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B is for Botany as / is for Identity: Reading Writing and Acting ing with Plants



Terminology and discourse surrounding identity and relocation – or dislocation – are replete with references to botany. One hears, for instance, of the pull of roots, the cross-fertilization of cultures, the dispersal of immigrants, and – derogatorily – germinating refugee crises and the need to weed out refugees. A reflection on such terms presents an opportunity to consider what these linguistic crossovers might inform of. Why has identity been rooted in the botanical and how is it being figured as a result? What purpose might such a figuration serve? Could it, for instance, work to render natural or unnatural diasporic conditions? What political implications does this naturalization or denaturalization have? What might an attempt to think identity, belonging and displacement together with plants – metaphorically or literally – yield?

The modern English *verb* ‘to plant’ originates from the Latin *plantare*, meaning ‘to plant, fix in a place.’ Combined with prefixes like *re-* or *trans-*, the word hints at a newfound but labored mobility that defies its original fastening. At the level of the literal, stasis and mobility also characterize the plant kingdom. While some plants are endemic or restricted to particular natural ecosystems, others, at the opposite end of the spectrum, enjoy a cosmopolitan distribution over most, if not all, appropriate ecosystems throughout the world. Moreover, plants are distributed and introduced between ecosystems by wind, water, human and non-human animals, and within these ecosystems, they may harmoniously thrive, invasively take over, or fail to take root. Trafficking in plants, both physically and metaphysically, thus opens up a clearing for considering connections between different forms of mobility, immobility, and their governance – be they in plant pollination, agricultural breeding, conservation technologies, or the cross-border circulation of human bodies. These re-arrangements of life produce transplantations at all scales – from the minute to the monumental – that can be mapped genetically, taxonomically and/or geographically.

The following is an attempt to not only *think with plants* but also with acts of planting. Planting is construed within it as creative labor with potential political potency. Such a construction builds on planting’s intertwined history with citizen activism, which includes the top-down victory gardens that emerged during WWI and WWII to relieve national economies from the pressures of food production and the bottom-up urban community gardens that provide alternatives in the present to the hegemony of global agribusiness. Beyond their utilitarianism, planting acts like cross-pollination or cross-fertilization are read as modes of intervening into the present status quo, imagining the future, and proposing other possibilities.

Glossary*

alien |'eɪlɪən| *adjective* belonging to a foreign country • (of a plant or animal species) introduced from another country and later naturalized *noun* a foreigner, especially one who is not a naturalized citizen of the country where he or she is living • a plant or animal species originally introduced from another country and later naturalized. *ORIGIN:* Middle English: via Old French from Latin *alienus* 'belonging to another,' from *alius* 'other.'

cross-fertilize *verb* 1 [with object] fertilize (a plant) using pollen from another plant of the same species • [no object] (of two plants) fertilize each other 2 stimulate the development of (something) with an exchange of ideas or information. *ORIGIN:* (fertilize): Late Middle English: via French from Latin *fertilis*, from *ferre* 'to bear.'

cross-pollinate *verb* [with object] pollinate (a flower or plant) with pollen from another flower or plant.

culture |'kʌltʃə| *noun* 1 the ideas, customs, and social behavior of a particular people or society 2 the cultivation of plants. *ORIGIN:* Middle English (denoting a cultivated piece of land): the *noun* from French *culture* or directly from Latin *cultura* 'growing,

cultivation.' In late Middle English the sense was 'cultivation of the soil' and from this (early 16th century), arose 'cultivation (of the mind, faculties, or manners).'

diaspore |'daɪəspɔː| *noun* a spore, seed, or other structure that functions in plant dispersal; a propagule. **diaspora** |daɪ'asp(ə)rə| *noun* the dispersion or spread of any people from their original homeland • people who have spread or been dispersed from their homeland. *ORIGIN:* Greek, from *diaspeirein* 'disperse,' from *dia* 'across' + *speirein* 'scatter.' The term originated in the Septuagint (Deuteronomy 28:25) in the phrase *esē diaspora en pásais basileias tēs gēs* 'thou shalt be a dispersion in all kingdoms of the earth.'

endemic |ɛn'demɪk| *adjective* 1 (of a disease or condition) regularly found among particular people or in a certain area 2 (of a plant or animal) native or restricted to a certain place • having a natural distribution restricted to a particular geographic region.** *ORIGIN:* Mid 17th century (as a *noun*): from French *endémique* or modern Latin *endemicus*, from Greek *endēmios* 'native' (based on *dēmos* 'people').

germinate |'dʒɔːmɪneɪt| *verb* [no object] (of a seed or spore) begin to grow and put out shoots after a period of dormancy • [with object] cause (a seed or spore) to germinate • come into existence and develop. *ORIGIN:* Late 16th century: from Latin *germinat-* 'sprouted forth, budded', from the *verb* *germinare*, from *germen*, *germin-* 'sprout, seed.'

