of both "the bodily eye and … the mind's eye."[2]

The morphologist must always begin her flights of thought by taking off from, and must always end them by returning to, "the solid ground" of the visual appearances, thereby "chastening … the mind through the discipline of the eye." For there are "many subtleties, seizable by the eye," that are routinely eliminated in arriving at the mental concept (Arber, 1964).

Arber points out that this solid ground is not always easily accessible to the eye of the morphologist. For one's perception "depends upon preparedness of mind." She herself had

been familiar with the flowering plant Queen Anne's lace[3] (see figure 1) for decades. Then one day she

Figure 1 – Queen Anne's Lace

finally noticed that "the pattern of its growth is such that the main axis almost invariably terminates in a reduced inflorescence."[4] Henceforth, whenever she observed the Queen Anne's lace, it "was found to show this salient feature so strikingly as to leave" her "bewildered and humiliated at having been totally blind to it year after year" (Arber, 1964).

The morphologist makes use of two media—words and drawings. With respect to the first, her aim is to *describe precisely*. That is, she describes what the plant looks like, in a way that allows us to form a distinct mental image of it. We can put the plant object into various mental categories we have of known things and of familiar appearances. The better the fit in this placement, "the better described the object becomes."[5] As a result we are able to read the description as a musical score and play, in our imaginations, the melody of precisely this plant.

The morphologist's second medium is visual expression. "'The pen and the pencil are the two principal means [she] can use for the depiction of beings', and 'of the two … the pencil'" is better able to depict. Hence, "artistic power and morphological insight" are, in a certain way, correlated. For there is much in all of a plant's detailed visible characteristics "which cannot be expressed in words, but … can

be portrayed by the artist." Our visual thinking can then use these visible traits to interpret the appearance.[6] The preeminent botanist of the 19th century, Julius von Sachs, used to tell "the students in his laboratory that 'What one has not drawn, one has not seen'" (Arber, 1964).

Finally, according to Arber, "one of the factors which …. cramps the biologist's visual thinking" is her tendency to see a thing from a human standpoint, instead of "as it is in and for itself." Many of the plant's subtleties are on offer to the eye-and-mind if it "becomes one with what it sees, thus breaking down the rigid subject-object antithesis." Arber is here referring to a mental state in which she is not conscious of herself as, so to speak, standing over against the plant. A Freshman Lab student said[7] that when we see what we see in our *own* way, we have a better sense of its individual tendency. Then it's as if we were touching it in our drawing. "Then it's already inside me, in the way a character in a short story I'm writing is inside me." We might say that there is an individuality coming from two sources, the individual thing and the individual looker.

This state of being-one-with is "prior" to the state of duality; it is a "self-identification with the living thing." Arber refers here to "Chinese and Japanese artists, who often identify themselves, as it were, with a bird or a flower, thus revealing its individual character with an intuitive insight" (Arber, 1964). When these artists expressed that distinctiveness on paper, the drawing was said to exhibit "*living movement*,"[8] that is,

> the transfusion into the work of the *felt* nature of the thing to be painted [or drawn] by the artist. At the moment of painting, the artist must *feel* the very nature of the subject, which he transfers into the work, so that it can affect all who see it with the same sensations he experienced when painting it. So, when painting a tree, *feel* the strength of a tree shooting through the branches or, when painting a flower, the grace with which a flower expands or bows its blossoms.[9]

In this quotation the repeated mention of feeling refers to a sensing that is both pre-conceptual and prior to I-versus-object perception.[10]

Indeed, "the primary quality of all perception" is our feeling of *dynamic properties*, like "the aggressive outward pointing of the triangle, the dissonant clash of the hues, the onrush of the movement." In applying the phrase *living movement* to drawings, we may seem to be speaking

metaphorically. If so then the phrase “directed tension” may better capture what the viewer actually experiences,[11] namely, qualities like “compactness, striving, twisting, expanding, yielding,” in all sensory modalities.[12]

The students’ looking can become sensitive to such dynamic effects visually received, but perhaps not consciously registered in the moment. A lab student said that she could sense the energy of the leaves of a tree, as if they were falling like drops from a fountain.[13] They could sense those effects “prior” to consciously registering the tree as object. When people become habituated to see what is familiar, they become less spontaneously responsive to directed tensions.[14]

A good way to become (re-)sensitized to living movement is to practice gesture drawing in the way outlined by Kimon Nicolaides in *The Natural Way to Draw*.[15] He tells us that we are “to seek the actual *impulse* of the gesture” in whatever we are drawing. We are not to confuse this impulse with emotion. For instance, when we call a certain tree a “weeping willow,” we do not mean that it is sad, because it “looks like a sad person.” Rather we are, first, responsive to “the shape, direction, and flexibility of the branches,” which “convey passive hanging.” Subsequently we may notice a similarity with “the … similar state of mind and body that we call sadness.”[16] (See figures 2 and 3)

Figure 2 – Weeping Willow

Figure 3 – White Pine (for contrast)

So, when the students are drawing the magnolias in the courtyard, they bear in mind-and-eye Nicolaides's advice that

> a tree does not grow from the top down but from the bottom up. Start then at the bottom, and in a loose, easy, tentative manner allow your pencil to move upward as you can *feel* that the tree moved up—upward and out along the branches. Let your pencil follow the *sense of movement* through to the leaves. Do they spread like bursts of flame from a skyrocket or do they fall down, dropping like water? As the tree reaches upward, it *moves* out from its core into a three-dimensional form. (Nicolaides, p. 30; italics added)

We are to draw rapidly and continuously and to let our pencil swing around the paper, impelled only by the felt sense of the living movement, without taking our pencil off the paper. "YOU SHOULD DRAW, NOT WHAT THE THING LOOKS LIKE, NOT EVEN WHAT IT IS, BUT WHAT IT IS DOING. *Feel* how the figure lifts or droops—pushes forward here—pulls back there—pushes out here—drops down easily there" (Nicolaides, pp. 14-15).

While gesture is only one of many aspects of drawing that Nicolaides had his students practice, if that aspect has not been felt and incorporated into the final drawing, the latter will lack aliveness. Thus, in addition to conveying, in their drawings and descriptions, precisely how the magnolia *appears* to their perception, the students express the active impulse which they *felt* "prior" to their object-perceptions.

Here are two examples of gesture drawings of a life model by his students (see figure 4).

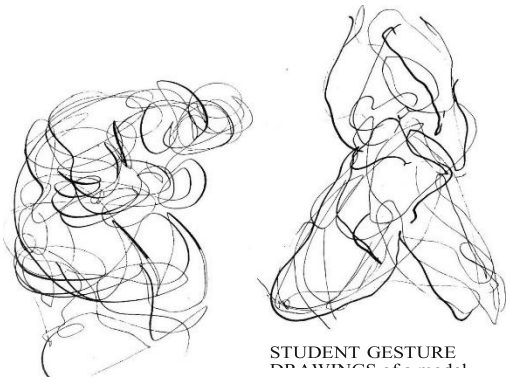

Figure 4 – Student Gesture Drawings

Section ii: Theophrastus's λόγος pours forth much

Having begun, in the first class, by attending to looking—to our state of mind as looker and to our way of looking, we now, with Theophrastus's *Inquiry Concerning Plants*, turn to the looked-at. Instead of looking contemplatively with an open gaze and with sensitivity to living movement, we are invited to attend to certain determinate features of plants, to their differences with respect to a) parts, to b) ways of responding to changes in their surroundings, to c) ways of coming-into-being, and to d) ways of life (i.1).

Because we spend only five classes on plants, our reading centers on a) the parts of plants. The fact that in order actually to see evidence relevant to the other three we'd need to be observing the plants over a longer period of time raises a question for the students about how well they could come to know a tree or a plant by looking closely and drawing over a short two-week period. One[17] suggested that our task is to tell the story of the tree, a story that would be composed of sub-stories of its various parts, which were like characters in a novel. Yet in the lab we have only a short time to become acquainted with it and with its characters.

Another student suggested that you can't have a clear sense of how the tree *trees*, unless you study the parts it uses to *tree*. A second said that looking very attentively at some one part might, in a way, convey a sense of the whole. A third[18] proposed that the key might lie in attaining a certain level of

intimacy with the tree in her sessions of looking and drawing. It may have been helpful that the first drawing exercise[19] asked them to experience their drawing of the plant part as if it were a chance, intimate, personal chat with a neighbor they hadn't really known before. After it they'd have a deeper sense for what that neighbor is like. One student[20] said that she could later reawaken that moment of close contact with the tree when she came to draw the whole.

Theophrastus points out that several factors make it difficult to determine precisely what is to count as a part and what not. We notice that some portions of a plant, like flowers and leaves last only to the end of the year, and, in addition, that new sprouts[21] keep springing up. Thus, if these are included as parts, the number of parts would be indeterminate. But we *must* include them since it is "when [plants] are sprouting and blooming and bearing fruit that they not only seem but also *are* more beautiful and more complete (τελότερος)" (i.2). They are complete in the sense that they are at their peak, or end-state (τέλος).

