

ANCESTRAL
EMBODIED
SCIENTIFIC

COMMUNICATIVE
FOLKLORIC
SENSORY

COMMUNAL
INTIMATE
SPECULATIVE

DECOLONIAL
QUEER
SPIRITUAL

EVERYTHING GOES IN NATURE:
LEARNINGS FROM THE PLANT KINGDOM
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83

Plant kingdom is manifold: with an infinite variety of shapes, colours, textures, and smells, it is averse to resemblance. The origin of this extreme diversity results from evolution through sexual reproduction, allowing to adapt to ever changing weather, climate, and soil conditions. Sexual reproduction amongst trees and herbs is multifaceted and plants can be either male, female, hermaphroditic, or even all at once. While this fact is nowadays widely acknowledged, it caused at its discovery an uproar, challenging patriarchal ideas about procreation. To acknowledge the variety of reproduction behaviours in the plant kingdom, is to allow the emergence of an emancipated idea of nature, not as something separate and dominant, but as relational and queer. Lessons learnt from the plant kingdom may also apply to other fields, and accordingly guide us towards the creation of a more inclusive urban environment.

Reproduction in the plant world has the particularity, in contrast with animals, to be able to happen in two distinct ways: either sexually or vegetatively. Vegetative propagation is commonplace in the wild: strawberries shoot out new plants thanks to their runners, stinging nettle spreads via its rhizomatic root systems. It can also be induced artificially, and horticulturalists use

techniques such as cutting, grafting, layering, or even tissue culture to multiply commercially houseplants and flowers purchased in garden centres. This manufactured botany is economically profitable as it breeds plants quickly but has the disadvantage to come at the cost of diversity, as vegetative propagation produces plant replicas that all carry an identical genetic material and are de facto clones. Sexual reproduction, in contrast, allows plants to evolve by selecting a balance of the most favourable genetic characteristics of the parent plants. This is a slow and demanding process, yet necessary to allow the mutations that inevitably happen during growth and are vital to adapt to and often-changing environment – and crucially nowadays global heating. Sexual reproduction happens thanks to the pollination process, this non-hierarchical relationship based on an exchange with bees, insects or birds, and involves either male, female or hermaphroditic flowers, whose sexual organs can be arranged according to a wide variety of patterns.

Some species carry plants that can only be either exclusively male or exclusively female, what botanists call 'dioecy'. The yew (*Taxus baccata*), for instance, carries either only male or only female flowers. After pollination, the male flowers are shed while the female ones turn into a red berry-like structure, the aril, whose ornamental qualities are cherished by gardeners. This feature can also evolve with time, as proven by the oldest male yew of the Royal Botanical Garden of Edinburgh, which happened to develop a branch carrying female flowers. Other examples of dioecious plants include ginkgo, stinging nettle, kiwis, hop and asparagus. Other species carry separate male and female cones or flowers on the same plant, known to botanists as 'monoecy'. The Scots Pine (*Pinus sylvestris*) carries both male and female

84

cones on distinct parts of the same plant. The male cones are recognizable thanks to the conspicuous yellow colour of their pollen. Once fertilised, the juvenile female cones turn into mature ones carrying the tree's naked seeds. Many conifers are monoecious and other examples include deciduous species such as plane tree, hornbeam, alder, birch, hazel, and walnut.

Dioecy and monoecy are actually rather archaic mechanisms of sexual reproduction and they were later in the evolution enhanced by a novel feature: hermaphroditism. Hermaphroditic plants gather both male and female cells within a single organ, what botanists describe as 'perfect' flowers. Most of the plants we know today are hermaphroditic, and the longlist includes lime tree, horse chestnut, magnolias, most fruit trees, vegetables, and ornamental plants. The sexual characteristics of plants are also not fixed, and they may also evolve with time and depending on factors like age or environmental conditions. A hermaphroditic plant can also carry solely male or solely female flowers, or both, a male tree can suddenly produce female flowers... Everything goes in nature.

85

The first known reference of plant sexuality in the western world appeared in antiquity, when the philosopher Aristotle audaciously compared plants to upside-down animals. According to him, roots were comparable to the mouth as a nurturing organ, twigs to legs, and consequently sexual organs should also be present on the plant structure above ground. The philosopher's intuition was not scientifically pursued until the end of the 17th century, when natural scientist Camerarius wrote the first modern publication on plant sexual reproduction, later used by the botanist Linnaeus as a basis for his own work on classification. This was actually not

an easy recognition, as the sole idea of plant sexuality challenged religious and patriarchal views of the time of nature as devoid of what was considered as immoral behaviours. Subsequent discussions lasted for almost a hundred years until, in the late 19th century, the scientific community ultimately reached a consensus on the true existence of plant sexuality. This realisation came uncannily late in the history of natural sciences, when we think that sexual reproduction in the animal world had been known since antiquity. Hand-pollination has in fact been commonplace ever since the beginning of agriculture – although it was not acknowledged as such. Artworks found in modern Iraq show Assyrian arborists manually fertilising the female flowers of date palms with male ones to produce the sweet edible fruit (like yews, date palms are dioecious and can only be either male or female). Hand-pollination had also been used for horticultural purposes since ancient times by plant breeders in order to create new varieties of flowers. This art reached an apex during the 17th century Netherlands, when florilegium paintings depicted the abundance of shapes and colours produced by tulip breeders. Intense speculation over the exchange of the flower bulbs led to what is now known as the Tulip Mania, when the price of coveted tulip bulbs increased one hundredfold within a few years, leading to the world's first recorded economic bubble and ensuing first world's financial crash.