graft |gruːft| *verb* [with object and *adverbial*] 1 insert (a shoot or twig) as a graft • insert a graft on (a trunk or stem) 2 combine or integrate (an idea, system, etc.) with another, typically in a way considered inappropriate. *ORIGIN:* Late Middle English *graff*, from Old French *grafe*, via Latin from Greek *graphion* 'stylus, writing implement' (with reference to the tap of the scion), *graphein* 'write.'

habitat |'hæbɪtæt| *noun* the natural home or environment of an animal, plant, or other organism. *ORIGIN:* Late 18th century: from Latin, literally 'it dwells', from *habitare*.

home-grown *adjective* grown or produced in one's own garden or country • belonging to one's own particular locality or country.

hybrid |'haɪbrɪd| *noun* 1 the offspring of two plants or animals of different species or varieties 2 a thing made by combining two different elements. *ORIGIN:* Early 17th century (as a *noun*): from Latin *hybrida* 'offspring of a tame sow and wild boar, child of a freeman and slave, etc.'

indigenous |ɪn'dɪdʒɪnəs| *adjective* originating or occurring naturally in a particular place • native to the area, not introduced, and not necessarily confined to the region discussed or present throughout it (hardly distinct from 'native' but usually applied to a smaller area).** *ORIGIN:* Mid 17th century: from Latin *indigena* 'a native.'

native |'neɪtɪv| *noun* 1 a person born in a specified place or associated with a place by birth, whether subsequently resident there or not • a local inhabitant • (dated, often offensive) a non-white original inhabitant of a country, as regarded by European colonists or travelers 2 an animal or plant indigenous to a place • naturally occurring in an area, but not necessarily confined to it.** *ORIGIN:* Late Middle English: from Latin *nativus*, from *nat-* 'born', from the *verb* *nasci*.

naturalize |'natʃ(ə)rəlaɪz| (also **naturalize**) *verb* 1 [with object] (often *be/become naturalized*) admit (a foreigner) to the citizenship of a country • [no object] (of a foreigner) be admitted to the citizenship of a country 2 (usually as *adjective naturalized*) establish (a plant or animal) so that it lives wild in a region where it is not indigenous • (with reference to a cultivated plant) establish or become established in a natural situation. *ORIGIN:* Mid 16th century: from French *naturaliser*, from Old French *natural*.

parasite |'pærəsɪt| *noun* 1 an organism which lives in or on another organism (its host) and benefits by deriving nutrients at the other's expense 2 a person who habitually relies on or exploits others and gives nothing in return. *ORIGIN:* Mid 16th century: via Latin from Greek *parasitos* '(person) eating at another's table,' from *para-* 'alongside' + *sitos* 'food.'

root |ruːt| *noun* 1 the part of a plant which attaches it to the ground or to a support, typically underground, conveying water and nourishment to the rest of the plant via numerous branches and fibers 2 the basic cause, source, or origin of something • (roots) family, ethnic, or cultural origins, especially as the reasons for one's long-standing emotional attachment to a place or community *phrases:* *put down roots* (of a plant) begin to draw nourishment from the soil through its roots • (of a

person) begin to have a settled life in a particular place. *ORIGIN:* Late Old English *rōt*, from Old Norse *rót*; related to Latin *radix*, also to *wort*.

terrestrial |tə'restriəl| *noun* an inhabitant of the earth. *ORIGIN:* Late Middle English (in the sense 'temporal, worldly, mundane'): from Latin *terrestris* (from *terra* 'earth').

transplant |trans'plɑːnt, trɑːns-, -nɪz-| *verb* [with object] move or transfer (someone or something) to another place or situation • replant (a plant) in another place. *ORIGIN:* Late Middle English (as a *verb* describing the repositioning of a plant): from late Latin *transplantare*, from Latin *trans-* 'across' + *plantare* 'to plant.'

uproot |ʌp'ruːt| *verb* [with object] 1 pull (something, especially a tree or plant) out of the ground 2 move (someone) from their home or a familiar location.

weed |wiːd| *verb* [with object] 1 remove unwanted plants from (an area of ground) 2 (weed someone/thing out) remove an inferior or unwanted component of a group or collection. *ORIGIN:* Old English *wēod* (*noun*), *wēodian* (*verb*), of unknown origin; related to Dutch *wieden* (*verb*).

*Unless otherwise noted, all definitions are taken from the Oxford Dictionary of English
**Definitions taken from the Wikipedia Glossary of Botanical Terms

Cross-pollination between different flowering plants occurs when one plant pollinates with another plant from the same genus. For instance, plums, cherries, peaches, nectarines, and apricots belong to the genus *Prunus* and therefore have the potential to cross-pollinate. As cross-pollination unfolds, the different plants' genetic materials intermix and eventually result in a hybrid that exhibits qualities from both of the original varieties but is a unique variety in and of itself. Hybridization is not expressed in the first generation of fruits borne; rather, it appears in the fruits grown from the first generation's seeds.