It is striking that plants are at their high point when they are in motion, becoming more themselves, growing twigs, leaves, blossoms, or fruit. For animals, as we shall see, differ fundamentally from plants in that they are at *their* high point when they are keeping themselves—that is, their parts and the capabilities of those parts to perform particular actions—at the very point at which they have already arrived, that is, precisely when they are *not* still moving toward their end-state.

This difference should serve as a warning to us—in dealing with the difficulty of delimiting parts and in viewing plants in general—not unthinkingly to rely on animal analogues. For instance, while it is true that leaves are like certain animal parts, such as, horns, feathers, hair, in being cast off, on the other hand, only plants, and not animals, are "capable of sprouting (βλαστητικόν) everywhere" (i.3-4). So, too, the fact that during growth animals' limbs emerge only in determinate places and that they have limits of growth and maintain those limits means that we must be careful in speaking of the "limbs" of trees.

Theophrastus makes recommendations about what to focus on when we are looking at the external parts of plants, that is, when we are doing morphology and inquiring about "μορφή as a whole." In spite of the fundamental difference, just mentioned, between plants and animals, he recommends that in addition to noting which parts belong to all plants and which are proper only to one or to several and which parts are similar to which other parts, he tells us to take note of which plant parts have *analogues among animals* (i.4-5). The reasons for his last recommendation are: first, animals are "more complete" than plants, in the sense that their activity is complete, and not on the way toward becoming complete. The sprouting of plants, on the other hand, "seems to be a certain activity but an incomplete one (ἀτελὴς)" (Aristotle, *Physics* 201b32)[22]; second, that we are more familiar with animals (ii.3-5), partly because being animals ourselves we know them "from the inside."

So, we can sometimes recognize a part of a plant more easily by seeing its similarity to a more complete or more familiar part of an animal. We may even learn from looking for an animal analogue and *not* finding one. For instance, a mouth and intestines belong to animals generally. But when we seek for an analogue in the case of plants, we realize that there is none to be found. Then we understand that, compared with animals, the plant is so "diverse and elaborate (ποικίλον)" that it "is hard to speak about as a whole" (i.10-11).

Theophrastus next tells us what we are aiming at in noting differences among the parts of plants. We look for them because "from them, in the case of each plant, the *morphe* as a whole becomes altogether manifest." In general there are three or four such differences: plants may have some parts, such as leaves, but not others, like fruit; their parts may be dissimilar in color, in figure, in proximity, in texture, and so on, or may be unequal in size; and they may be arranged in a different order, as when the fruit is below rather than above the leaves (i.6-8).

Theophrastus then says that after enumerating the differences among the parts we are to focus on each part by itself. We should begin by attending to those parts that are "greatest and common to

most" plants, even though not all plants have all of them. The four parts to study first are roots, stems—or, in the case of trees, trunks—branches, and twigs, that is, shoots coming from branches (i.9-11).

In addition to these four parts, there are other sorts of parts—first, parts of these four, such as bark, wood, and core; second, impermanent parts, like flowers and leaves, mentioned above; and, finally, things like sap, fiber, veins, and flesh which are "prior" to the others and which are common to all the parts. Theophrastus says that these last are the initiator-rulers (ἀρχαί) of the other parts, which come forth and appear to us as we draw. "Indeed, it is rather the case that [the plant's] way of being what it is (οὐσία) and [its] whole origination (of sprouts) (φύσις) is in these" latter parts (i.11-12; ii.1). Perhaps they are the initial sources of "the impulse of the gesture" that Nicolaides asks us to seek.

In Theophrastus's view we do well to begin our lab by observing the magnolia trees in the courtyard. For the four parts with which we ought to begin our observation happen to "belong most of all to trees, and the division into parts is more proper to them" than to any other plant. Moreover, the variety of differences with respect to parts that we notice among trees will "indicate clearly" the differences of the parts "of each of the other plants as well." We'll be able to discern differences in color, in figure, in proximity, or in order of arrangement most easily in trees. So, it is a good approach to refer the other plants to trees (i.11-12; ii.1; cf. i.6-8).

From another point of view, too, we do well by studying the magnolias first. For our understanding becomes clearer if we divide according to the looks (εἴδη) of the plants. Most plants exhibit one of the following four looks—tree, shrub, small shrub, or herb (iii.1). It is true that some plants change their look from one to another of these, as well as that others "become quite different and depart from their [mode of] origination (of sprouts)." Nevertheless, provided we don't become overly precise in marking the looks off from one another, we ought to divide with respect to the four just mentioned. The reason is that something in their origination of sprouts is common to all four of

them. So, it is reasonable to think that what's responsible for their differences is also common to all of them (iii.2, 5, 6).

Theophrastus makes the following more general observation: "The plant is a thing pouring forth much (πολύχουν)" (i.10; cp. ii.3). According to our manual the progressive participle, *πολύχουν*, emphasizes that a plant's sprouting or blooming is "never finished, unlike the corresponding activity of animals." It seems that the "much" of a plant that is poured forth is or becomes its various parts. Perhaps, Theophrastus's idea is that if our looking were not oriented by the many helpful distinctions he makes, we'd look at a plant and have only a *global sense* of the *energy* of water being shot up by a fountain and then falling down.

With his guidance, though, and his foregrounding of differences of parts and of sprouting, or budding, blooming and bearing fruit, what we see may be likened to a fountain having different-sized and -shaped openings, putting forth water to different heights at different pressures. The water from various openings may come forth in different colors. From some the water may gradually shoot higher and higher; from others it may suddenly turn off. We'd miss much of this variety if we had not read Theophrastus.

As we attempt to follow Theophrastus, how does our observation of the magnolias differ from what it was like on the first day? Then, it seemed, we were invited, first, to begin by being open to whatever came forth spontaneously from our sensory experiencing. Second, we were also initiated into a state of mind prior to words, in which we aimed to sense and to express the plant's doing; we avoided slipping into the attitude of being a mere observer, over-against objects.

Theophrastus's λόγος may have both benefits and drawbacks for us. On the one hand, it offers us new perspectives. When we view plants from those standpoints, we find that new aspects disclose themselves to our gaze. Instead of puzzling over some feature of the plant, we may now feel, "That's it. I've got it." Or his λόγος may open our eyes to a part that is right in front of us, so that we don't have to

wait fifty years, as Arber did, before seeing it. Or, again, the disconnected pieces that we are looking at may suddenly come together, like the pieces of a jigsaw puzzle. Moreover, additional layers of meaning are added when we see the likeness of a tree-part to a more familiar and determinate animal-part. Finally, our attending to similarities and differences between parts embeds them in a web of relationships. In ways like these our tree comes to make more sense to us. This additional sense may, in turn, lead us to say something new about it; and that may lead us to a fresh seeing, and so on.

On the other hand, the direction that Theophrastus's λόγος gives to our gaze may come to prescribe what we look for in a way that closes us off from other possibilities and more fresh discoveries. We might "lock onto" the distinctions we've learned from Theophrastus in a way that our "tracking" of them prevents us from noticing other "targets" on our radar screen. There is also a risk of not noticing the impulses of living movement, which we had sensed on the first day. We might become like someone who only notices and responds to the meaning of what a friend says, and is oblivious to the speaker's tone of voice, physiognomy, and gestural accompaniments. In such an event our drawings and descriptions of parts and of their interrelationships would seem "dried up," withered, lacking aliveness.[23]

Both approaches, the *impulse-approach* and the *logos-approach*, go beyond ordinary experiencing and awaken or enliven us to what is new. The aliveness of the first lies in our *sensing* the impulse of the tree's gesture, in our *feeling* "the strength of a tree, shooting through the branches." What is enlivening about the second is illustrated when the vague becomes sharp, as in "Ah, so that's it!" or when isolated fragments suddenly fit together into a whole. It's like what occurs when we've been observing a face and then "suddenly notice its similarity to another"; a new aspect of the face lights up (*Aufleuchten*) for us in an instant.[24] Experiencing either of these two kinds of aliveness feels like a bud's bursting into flower.

We die to either approach to aliveness when we become content to drift smoothly, carried

along by familiar concepts—interrupted neither by a sudden sense of striving or twisting nor by an unexpected connection between familiar things popping into mind. In the same way *forming* an opinion (δοξάζειν)[25] is enlivening; *holding onto* an opinion (δόξα) is not (cf. *Theat*. 189e-190a).

Moreover, both approaches to aliveness are characterized by their temporal priority to the everyday, but in different senses. The priority exemplified by the impulse-approach is that of the split second when a tree is just coming into focus but I have not yet "registered" it as a tree.[26] One can train oneself to stay in touch with that pre-conceptual awareness beyond the first fraction of a second. In the *logos*-approach the priority is usually of very long duration. It has taken centuries for the language to acquire the relevant individual meanings and the web of family relationships (συγγενοῦς) among them. The experience of drawing them up now has the feel of "recollecting" (ἀναμνησθῆναι) a name you "already knew before" but had long ago forgotten (*Meno*, 81cd).