86

The diversity of the natural world is remarkable, and challenges prejudiced ideas of what is considered as being natural, i.e. proper. Lessons learnt from the plant kingdom may also apply to other fields, and as a landscape architect I am interested to investigate how this can apply to the design of open spaces. The success of public demonstrations like Women's Marches and Pride

Parades shows a rising demand from citizens to transcend patriarchal and heteronormative conformism. The public realm is a prominent space of expression for civil society and requires to be placed under scrutiny.

Within the city of Basel, where I live, around one hundredth of all streets and squares are named after people. The namesakes include historical and political luminaries, influential families, cultural actors, and mythological figures. Just about a tenth of the spaces are named after women, and out-of-the-closet gays are simply absent. This situation is widespread and, to highlight this issue, feminist and queer groups throughout Europe are undertaking bottom-up activism, renaming to their likings the public realm in cities like Geneva, Paris and Amsterdam. Some governments are hearing them: in tribute to the Stonewall riots, for instance, Paris renamed a series of squares and streets after local and international queer personas, including the transgender writer and resistance fighter Ovida Delect, the Holocaust survivor Pierre Seel, and the politician and activist Harvey Milk.

87

Other insights of gender-biased public spaces are visible in the range of freely accessible recreational available in squares and gardens. A study conducted in Geneva reveals that city subsidised sport resources are allocated to men in more than two-thirds of cases, and that they too often favour power and stamina over dexterity and non-normative bodies. Facilities for strength-based recreation like skateboarding or urban fitness, which are conventionally regarded as masculine activities, are widespread, while amenities addressing agility and team sports such as badminton or volleyball, which are generally feminine-coded, are underrepresented in many public spaces.

Those patriarchal values are also permeating other fields of public space and maybe more surprisingly, are also recognizable in the choice of trees used to plant our streets. Urban trees are a key feature of European cities, adorning the cityscape with their leafy presence, usually planted linearly to emphasise the geometry of a pedestrian axis or border traffic-heavy avenues or boulevards. Limes and planes are some of the most popular European alley trees, followed closely by horse chestnuts and maples. They provide a vast array of ecological services to citizens: they shade the streets, contribute to a pleasing micro-climate thanks to evapotranspiration, produce oxygen and clean the air by collecting dust on their foliage. They also gulp excess rainwater and serve as hosts for many varieties of birds and insects. When planted over a larger territory, they act as valuable agreement and precious ecological corridor, one of the most famous examples of such an urban corridor to this date remains the Boston Emerald Necklace from Frederick Law Olmsted.

88

The range of challenges facing street trees is also fierce: they should be able to grow in reduced tree pits with compacted soil, resistant to air pollution, drought, excess water, be easily trimmed to accommodate traffic, especially large trucks, streetlights, and tramway catenaries. In order to fulfil all those demands, some tree species were even engineered especially for that purpose, such as the London Plane (*Platanus × hybrida*), which is a cross breed between an oriental plane and an American Sycamore. This London landmark is tolerant to root compaction and air pollution, resists wind and drought well, making it a very proper and resistant urban tree.

Hygiene and low maintenance are also decisive factors for the choice of the appropriate street tree. The chosen

species should not exhale unpleasant smells or produce large fruits, which are regarded by municipalities as a source of extra workload and a health hazard, as falling fruits may render the pavement slippery and attract unsolicited insects such as wasps and flies. When available, the male tree is too often favoured to the female one. This applies to species like poplar, ash, willow or ginkgo, the latter female specimen producing fruit carrying an acrid smell usually considered as highly unpleasant. Those choices have regrettable unintended consequences, as the male trees are the ones producing pollen, which is cause to many spring allergies. This also poses the question of the place of production and reproduction within our cityscapes. Why do we revere flowers, while we forbid fruits? Is the only purpose of urban trees to be ornamental?

89

The gap between ornamental and horticultural varieties does not need to be so sharp and hopeful examples show how (re)production can find its place in our metropolitan environments. One of the most hopeful examples to that regard is the city of Seville in Spain, whose streets are bordered by Bitter Orange trees (*Citrus × aurantium*). In the spring, the city is filled with the fragrance of orange blossoms, while the plump fruits adorn the autumn and winter months. The bitter taste is though not favoured by the Spaniards and once harvested, bitter oranges are shipped to England where they are turned into a sweet-sour marmalade, to the delight of the Britons.

Climate change is demanding city planners and landscape architects all around the world to unsettle their habits and review the traditional assortment of urban trees. Species like beech, spruce, or birch suffer tremendously from increased heat and lack of water. This is a

tragedy, as many trees will not survive our heated future, but it is also the opportunity to broaden our palette with species that are not only resistant to global warming but can also play a role in feeding our cities. The Sweet Chestnut (*Castanea sativa*) for instance, is a tree originating from the Mediterranean area known to be heat tolerant. Its fruits, the chestnuts, are also a valuable source of carbohydrate and can be eaten roasted, turned into flour, or candied. The plantation of such species as alley trees offers the opportunity to shape an urban future where fructification and reproduction find a room of their own, allowing the emergence of a cityscape which is not only ornamental and fragrant, but also palatable.

Queering the public realm—that is, fostering a diversity of genders expression—can address both plants and people. Unseal the soil; make it porous and permeable to create a welcoming ground for all. Grant free spaces for roots to grow and communities of humans as well as nonhuman to mingle. By exploring the power of trees, shrubs, flowers and herbs as a source of inspiration, we can find alternatives to the way we design and act in order to shape truly inclusive metropolitan ecosystems.