Cross-pollination can take place naturally, as wind, bees, or butterflies carry the pollen of one plant to another, or as a consequence of human intervention. Though its particulars remained a mystery until the 1860s, selective plant breeding was practiced for thousands of years. In 1865, Gregor Mendel, who had been experimenting with hybridizing peas, formulated his laws of inheritance, thus establishing the field of genetics and transforming cross-pollination into a scientific endeavor. The following is a step-by-step guide to cross-pollinating that will enable you to make your own hybrids.

Background Information on Plant Reproduction*

Before delving into cross-pollination, it is important to understand the basics of plant reproduction. Plant reproduction most often entails the fusion of a male and a female germ cell. The fusion produces a seed, which eventually develops into an offspring plant. Reproduction in plants takes place within the flower, where the reproductive organs - the stamen and the pistil - are located. (see fig. 1)

The anther, found at the top of the stamen, produces pollen grains, which contain the male germ cells; the ovary, found at the base of the pistil, holds ovules, which contain the female germ cells. Pollination is the process by which pollen is transferred, by natural or artificial means, from the anther to the stigma at the top of the pistil. This takes place after the anther matures and splits open, making the pollen grains accessible. (see fig. 2)

Fertilization, which follows pollination, occurs when the pollen that has reached the stigma develops a tube that extends down the style and into the ovule. Within the ovule, the female and male germ cells fuse and develop into a seed. (see fig. 3)

There are three types of flowers - perfect, imperfect, and composite. Perfect flowers are the most common kind and contain both the stamen and pistil within a single flower. (see fig. 1) These flowers are capable of self-pollinating. An imperfect flower contains either the stigma or the pistil. Imperfect flowers that contain the stigma are staminate flowers while those that contain the pistil are pistillate flowers. Staminate and pistillate flowers may grow on the same plant or on separate ones and require each other to pollinate. Composite flowers are made up of clusters of flowers or florets that look like petals and that are joined together in a flower head. The florets can contain both reproductive organs (disc florets) or only the pistil (ray florets). Composite flowers are made up of a cluster of only disc florets or of both disc and ray florets.

Cross-Pollination Instructions

Materials:

- String (2 different colors)
- Tweezers
- Magnifying glass
- Rubbing alcohol
- Cellophane bags
- Paper clips
- Small plastic container

NB: For the sake of simplicity, the guidelines below are for perfect flowers.

1 Find two different flowering plants that belong to the same genus. To ensure that the flowers you choose for cross-pollination have not already pollinated, use flowers that have not yet opened.

2 Choose a flower from one plant that will serve as the male parent - the parent flower that will provide the pollen - and from the other a flower that will serve as the female parent - the parent flower that will receive the pollen. Make sure to choose a male parent that has heavy yellow powder on its anthers and a female parent that has a glistening stigma that is sticky or hairy to the touch. Mark each flower with a thread of a different color to keep track of its role.

3 To prepare the female parent, you must first protect it from self-pollinating by incapacitating its stamens. Gently open the flower by hand and pinch off its stamens or anthers with tweezers. (see fig. 4) Use your magnifying glass to assist you in this process if needed. Clean your tweezers by rubbing alcohol before proceeding.

4 Next, you must protect both parents from contamination from foreign pollen by covering each of the flowers with a cellophane bag. Fasten the bags at the bottom with paper clips or threads. (see fig. 5)

5 Uncover the male parent and remove its stamens or anthers using your clean tweezers. Place these stamens or anthers in a sealed plastic container. (see fig. 6)

6 Now uncover the female parent. Hold one of the male parent's stamens or anthers with your tweezers and softly brush the anther across the female parent's stigma. (see fig. 7) Cover the female parent again.

7 Once this process has been completed, fertilization takes place and seeds develop that you can then harvest. If the plants chosen do not yield fruits or vegetables, you can harvest the seeds when the female parent's seedpod becomes dry or begins to split open. (see fig. 8) If the plants chosen yield fruits or vegetables, the seeds will be ready for harvesting when the fruit/vegetable has ripened and its seed-bearing parts have reached maturity. Place the harvested seeds in a packet. Store the packet in a warm place for the first week and then keep the seeds in a cool, dry area. Once you are ready, plant your harvested seeds and watch your hybrid grow.

*The sections 'Background Information on Plant Reproduction' and 'Cross-Pollination Instructions,' as well as accompanying illustrations, are based on the circular, "Plant Breeding as a Hobby" by J.D. Butler and N.F. Oebker at the College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign. It can be accessed at: http://www.aces.uiuc.edu/vista/html_pubs/PLBREED/pl_breed.html

How to Cross-Pollinate Different Flowering Plants to Produce Hybrids