Ideally we could experience the benefits of both approaches, while avoiding the downside of either. As a student[27] suggested, we could aim to alternate back and forth between them: Now we look "through" the Theophrastian λόγος; now we sense the leaves spreading like bursts of flame or dripping like water. Our encounter with the unique individuality of the plant incites us to endeavor to grasp and articulate it on the level of *logos*. We seek to understand it through moving back and forth between sensing the particular and comprehending it together with others and distinguishing it from others.

It might be possible, though, to be, somehow, experiencing in both ways together at the same time and yet not quite in either of them.[28] *The Mustard Seed Garden Manual of Painting* hints at this possibility in a colorful formulation: We are inspired by the madness of a wild dog (*kuang*),[29] and simultaneously our mind is opened wide (大) to the oneness (一) of the Heaven (*tiān*).[30]

Finally, before leaving Theophrastus let us revisit a word, *φύσις*, that occurs right at the beginning of his treatise (i.1), and which we have been translating as *origination (of sprouts)*. The transitive verb from which it is derived, "*φύω*," means: I. bring or put forth (as, leaves or shoots);

engender, or generate (as, offspring); (in reference to parts of oneself) grow (as, a beard); II. (in present, seemingly intransitive) put forth shoots. The middle voice *φύομαι* means grow, wax, spring up or forth, especially of the vegetable world.[31] According to Theophrastus our task includes grasping the plant's mode of origination of sprouts, including buds and shoots—stems and their appendages, leaves, flowers, fruits.

Aristotle's account of φύσις in the *Physics (*192b12ff*)*[32] will help us to refine our thinking about it. Animals as well as plants have φύσις. Both—primordially (πρώτως)—have within themselves the originator of and ruler over (ἀρχὴν) their moving (κινεῖσθαι) and their remaining-at-rest (ἠρεμεῖν). This inner originator-ruler may be understood, Aristotle says, as a switch-over impulse (ὁρμὴν[33] … μεταβολῆς; perhaps, *Umschalt-Impuls*), an impulse that originates a "shifting of gears" from motion (κινήσεως) to stand-still (στάσεως) or vice versa.

It is important to note that—as evidenced by the verb *μεταβάλλω*,[34] from which *μεταβολή* (switch-over) is derived—the switch-over at issue here has two features, which distinguish it from a process or motion. First, it is a shift between alternative positions, as in turning the earth upside down or turning about to face the rear. Second, it is quick and sudden, as if it took no time at all and as if it were not gradually led up to by what preceded it. So, φύσις here is the source *not* of a process or motion but of an instantaneous shift or change-over*,* as in flipping a light switch on or off.

This impulse may be what Nicolaides proposed that the draftsperson aim to sense and to express through the body-mind's intuitive sensing: "seek the actual impulse of the gesture," whether of the model's pose or of the magnolia. If we looked more closely, it might even be possible to detect a *sequence* of switch-overs in what had appeared to be a smooth growth process. In that case growing would turn out to be a series of tiny growth-spurts, with pauses in between.[35]

In summary, the plant's φύσις impels it to change over instantly from inactivity at a particular place and time to putting forth (φύειν) leaves, shoots, flowers, or fruit, or, conversely, from sprouting,

blossoming, fruiting to inactivity there and then. The plant's individual acts of putting-forth, its φύειν, then, are manifestations of the inner originator-ruler. It is the latter that is the plant's φύσις.

Let's now skip a few weeks ahead in the lab to the activities of unicellular animals, in order to see how the switch-over impulse might show up in them, too. We study animals like amoebae with some help from the theoretical biologist Jakob von Uexküll. We notice that when faced with tasks like escaping a predator, feeding on a prey, or digesting what it has consumed, the amoebae's protoplasm has the power, in each situation, to form the structure the animal needs in order to perform the given task and, afterwards, to un-form that structure again.

For instance, in eating and digesting, a compartment enclosed by a membrane, known as "a vacuole … first becomes the mouth, then the stomach, then the intestine, and finally the anus." "We see the organs appear one after the other in a fixed temporal sequence; and each [organ], when its performance is finished, disappears again." Here the immediate "effect of the impulse" (*Impulsfolge*) of the switch-over is to *form* the first organ the amoeba needs in order to exercise that organ's function.[36] The next switch-over is to *exercise* that function. Then it forms the second organ needed, and so on, in a sequence of bursts of formation and un-formation or of action and cessation of action. Each forming or using of an organ is, in one way, analogous to an act of sprouting by the magnolia.

We might say of either the plant or the amoeba that what it has at the ready is a complex power with respect to its actions. This power enables it to display, in the appropriate ways as required from moment to moment, the relevant features of the complex activity which comprises its way of being what it is (οὐσία).

However, the plants' part-making origination of sprouts and the amoebae's organ-forming origination of metaphorical sprouts also differ significantly. A plant's switch-over to budding, blooming, or fruiting is an initiation of a production. What it is producing is a part of itself, which will endure for at

least long enough to become an object of study for Theophrastus. As producing itself, a plant's switch-overs are engaged in its continual process of coming-to-be.

In the case of the amoeba, the sequence of its "sproutings," that is, its switch-overs to shaping, to using, and to un-shaping organs, leaves it right where it began. That is, nothing like a sprout, twig, or flower, or additional length persists; it comes to have no new part or augmented part. It is now what it has been. It was already in a complete state, and its turnings-on and -off have served to maintain itself in that same state of completeness. They are change-overs to or from actions, which hold, or keep, it in its pre-existing state of completeness.

We might compare the plant, the amoeba, and the adult multi-cellular animal as follows. "The urge towards self-maintenance … in the flowering plants … is expressed in repetitive branching."[37] The branches that the plant puts forth become co-constitutive of it, by accretion. So, in one sense it remains the same plant; in another sense it is always impelling itself to switch over to motion and to put forth another sprout, thus becoming different. The impulse in the amoeba expresses itself in a temporary "branching" and "unbranching," so that it does not become altered or increased relative to what it was. The adult multicellular animal's maintaining itself leads it merely to move its "branches" around relative to itself.

As we later read in the lab excerpt from Aristotle's *On the Soul* (II.1), there are, in the case of adult animals, two sorts of holding themselves (-έχεια) in their end-state of completeness (ἐντελ-). The first one is an activity of keeping themselves in an active state of readiness, so that they are able to turn on or off, at a moment's notice, any one or several of their activities of the second sort. Moreover, each of those latter activities—like sensing and chasing prey; sensing and fleeing from predators, etc.—makes its contribution to maintaining the animal in its adult condition. In these examples they provide needed nourishment and offer escape from death at the hands of predators.

So, the amoeba stays at its peak because it preserves its power to turn on and off, as needed, its

working at its various jobs of self-maintenance, a working that includes a "just-in-time" production of the tool needed to work at the respective job. As was just illustrated, the first and the second sorts of staying-itself are each a being-at-work, or activity, or a set of several of them. This combining of action and self-maintenance is nicely captured in Joe Sachs's translation of "ἐντελέχεια" as *being-at-work-staying-complete*.[38]

What is true of amoebae also holds for adult multicellular animals, with the one major difference that the organs of the latter are *persisting* parts of the adult animal. Generally there is not even a momentary making or unmaking of an organ. The existing organs are simply switched over from performing one action to performing another or from action to rest and back or into simultaneous action—as in lying on the ground, then noticing and following with the eyes a potential prey moving across the field, and then rising and running in pursuit. We might say that the animal had been "idling"[39] and had then shifted into first "gear," then into second, third, or fourth "gears." The animal's watching and running are the analogues of the plant's sprouting and flowering.

Section iii: Goethe's Intuitive Looking and the *Trans*forma*tion* of the Leaf

Our next author, Goethe, seeks to combine in a fresh way the impulse- and logos-approaches that we discerned in the readings and *practica* of the first three laboratories. As suggested by the title of his major work on plants, *The Metamorphosis of Plants*,[40] he reconceptualizes Arber's pure morphology in two-steps.

First, as Goethe explains in introducing his aim,[41] morphology is literally an account (λόγος) of a structured shape, or form (μορφή; *Gestalt*), which, in assuming "that a connected thing is … fixed," abstracts "from what is mobile." But when he gazes intuitively at the shapes of plants and their parts, Goethe sees that "nothing in them is … at rest …—everything is fluctuating in continual motion." What he actually experiences as the referent of the expression "*μορφή*" is something "that is held steady only

for an instant" in his experience. So, he replaces "*Gestalt*," or "*μορφή*" with "forma*tion*" (*Bildung*), which would be "*μόρφωσις*" in Greek. The word "formation" can refer to "both what *has* been brought forth and what *is* being brought forth." If he had stopped here, he would have written a work of morphosis-ology, *The Morphosis of Plants*, illustrating the impulse-approach.

However, in Goethe's intuitive vision "what has been formed is immediately again being *trans*formed," that is, metamorphosized. What does this mean? In gazing intuitively at a tree or at another plant, Goethe sees that while it "really does *appear* to us as an individual," it actually "consists of nothing but particular single things." Furthermore, these single things: i) are similar (*ähnlich*) in appearance, ii) are identical (*gleich*) in Idea (*Idee*), and iii) are alike (*gleichen*) to the whole plant or tree (Aim 55-57; italics added).

Goethe's intuitive gazing might be compared to viewing a ballet from three different viewpoints. First, when I focus on several individual dancers, I notice that their movements, when not identical, are similar to each other. Second, I am able to intuit in each of them the source (*Idee*) from which the whole ballet first sprang up in the mind of the choreographer. Third, when I step back and take in the flow of the whole dance, I can see how the movements of the individual dancers are like the larger movement of the entire ballet. In viewing the ballet of the plant in this way, Goethe claims to be recognizing "living formations as such," that is, as alive and as moving on to their next formation. He is also grasping the "outward, visible, tangible" dancers "in interrelation," that is, as forming the ballet as a whole. And he is shedding "light on these [dancers] as hints of the interior" (Aim, 55) Idea, whence the ballet originated and which it expresses.

The name Goethe chose for that which stands for what is the same in Idea and tendency was "leaf." Here is a way to experience, right now, what he might have had in mind. Look at the sketch of the two leaves below (figure 5) for a short period of time, with the question in mind, What are some possible relationships between them?

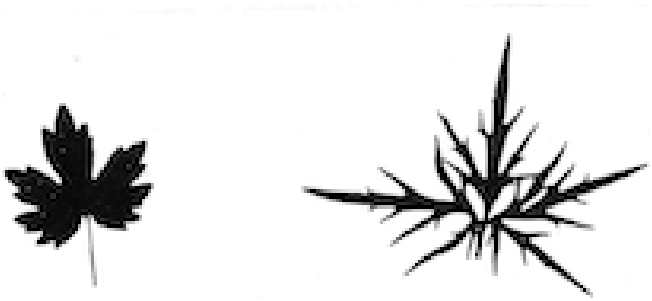

Figure 5 – Two Leaves

Now, after that pause, look at the next sketch (figure 6).

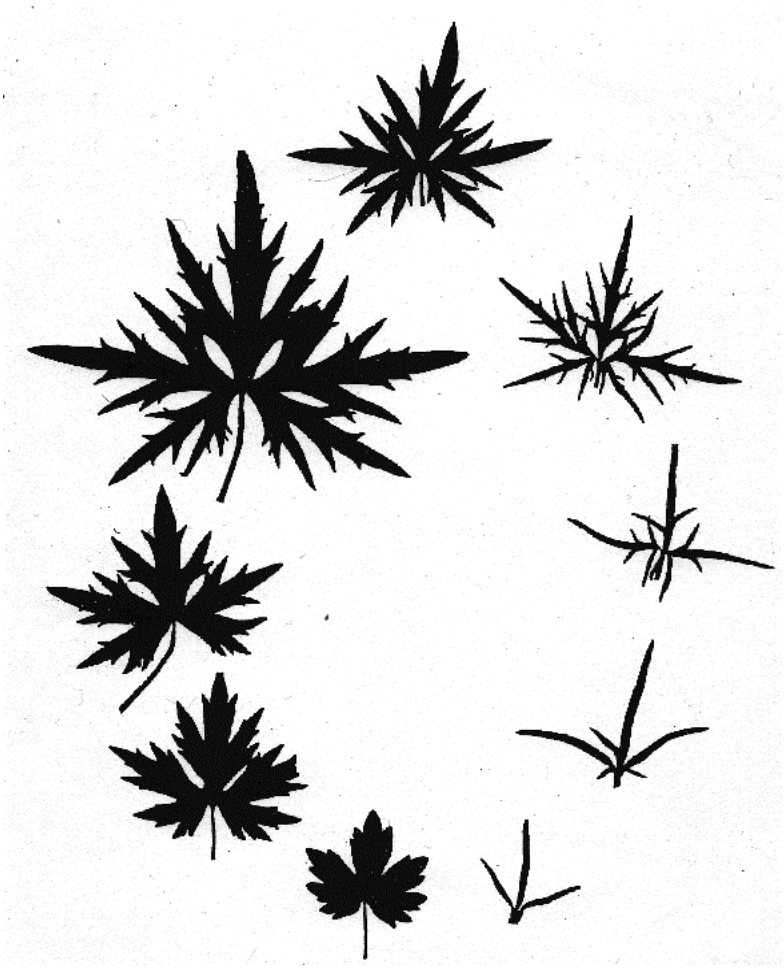

Figure 6 – Nine Leaves

It shows leaves taken from the common buttercup, ordered from the bottom of stem, at the lowest left, to top of the stem, displayed at the bottom right.[42] Looking at the two leaves from the first figure, we can intuit little kinship between them. When we look, in succession, at the nine formations in the second figure, we see them as if "held steady for only an instant," in their temporal sequence. The two leaves from the first figure now make sense to us as successive moves in a dance of development.

Goethe has, in a way, developed into "moving pictures," that is, into movies projected in the imagination, Theophrastus's image of "pouring forth much" and his accounts of differences and similarities of parts. That is why Goethe says that "if we wish to look at nature in a way that is alive and intuitive, we ourselves must remain as mobile and flexible as nature and follow the example she gives" (Aim, 56). Through the mobile imagining of such a film, he is able to "make intuitive (*anschaulich*) to us," the "inner identity of the different plant parts," "despite the greatest deviation of their outer form" (## 60, 67). Thereby we may accompany, in our imaginations, "the outer form of the plant through all its transformations," while, at the same time, keeping a mental gaze on the inner identity—as we have just experienced when we looked at the wheel of the nine schematic shapes of the buttercup leaf.

Viewed from a different perspective, Goethe's emphasis on an underlying sameness throughout the sequence of appearances might lead us to see that, in his moving pictures, the Same, while remaining itself, is generating likenesses or images (εἰκόνες) of itself and of each other. Φύσις, as the source of formation and transformation, could then be said itself to have "within itself the possibility of acting as the source of repetition." It would "have a primal character of '*image-ability*,' a character which makes possible all 'difference'"—in the sequence of appearances as the plant is growing—as well as making possible "all 'recognition'"—of similarity, as in the above example of the nine leaves.[43]

Goethe's view of the leaf as playing the key role was later revised.[44] The shoot, or the unity of the stem-and-leaf complex, came to be seen as the source of the plant's dance. Later botanists thought it obvious that "each branch shoot echoes the characters of the parent shoot."[45] The lab students, too,

seemed to see the centrality of the shoot, two classes before they had even read Goethe. One[46] proposed that each part of the tree began by coming forth as a shoot and then differentiating itself and distinguishing itself as it grew. For another[47] the shoot was like the tree or plant coming forth to say, "Here I am," making its identity known.

In the *Metamorphosis* Goethe shows that the flowering plant continually moves through the following six-step cycle: expanding "from the seed to the fullest development of the stem leaf"; contracting to the sepals of the calyx; expanding to the petals of the corolla; contracting to the style and stamen; expanding to the fruit; and, finally, returning to seed by a contraction (#73). In effect the sequence is bud - expansive shooting forth – bud – contractive shooting forth – bud - expansive shooting forth – bud – contractive shooting forth, etc. The "motion" is not circular but rather like a graph of waves moving around a circle, contracting and expanding alternately.

Let's look at the second of the six transitions. When it occurs rapidly: "the stem, suddenly lengthened and refined, shoots up from the node of the last fully developed [stem] leaf and collects several leaves around the axis at its end." Goethe suggests that, in examples like figures 7 and 8,[48]

Figure 7 - Cornflower with urn-shaped calyx beneath corolla

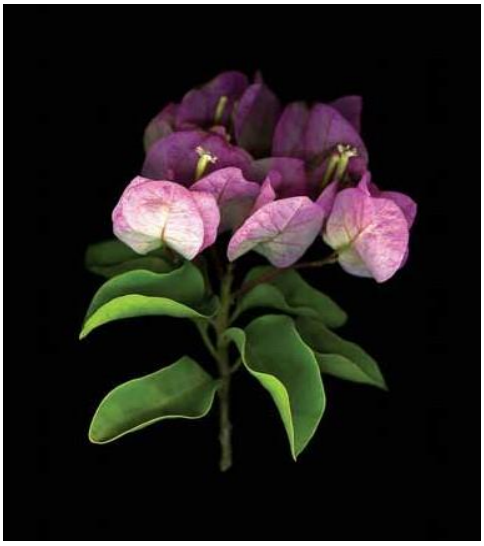

Figure 8 - 'Thai Delight' Bougainvillea with leaflike bracts collected around the tubular flowers

since the stem leaves "still fully retain their shape, we can rely on the mere *appearance*." For "we *see* unaltered stem leaves moved closer together, in a kind of calyx right under the flower." Goethe's intuitive looking discloses that the "the *same* organs which so far can be seen developed as stem leaves," now "often in a very altered shape," are "collected around a common center," as the leaves of a calyx (## 31, 32, 34; italics added).

If the transition to the calyx should occur slowly, "as the stem leaves come together gradually, alter, and gently steal over, as it were, into the calyx," as in figure 9. Or the edges of the clustered

Figure 9 – Stem leaves and calyx of the sunflower

and modified stem leaves may grow together, making them even less recognizable, as in figure 10.[49]


Figure 10 – Calyx of pot marigold

Goethe's conclusion from such observations is that in forming the calyx, nature—instead of producing several "leaves and nodes *successively* and at a distance *from one another*"—joins them "*together* around a central point" (## 35, 36, 38).

Following this contraction of leaves in the formation of a calyx, the next transition is produced by an expansion of the leaves, that is, the sepals, in the formation of the petals of a corolla. However, the petals are so different in appearance from the sepals that we couldn't recognize that they originated from the sepals, "were we not able to eavesdrop on nature in several abnormal cases." Here are three of the examples of eavesdropping which Goethe mentions. In the first (figure 11) the color of some of


Figure 11 – Calyx and corolla of coreopsis displaying both green and more refined golden sepals

the sepals is not green, as usual, but anticipates the gold of the petals. Sometimes (figure 12) even

Figure 12: Bee balm showing advancing coloration in stem leaves and a second flower emerging from within the first.

the stem leaves already show some of the purple of the petals. Finally, we can see "that stem leaves transition into petals" in the abnormal case of a tulip (figure 13)[50] where half of one petal is green

Figure 13 – Transition from stem leaf to petal in the tulip

and still attached to the stem, like a sepal, and the other half is colored like the other petals and raised up as part of the corolla. It looks as though nature had skipped over the calyx in rushing ahead to the corolla (## 40-44).

The six steps in the circular wave motion mentioned above are the steps in "progressive metamorphosis," which, "through transformation of one shape into another, climbs up, as it were, on a

mental ladder, to that pinnacle of nature, propagation through two genders" (#6). The contraction in the sixth step of the spiral staircase Goethe sees in his mind's eye as "a mental junction (*geistige Anastomosis*)" of pollen and ovule. He believes that this mental junction has, "at least for an instant, … brought the concepts of growth and reproduction closer together" (#63). As he puts it more fully later:

> as the plant … sprouts, … a propagation is taking place, but a propagation that differs from that of flower and fruit, which takes place all at once, in that it is successive and appears as a sequence of individual developments. This sprouting force that expresses itself gradually is in the most precise way akin to the force that suddenly develops a large propagation (#113).

Hence, Goethe can call "*sprouting a successive propagation, but flowering and fruiting a simultaneous propagation*" (#114). In the case of both sorts of propagation, there is "the development of innumerable identical individuals," whether from a bud or from a mother plant (Aim 57). So, we can view "flowers that develop from the buds … as whole plants that are standing on the parental plant, just as the [parental plant] is standing on the earth" (#95).

PART II

Section i: GOETHE AND CHINESE PAINTING

Goethe's constant endeavor to "make intuitive to us" the "inner identity of the different plant parts," in spite of their great outer diversity, helps us to "derive" all the transformations of "the outer form of the plant" (# 84). It may be that in performing this derivation we become, as it were, identified with the origination of the shooting-forth, so that in our imagination we pulsate rhythmically with it, in its switch-overs from ON to OFF and back.

For Goethe *making intuitive* the inner identity and *deriving* the appearances requires a training in a new way of looking and in a new way of using "the power of imagination and the understanding." It gradually will become easy for us to look at the appearances next to "each other in both a forward and a backward direction." We'll be able to "say that a stamen is a contracted petal or, with equal justification, that a petal is a stamen in a state of expansion; that a sepal is a contracted stem leaf … or that a stem leaf is a sepal expanded" (#120)—as depicted here in Goethe's drawing (figure 14).[51]

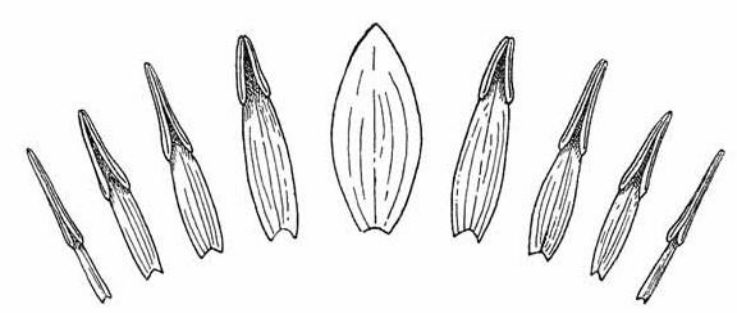

Figure 14 – Successive transformation of petal into stamen in white water lily

After the *Metamorphosis* we read some reflections by Goethe on his *way* of looking.[52] Some observers of nature, on the basis of isolated, single experiences, try to come up with an idea, hypothesis, or theory (Experiment, 16). To them he says that while experiences may *appear* isolated, in reality they interconnect both with each other and with the whole. In order to allow the interconnection to appear,

we must multiply and diversify the initial experience, by arranging for a series of closely related experiences. Then we can survey and see them all as revealing "a higher sort" of experience. What we then see is, in reality "only a single experience" viewed from many different viewpoints or composed of many facets (Experiment, 17-18). Instead of thinking of a box of slides as separate photos, he sees them the "frames" of a film, and, hence, as presenting a single, temporally spread-out entity.

Goethe calls the object of this deeper view "the pure phenomenon." When he looks at a sequence of experiences in this way, what seemed to be wavering in the isolated experiences becomes stable. What appeared merely accidental is eliminated, and what looked too complicated becomes untangled (Experience, 24-25).

Goethe uses the word "idea" in two different ways. On the one hand, a scientist may think up and formulate an idea in advance, and state it as an hypothesis to be confirmed by subsequent experiments. On the other hand, Goethe himself holds his mind and his senses in a state of "attunement" and "attentiveness as sharp as it is calm." He is then able to *see* the pure phenomenon displaying "itself in a continuous sequence of appearances." He experiences it as a *living idea*. As Goethe puts it—in language reminiscent of Nicolaides's account of drawing a tree—he is experiencing nature herself "as alive and active, striving from the whole to the parts" (Experience, 24; Fortunate, 541-42).

It was in this way that Goethe *experienced* the idea of the metamorphosis of plants, blossoming in himself (Significant, 39). Once he described the metamorphosis of plants to his friend, Schiller, and made a schematic sketch of it. When Schiller responded, "That is not an experience. That is an idea," Goethe was taken aback and somewhat annoyed and said, "Then I may rejoice that I have ideas without knowing it, and can even see them with my own eyes" (Fortunate, 540-41)."

This mental participating in nature's productions is what he has been calling "intuitive looking" (Power, 31). In it our "power of thinking is active in an objective way" (Significant, 37). Goethe

understands *objective* thinking to mean that when he looks at a plant in his mental "film" what he is looking at then "belongs to" him, so that he can produce it again in his mind (Polarity, 863). Such belonging echoes what my student said, in the first class, about the tree being inside her, in the way a character in a short story she's writing is inside her. Goethe can generate the appearances "under thousands of circumstances, their uniformity and mutability [being] looked at with an intuitive gaze …; their determinateness … recognized and determined again by the human mind" (Experience, 25).

This objective thinking is the ultimate ground of Goethe's ability to derive plant forms. It is "a pregnant point from which much may be derived" (Significant, 40). Perhaps in looking at his mental film of the appearances of a plant, Goethe participates in its unique switch-over impulse, in such a way that he can generate those appearances and their modifications in his mind. The pregnant point of objective thinking would be the point where the aliveness of the bud's bursting-into-flower meets and is one with the aliveness of our sensing the flower's impulse (impulse-approach). Or, since objective thinking is not limited to the study of plants, the pregnant point could also be where the lighting-up of one face's similarity to another meets and is one with our noticing the new aspect of the face (*logos*-approach).

What has Goethe shown us about how we can look in a different way? First, he emphasizes that we need to be focused on two aspects of a plant—on its continual shifts over time and on the interconnectedness of its parts. Second, by arranging our experiences of the plant in the proper sequence, we can see the pure phenomenon revealing itself in and through them. Third, if we become objectively one with the pure phenomenon, our mind will derive countless varieties of the plant's appearances.

In this way of looking, we hold ourselves back from imposing our preconceptions and from projecting our hypotheses. We are participating mentally, in a way, in the plant's origination of sprouts. We are experiencing φύσις "as alive and active." Goethe's "pregnant point" is the source of experiencing the immediate trans-formation of what has just been formed. Nicolaides's advice, "to seek

the actual impulse" of the tree, which appears to be static, changes the drawer's looking into this Goethean mode of "objective thinking." In what is motionless to the ordinary gaze, Nicolaides has us sense a lifting or drooping, a pushing or pulling, just as Goethe invites us to see an expansion or contraction—what was called "living movement" at the beginning of Part One of the lecture.

"Living movement" is a translation of the second half of the First Canon of Chinese painting, which, according to Sze's *The Tao of Painting*, reads as follows: "Circulation of *Ch'i* makes living movement."[53] In a later version it was changed slightly to: "Rhythmic reverberation of *ch'i* makes living movement."[54] This canon of painting may be interpreted more broadly as a standard of what constitutes alive drawing, or, more generally, alive looking, seeing, and thinking. Of the two parts of the First Canon, the key is the first: "circulation of the *Ch'i.*" For the alive moving follows from it. "This concept of the *Ch'i* in action governs all the principles and every work of art, down to each brushstroke."

While the *Ch'i* is what brings forth and "permeates life and its movement," it is not to be identified with that life and movement; they emerge *from* it. In the same way, when the wind in "stirring the leaves produces a rustle," the rustling is of the foliage, not of the wind. Thus, living movement is the rustling of the things, the stirring of the forms in the painting, and the motions of the painter's hand-and-arm (cp. Sze, 42, 54-55), all of which are brought forth and permeated by the circulation or reverberation of the *Ch'i* (Sze, 52)

Chinese painters aimed to render the *ch'i* that resides in each form (Sze, 34). The forms of a painting would be lifeless if they did not manifest something of that *ch'i*, which is moving and transforming the depicted things. The painters recognized that "when one succeeds in conveying the *ch'i* of each form, the result is an expression of the *Ch'i* that pervades the universe" (Sze, 35). In our terms, to produce such a result, the painter must penetrate into the secret of the inner switch-over impulse.

In Goethe's formulation of such penetration, we transcend mere looking-at and pass over into

intuitive looking, participating in nature's productions. Intuitive looking allowed Goethe to see nature herself "as alive and active," as in the metamorphosis of plants. In the same way "*Ch'i* … has to be grasped through intuition," that is, by looking "in a certain way" (Sze, 52-53), so as to call forth the receptivity and responsiveness of the heart-mind (*hsin*; Sze 35).

For Goethe the metamorphosis of plants was a succession of alternating expansions and contractions. In Chinese painting what is important in nature's perpetual motion is the constant interaction of "the rising, floating, expanding, and active qualities of the *Ch'i,*" known as *yáng*, and "the sinking, settling, shrinking, and passive qualities," known as *yīn*. The painter sees "the cycle of growth, bloom, and decay of a flower" as illustrating the operation of the *yīn* and *yáng*, so that the resulting "painting of a flower at a given stage of development depicts either a *yang* or *yin* aspect of it" (Sze, 41, 54-55, 41). Goethe seems to have a more regular sense of the alternation of *yang* and *yīn*. Perhaps he would prefer the second version of the First Canon, which speaks of *rhythmic* reverberation of *ch'i*.

Here is a passage—echoing Goethe's account of his intuitive looking—that describes the Chinese painter's participation in one of nature's formations:

> In observing the way a bud opens into full flower, eventually to shed its petals, and the conditions under which this process takes place, the painter is exploring an aspect of [φύσις]. He is able to understand [φύσις] when he is thoroughly familiar with every stage of the process, can see it [namely, the bud opening, then shedding petals, etc.] at each stage of the process and as a whole as analogous to other manifestations of the way of [φύσις] around him, including himself, and can through his heart and mind[55] become aware of the same pattern of movement beyond his own limited horizon, on the scale … of the whole universe (Sze, 41).[56]

In this description one has only to replace "painter" with "observer of nature," in order to have a good account of Goethe's "objective thinking." In the painter's way of observing, too, we are "accustoming ourselves to hold the appearances against each other in both a forward and a backward direction."

Moreover, just as the painter's seeing the way of φύσις includes seeing it in himself and in the whole universe, so, too, was Goethe himself transformed by his observation of nature: "[I and my] brothers and sisters … think: 'in every place/ We are in the Interior [of Nature].'"

To myself a thousand times I say:
"All things she gives, gladly and lavishly;
Nature has neither kernel nor shell,
She is everything at once.
Examine chiefly only yourself,
Whether you are kernel or shell." (*Allerdings*)

When we draw the impulse or when we look intuitively, how are we experiencing in a way different from our everyday experiencing? When we participate in the formations of φύσις, as we draw, look, see, or think, how are we experiencing?

Drawing-looking-describing is an action that aims to manifest outwardly what is appearing, *precisely in the way* it is appearing *to us*. Taking our cue from Arber and Nicolaides, from Goethe and the Chinese painters, we might compare ourselves to a musical instrument on which the plant is playing its melody, when we are drawing, painting, or describing it. If we are in a state of calm attention and flexible responsiveness to the plant's "playing," we are a *well-tuned* instrument. Our drawing or our precise description is then the melody that the plant is playing.

Section ii: ΦΎΣΙΣ AND BEING

Drawings and descriptions aren't the only kinds of melodies that may come forth from us in response to the appearances of a plant. We might, instead, come up with a metaphor or write a poem. The conclusion to this lecture borrows from the philosopher Paul Ricoeur's reflections on the way of experiencing that is proper to metaphorizing. His ideas, which are in part inspired by Aristotle, will deepen our understanding of Goethe's and of the Chinese painters' way of experiencing.

In the discussion to follow, "intuitive looking" will be used to refer equally to Arber's visual thinking, Nicolaides's gesture drawing, Goethe's intuitive looking or objective thinking, and the looking of the Chinese painters. The above characterization of intuitive looking as alive means that it presents "all things '*as in act.*'" Intuitive looking allows "every latent capacity for action" in each thing to appear *as* at work (*ἐνέργειᾳ)*, "every dormant potentiality of existence [to] appear … *as* in bloom (*éclose*)," or,

according to an alternative translation, *as* a new life emerging, like a chick, from the cracked shell of an egg.[57] In allowing human beings to experience things in this way, intuitive looking has an "*ontological function*," that is, a role to play in regard to the Being of beings. Intuitive looking allows the Being of things to be manifested in such a way that it is made available for others to encounter, too.

The intuitive looker has an insight which is like a "glance … of genius." Think of an instant in which fresh aspects of things are, as it were, "in the process of being born" for you. In this instant you would be experiencing things *before* conceptualizing them. That is, this insight would occur in "a pre-conceptual mode" (MV248-49/230-31, 253/236). The new aspects arising from, in, and to the intuitive looking constitute an instance of genuine origination, or "sprouting." As the Chinese painter shares in nature's production, so here, too, the one looking intuitively participates in the sprouting of novelty in what is being looked at. Moreover, the resulting expression of the insight allows *us* to participate in the "emergence" of those novel aspects, too.

This seeing of new aspects is a two-sided seeing. It is partly active thinking and partly receptive sensing. In the case of Arber's visual thinking and Goethe's intuitive looking, the active part is a thought—a fresh cognition, which arises spontaneously, due to the advance preparation of the experience(s) by the observer. In the case of Nicolaides and the Chinese painters, the active part is the body-mind's moving the pencil or brush over the paper, as if their receptive looking called forth, spontaneously, arm-hand motions that expressed what they were receiving. They are engaged in "thinking in movement."[58] In either case the intuitive looking *both* "escapes any voluntary control"—that is, either you see it or you don't—*and* involves "doing something" (MV270/252).

When we are looking at things in the fraction of a second before taking them in their familiar sense, we are, as it were, joining them in their coming-into-being (γένεσις) *as* they are sprouting (*φυομένων*).[59] The person looking sees things springing up, as if for the first time. Seeing them in this way is what is meant by "seeing all things in act," or "seeing them as natural bloomings, or hatchings

(*éclosions*)." This mode of seeing and of subsequent showing of what is seen is *alive*, is "*alive* experience" (MV391-92/364-65). In Goethe's terms we are experiencing the things not as static shapes but rather as formations.

To see in this way would be to see act—in the sense of being-active-staying-in-its-state-of-completion—and to see power—in a sense that would include the ability to produce different kinds of motion or rest—as together, as simultaneous. An intuitive looker would then be seeing, first, "power as act," that is, would be seeing *as* a finished thing what is still only potentially that thing. A person gazing intuitively would, second, be seeing "act as power," or seeing "every achieved form as a promise of novelty" (MV, 391-92/364).

Like the two paths we saw in Part One, that of the impulse-approach and that of the *logos*-approach, power and act are not mutually exclusive alternatives. Perhaps it is because one's heart-mind has penetrated to the inner switch-over impulse at the "pregnant point" that one sees rest in a production of motion and motion in a resting. This could be one way of taking that to which the Eleatic Stranger was referring when he said that it is "as if Rest and Motion were embraced by" Being.[60]

One who is seeing in this way is reaching φύσις "in the primary sense."[61] "Comings-into-being and sproutings (φύεσθαι)" are the rustling of the things in the wind of φύσις. They are not φύσις itself. For, in Aristotle's words, it is rather "the way of being what they are (οὐσία) of things that have an originator of and ruler over motion within themselves precisely as themselves." This originator-ruler may be in them in either of two ways—as a power-to-do or as a holding-itself-in-its-end-state (Met. 1015a14-15, 18-19). In being able to experience the wind in the rustling of the trees, the intuitive looker, upon seeing a thing as simply at work staying itself, can also see it *as* having capabilities to become some new thing. Alternatively, when such a looker sees something in motion or as having the potential to move, she can also see it *as* already having arrived at its goal. These ways of seeing are

familiar from Goethe's considering the appearances next to each other in both a forward and a backward direction.

In order to assist in resuscitating this sense of φύσις, we "moderns" must look for places "where appearing signifies 'the coming-into-being of the things that are sprouting.'" One such place is where we have begun the Lab, where intuitive gazing at plants shows us "the blooming, or hatching (*éclosion*), of appearing" (MV392/365). We can then look at actions, makings, and motions metaphorically as particular species of sproutings, bloomings, or hatchings. This may reawaken in us the boundlessness of the original sense of φύσις, which is responsible for the "rustlings" of actions, makings, and motions.

Thus, it might be possible for St. John's students to be in a position to connect what is being said in the following passage to some of their own experiences in Freshman Lab. They'll have something toward which they can be looking off (ἀποβλέπειν) in trying to make sense of it.

> Now what does the word *φύσις* say? It says that which is spontaneously blossoming on its own (*das von sich aus Aufgehende*) (e.g., the blossoming (*Aufgehen*) of a rose), the unfolding that is opening itself up, the entering-into-appearance in such unfolding, and holding itself and persisting (*Verbleiben*) in appearance, in short, the ruling-working holding-sway (*Walten*) that is blossoming-abiding (*-verweilende*)….
>
> Φύσις as blossoming can be experienced everywhere, e.g., …, in the growth of plants, in the emergence of animal and human from the womb. But φύσις, the holding-sway that is blossoming, is not synonymous with these processes, which we today still count as part of "nature." … Φύσις is Being itself, by virtue of which beings first become and remain observable.[62]

As we students of the early part of Freshman Lab listen to this passage written by the philosopher Martin Heidegger, we are able to recognize its kinship with our experience so far in the lab. We might add that blossoming brings to our minds the sudden putting-forth of shoots and the switch-over impulse that is the originator-ruler of moving and of standing still. We also recognize in it the plant's staying itself in a way, while at the same time becoming other.

Looking ahead to the next section of the lab, on animals, we might wonder whether we'll encounter some new feature, which foreshadows what we'll soon meet in seminar—the idea that there is something—or rather not some thing—the Good itself, which might even transcend Being as blossoming.

[1] A two-part lecture delivered on September 11-12, 2020.
[2] Agnes Arber, *The Mind and the Eye* (Cambridge: Cambridge University Press, 1964), pp. 115-21, 124-26. (Translations of quotations sometimes added or modified; italics occasionally added.)
[3] The Queen Anne's lace flower resembles lace and often has a solitary purple dot in the center. Each flower cluster is made up of numerous tiny white flowers.
[4] a cluster of flowers arranged on the shoot of seed plants.
[5] Jacob Klein, "On Precision," lecture St. John's College.
[6] Agnes Arber, *The Natural Philosophy of Plant Form* (Cambridge: Cambridge University Press, 1950), pp. 210-11; quotation from P. Turpin, 1820.
[7] Ms. Younji Youn, on August 31, 2020.
[8] *Sei do* (*sheng* 生 + *dòng* 動).
[9] Henry Bowie, *On the Laws of Japanese Painting* (NY: Dover, 1911), pp. 77-78; italics added.
[10] "Feeling" here is to be taken in the same sense as "*Empfinden*," which Erwin Straus characterized beautifully and distinguishes from I-versus-object perception (*Wahrnehmung*), in *Vom Sinn der Sinne: Ein Beitrag zur Grundlegung der Psychologie* (Berlin: Springer, 1936).
[11] Experiencing directed tensions corresponds to Whitehead's perceiving sensa in the mode of causal efficacy, which is prior to perceiving objects in presentations (*Vorstellungen*), clothed with sense data, in space. See A. N. Whitehead, *Process and Reality*, revised edition (NY: The Free Press, 1979), pp. 58 et passim.
[12] Rudolf Arnheim, *Art and Visual Perception* (Berkeley: U of CA Press), 412-13, 416, 437, 444-45, 449. The phrase "directed tension" was proposed by Wassily Kandinsky in *Punkt und Linie zur Fläche*.
[13] Ms. Kelly Kane, on August 31, 2020.
[14] "The dynamics is an integral part of what an observer sees as long as his natural sensory responsiveness has not been repressed by an education geared to the static" (*ib.*).
[15] Boston: Houghton Mifflin Company, 1941, pp. 14-18 and 30.
[16] Arnheim, *op. cit.*, p. 454.
[17] Mr. Frederic Duch Clerici, on September 3, 2020.
[18] The three students are Mr. Roman Paul Wlodkowski, Mr. Henry David Hills, and Ms. Younji Youn, respectively, on September 3, 2020.
[19] Suggested to me by my friend, the artist, Betsy Kopmar.
[20] Ms. Songeun Jang, on September 3, 2020.
[21] Note on terminology: *Sprout* will mean (v.) to begin to give off shoots or buds; (n.) young plant growth, such as a bud or shoot. *Shoots* will mean the new fresh plant growth of both stems and their appendages, the leaves and lateral buds, flowering stems and flower buds. *Bud* will mean an undeveloped or embryonic shoot, normally occurring either in the axil of a leaf (= axillary bud) or at the tip of a stem (= terminal bud).
[22] What is responsible for this seeming incompleteness of activity is the fact that the potential of which the sprouting is an activity is itself incomplete (201b33).
[23] As the DC-based painter Paul Reuther has said, when paintings give evidence of mastery of shape, line, value, and composition and yet lack life it is often due to their not having a gestural foundation, as taught by Nicolaides (private communication).
[24] Ludwig Wittgenstein, *Philosophical Investigations* (NY: The Macmillan Company, 1953), tr. G. E. M. Anscombe, modified, Part II, section xi, pp. 193-94.
[25] Included in forming an opinion are all of the lively transformations of thought that follow in its wake.
[26] Henepola Gunaratana, *Mindfulness in Plain English* (Boston: Wisdom Publications, 1991), pp. 149-50.
[27] Mr. Adam Miller Powers, on September 7, 2020.
[28] In Japanese this state of self-world interrelationship is known as *jishu zammai* (自主 三味). It is, perhaps, somehow *both* self-less absorption (三味) *and* agency (主) by the self (自); and yet it is *neither* the one *nor* the other. It will be explored in a later lecture.
[29] 狂, the left side of which originally represented a wild dog.
[30] 天, where the upper horizontal line originally represented the Heaven, below which stands a human being, with arms stretched out wide.
[31] Henry George Liddell; Robert Scott [1940], *A Greek-English Lexicon*; Machine readable text (Trustees of Tufts University, Oxford).
[32] ταῦτα γὰρ εἶναι καὶ τὰ τοιαῦτα φύσει φαμέν. πάντα δὲ τὰ ῥηθέντα φαίνεται διαφέροντα πρὸς τὰ μὴ φύσει συνεστῶτα. τὰ μὲν γὰρ φύσει ὄντα πάντα φαίνεται ἔχοντα ἐν ἑαυτοῖς ἀρχὴν κινήσεως καὶ στάσεως—τὰ μὲν κατὰ τόπον, τὰ δὲ κατ᾽ αὔξησιν καὶ φθίσιν, τὰ δὲ κατ᾽ ἀλλοίωσιν—κλίνη δὲ καὶ ἱμάτιον καὶ εἴ τι τοιοῦτον ἄλλο γένος ἐστίν, ᾗ μὲν τετύχηκε τῆς κατηγορίας ἑκάστης καὶ καθ᾽ ὅσον ἐστὶν ἀπὸ τέχνης, οὐδεμίαν ὁρμὴν ἔχει μεταβολῆς ἔμφυτον, ᾗ δὲ συμβέβηκεν αὐτοῖς εἶναι λιθίνοις ἢ γηΐνοις ἢ μικτοῖς, ἐκ τούτων ἔχει καὶ κατὰ τοσοῦτον, ὡς οὔσης τῆς φύσεως ἀρχῆς τινος καὶ αἰτίας τοῦ κινεῖσθαι καὶ ἠρεμεῖν ἐν ᾧ ὑπάρχει πρώτως …. Ὁμοίως δὲ καὶ τῶν ἄλλων ἕκαστον τῶν ποιουμένων· οὐδὲν γὰρ αὐτῶν ἔχει τὴν ἀρχὴν ἐν ἑαυτῷ τῆς ποιήσεως, ἀλλὰ τὰ μὲν ἐν ἄλλοις καὶ ἔξωθεν, οἷον οἰκία καὶ τῶν ἄλλων τῶν χειροκμήτων ἕκαστον, τὰ δ᾽ ἐν αὐτοῖς μὲν ἀλλ᾽ οὐ καθ᾽ αὑτά, ὅσα κατὰ συμβεβηκὸς αἴτια γένοιτ᾽ ἂν αὐτοῖς.
[33] A rapid motion forwards, onrush, onset, assault; II impulse to do a thing, effort; III setting oneself in motion, start on a march, etc. in Liddell and Scott, *op. cit*.
[34] The verb *μεταβάλλω* means: I throw into a different position, turn quickly or suddenly, turn, i.e. plough, the earth; II turn about (Liddell and Scott, *op. cit*.).
[35] This possibility will be explored in Senior Laboratory.
[36] J. von Uexküll, *Theoretische Biologie* (Frankfurt am Main: Suhrkamp, 1973), p.148.
[37] The quotation from Agnes Arber, *The Natural Philosophy of Plant Form* (Cambridge University Press, 1950), p. 78, continues: "The plant in endeavouring 'to persevere in its own being', repeats that being time after time, each daughter shoot or root becoming, in its turn a parent shoot or root." We see here the being-at-work-staying-itself of the potential, precisely as potential, which is the definition of motion (Aristotle, *Physics,* Book III). She also mentions there an interesting proposal by Baruch de Spinoza, who after having identified "'the effort (*conatus*) by which each thing endeavours (*conatur*) to persevere in its own being (*esse*)'" with life, stated that that *conatus* "'is nothing but the actual essence of the thing itself' (*Ethices*, pars III, Prop. vii)."

[38] Aristotle, *Metaphysics*, Book 9, Chapter 3, 1047a30-31, trl. Joe Sachs (Santa Fe: Green Lion, 1999): "And the phrase being-at-work … is designed to converge in meaning with being-at-work-staying-complete."
[39] The comparison of the soul as the first staying-complete to the idling of a car is due to Seth Benardete, in a course on the *De Anima* at the New School for Social Research. Included in idling are the activities going on within the body that allow animals to maintain their structures and to be ready and able to respond to changes in their environments. The fact that these are known as *metabolic* activities may be taken as a sign that they are initiated and ruled over (ἀρχή) by onsets (ὁρμαί) of a switch-on or a switch-off (μεταβολῆς). The latter two expressions are, of course, suggestive for those familiar with genetic regulatory mechanisms.
[40] Johann Wolfgang von Goethe, *The Metamorphosis of Plants*, introduction and photography by Gordon L. Miller (Cambridge, Massachusetts: The MIT Press, 2009), translation modified; hereafter cited by paragraph number preceded by "#."
[41] "The Aim Introduced" (1807) in J. W. von Goethe, *Werke*, Bd. XIII, pp. 55-59; J. W. von Goethe, *Scientific Studies* (NY: Suhrkamp, 1983), ed. and trl., Douglas Miller (translation modified), pp. 55-56, italics added; hereafter referred to as "Aim.
[42] The two figures are from R. Brady, "The Idea in Nature" in *Goethe's Way of Science: A Phenomenology of Nature*, eds. D Seamon & A. Zajonc (Albany: SUNY Press, 1998), pp. 94 and 107.]
[43] The language in this paragraph is taken from Jacob Klein's *Greek Mathematical Thought and the Origin of Algebra*, trl. Eva Brann (The M.I.T Press, 1968), p. 82 (cited below as GMT). In context that which has "within itself the possibility of acting as the source of repetition" and has "a primal character of '*image-ability,*' … which makes possible … all 'recognition'" is being itself. This possibility and primal character is "the effect of … the 'indeterminate dyad.'" Thus, when, following Goethe, we look at the formation and trans-formation and see that each leaf shape in the sequence of shapes "is originally 'alienated' from itself, is not only 'itself' but also 'another' than 'itself,'" we are witnessing an instance of the indeterminate dyad at work (GMT 82; cp. 95-96). Goethe's way of looking at plants might, in this way, plant a first seed in the students' minds of what it could mean to say that being is φύσις.
[44] Goethe himself implied that the word "leaf" was only a temporary makeshift. He wrote that "we would obviously need a general term by which we could designate this organ that metamorphosed into such different shapes, and with which we could compare all the appearances of its shape" (# 120). And, in any case, it should be clear that this difference in the ultimate unit does not alter the accuracy of Goethe's mobile, flexible tracking of the fluctuation in the plant's putting-forth, in its gestural impulse of formation and trans-formation. A plant's inner truth would be its unique "gesture" of self-formation.
[45] In *The Natural Philosophy of Plant Form* (Cambridge University Press, 1950), pp. 70-71, Agnes Arber reports the following: In 1875 the botanist Julius von Sachs wrote: "'The expressions Stem and Leaf denote only certain relationships of the parts of a whole—the Shoot.'" Arber's own view is that "we need … a synthetic standpoint combining the advantages of …. the conception of the shoot as the ultimate unit, and the opposed conception of the leaf and stem as each being ultimate units."
[46] Mr. Frederic Duch Clerici, on September 3, 2020.
[47] Mr. Adam Miller Powers, on September 3, 2020.
[48] Figures 7 and 8 are Images 10 and 11, respectively, on pp. 26-27 of Goethe, *The Metamorphosis of Plants*, *op. cit*.
[49] Figures 9 and 10 are Images 12 and 13, respectively, in *ibid*., pp. 28-29.
[50] Figures 11-13 are Images 14, 16, and 17, respectively, in *ibid*., pp. 32 and 34-35.
[51] Figure 14 is Figure 6 in *ibid*., p. 44.
[52] These short works will be cited by title; the page references are to J. W. von Goethe, *Werke*, Bd. XIII; the translation was based in significant part on that of Douglas Miller, found in J. W. von Goethe, *Scientific Studies*, *op. cit*.
[53] 氣運生動 (*qì yùn shēng dòng)*, formulated by Xie He around 500 C.E. The following graphs and translations and the considerations in the text about the first canon are mostly based on Mai-Mai Sze's *The Tao of Painting*, Volume 1 (Princeton University Press, 1956), pp. 33ff: 氣 *qì*: vapor, breath; air, manner, influence; Breath of Heaven, Spirit, Vital Force, vivifying principle. 運 *yùn*: turn, revolve; a circuit. 韻 *yùn*: beautiful sound, rhythm, reverberation. Hence, 氣韻 qì yùn = (of literature, art) distinct style, flavor, spirit, character. 生 *shēng* (pictograph of a plant sprouting): to be born; to give birth; to produce; life; to grow. 動*dòng*: (trans.) to move, stir, arouse, touch; to set into action; to displace—by some sort of power, force, strength (力 li). Hence, *shēng dòng* = vivid, lively; living movement, alive power of moving (trans.).
[54] : 氣韻生動 (*qì yùn shēng dòng)*, which means '*Ch'i* reverberation (turning/bending back) [or uttering sounds (radical 180) that are round like a cauldron (phonetic)] [is or makes] living movement, or alive power of moving' (Sze, 49). However, while "circulation," as "in the vast circuit of the heavens and the cycles of the seasons" may suggest rhythmic motion, the movement of the Ch'i is not subject to "the limitations of a measured beat…. Rhythm is only one aspect of the total action of the Ch'i."
[55] 心 *hsin*.
[56] In this passage "[φύσις]" replaces "the *Tao*" (道 = the head, or leader, seeing everywhere, is *taking an initial step* along the way).
[57] Paul Ricoeur. *La Métaphor vive* (Paris: Éditions du Seuil, 1975), p. 61; *The Rule of Metaphor*, trls. R. Czerny et al. (Ny: Routledge, 1977), p.48; translation modified; hereafter cited in the text as "MV61/48." The above quotations by Ricoeur are from Aristotle, *Poetics*, 1448a24 and 1411b25, respectively. As Ricoeur notes, the "as" in this and subsequent passages derives ultimately from Wittgenstein, *Philosophical Investigations*, Part II, section xi.
[58] Maxine Sheets-Johnston, *The Primacy of Movement* (John Benjamins, 2011), Chapter 12 "Thinking in movement." In particular she shows how dance improvisation is a "paradigm of thinking in movement" (p. 420).
[59] I have altered Ricoeur's translation of Aristotle, *Met*. 1014b17-18. Here is the whole relevant passage: "In a sense φύσις means [a] the coming-into-being of the things that are sprouting (φυομένων), as if one were to pronounce the upsilon in φύσις long; but in a sense it means [b] the thing present within forth from which the thing shooting forth, is first shooting forth (φύεται). Again, it is [c] the [source] whence the first motion in each of the beings that are by φύσις is present within it precisely as itself…. [e] The primary and authoritative meaning of φύσις is the way of being what they are of things that have in themselves, precisely as themselves, a ruling source of motion … and [a] the comings-into-being and [b] shooting forth (φύεσθαι) are called φύσις by virtue of being motions from this [φύσις in the primary sense]. And [e] [φύσις in] this [primary sense] is [c] the ruling source of motion of beings that are by φύσις, in being present within [them] in some way, whether in the way of power-for or in the way of holding-itself-in-its-end-state-of completion" (Met. 1014b15-20; 1015a14-15, 18-19).
[60] Cp. *Soph* 247de: Str: "I say, then, that whatever possesses any sort of power—whether for making anything at all, of whatever nature, other than it is or for being affected even the least bit by the meagerest thing, even if only once—… *is* in its very being (*ὄντως ἐῖναι*). For I set down

as a boundary marking off the beings that it is nothing else but *power*"; and 250b: Str: "Then do you posit in the soul being as some third thing beyond [Motion and Rest] as if Rest and Motion were embraced by it? And is it through taking them together and looking away toward the community of their way of being that you say that both of them *are*?" The translations generally follow that by E. Brann, P. Kalkavage, and E. Salem (Newburyport: Focus Philosophical Library, 1996).

[61] Aristotle, *Metaphysics*, Δ, 1015a18-19, based on the Sachs translation, with changes, here and in the following quotations.

[62] Martin Heidegger, *Einfūhrung in die Metaphysik* (Tūbingen: Max Niemeyer Verlag, 1953), p. 11; *Introduction to Metaphysics* (New Haven: Yale University, 2000), trls. G. Fried and R. Polt, p. 15; translation modified.