"'At the root' of practices and knowledge: natural histories of the underground plant-object in a visual iconographic database"

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(**Slide 1**) First, I would like to thank Anna Myers and Georgia Vullinghs for taking care of the organization of this seminar at the University of Edinburgh. I feel really honored to talk here about my recent *Ph.D*. research.

My *Ph.D*. dissertation explores the plant-object and more specifically the "roots" of plants, from tubers to rhizomes and bulbs. As this is a curious object to study, I will start by showing you some images to introduce my talk here. My interest in studying the roots of plants is more obvious when one sees those images: the symbolic meaning of the underground part of the plant is extraordinarily rich and complex. But how do we tell a natural history of the root part of the plant? How could it be of any interest to unravel the scientific knowledge of early modern Europe? How could underground objects shed light on the historical discipline?

(**Slide 2**) European ways of thinking are commonly based on a hierarchy of beings which one generally calls "Chain of Beings" or "*Scala naturae*" (for "Scale of beings"). These terms define how an individual of the early modern times envisioned the natural world and the beings which lived in this world. Roots and bulbs were the very last level, the lowest one in the food chain. (**Slide 3**) As you can see on Jan Brueghel and Henrick van Balen's painting, the root vegetables are placed on the ground, next to animals (rabbits which are meant to eat them). They were called "crawling livings". They were opposed to lemons or apples and pears which are painted higher on this allegoric depiction of seasons. Fruits are nobler edible resources than roots. However, this "noble status" was contradicted by the authors of herbaria and medical treatises. As a matter of fact, "roots" were one of the most valued parts of the plants, commonly used as medicinal herbs. At first, the root part of the plant was described as a secret remedy. It was often surrounded by magical rituals, such as the mandragora (or mandrake), which I could not forget to mention in this presentation. (**Slide 4**) Mandrake, bryony, mallow and other famous roots were jealously kept secret as occult knowledge, shared only between practitioners of such

"wizardry" : it was shared among women mostly, because they were the one in charge of the health issues in their home, and it was also shared between travelling and itinerant merchants, and even some apothecaries. Roots were also the domain of sorcerers and women capable of witchcraft. They were synonyms of the underground earth, the act of collecting roots was embedded with the act of digging the ground, which was more of a wild animal gesture. Roots were used both as medicinal talismans and therapeutic edible remedies. It was not surprising, then, that the mandrake would shriek when extracted out of the ground, by night, during a specific moon. (**Slide 5**) It also led to particularly ridiculous fashions and rituals, such as depicted in the satirical play by Niccolò Machiavelli (*The Mandrake*, 1524), or in *Othello*, the tragedy written in 1603 by William Shakespeare. Roots were inevitably viewed as universal remedies, a panacea used for every human ache and illness, but more frequently used as an aphrodisiac, a poison or as a psychotropic drug. The mandrake was called *Anthropomorphos* by Greek authors. John Gerard, in *The Herball, or Generall Historie of Plante* (1636), reminds us of the biblical origins of the famous root, especially in Rachel and Jacob biblical parabola about sterility. John Gerard said:

> *There have been many ridiculous tales brought up of this plant, whether of olde wives or some runnagate surgeons or phisickmongers, I know not, (a title bad inough for them:) but sure some one or moe that sought to make themselves famous in skillfull above others were the first brochers of that errour I spake of. […] They fable further and affirm, that he who woulde take up a plant thereof must tie a dogge thereunto to pull it up, which will give a great shrike at the digging up; otherwise if a man should do it, he should certainly die in short space after […]*[1]

(**Slide 6**) Moreover, I came across some root images by zooming on big digitized canvasses and luckily, I could find some interesting scenes of practices around the roots of plants in bigger sceneries and landscapes. This is, as *The Routledge Handbook of Material Culture in Early Modern Europe* says, a "stimulating view of materiality". It questions us "about the whole material world as a context for lived experience […], material interactions at all social levels"[2]. This visual method perfectly complements my study of herbaria and other treatises that I compare and intertwine with iconographic data in which we can observe, surrounding the vegetal objects, work environments and practices, as well as gestures of consumers, farmers or merchants, whose knowledge and technics were various. These research crossovers between written and iconographic data also make it possible to find connections between diverse social environments. Images also allow us to question

[1] GERARD, John, *The Herball, or Generall Historie of Plante,* volume 1, 1636, p.281.
[2] RICHARDSON, Catherine, HAMLING, Tara, GAIMSTER, David (dir.), *The Routledge Handbook of Material Culture in Early Modern Europe*, Routledge, 2017, p.1.

cultures where writing and reading are not common practices. Once we look at these iconographic representations, we can view the interactions between things and history, the material object studied here being the root. The way we see the plant object in all its dimensions, material, symbolic, cultural, teaches us more about the tastes of people in modern times, but also the constraints of their environment: their climatic constraints, their social constraints as well, etc. The plant objects in the paintings or in the illustrated plates of the herbaria, depicted a slightly bigger picture, portraits of individuals or groups of individuals in history, which could be described as "larger narratives"[3].

Root vegetables are often used to represent the scarcity and harshness of winters, as well as the difficulties of farmers in the fields. They could also picture poverty in its most figurative and literal depiction. The image of poverty is often featured in the paintings of 16th and 17th centuries. Those paintings were not just the portraits of people, women, and men, who bore the scars of this poverty, as objects are indeed a proof of this poverty and of the necessity of root vegetables in times of shortage. (**Slide 7**) Root vegetables also added theatrical dramaturgy to the scenes. For instance, hermits and pilgrims ate sparingly and rarely, as we can see on Jan Wildens canvas. Root vegetables were painted here to show their frugality and accentuate the rigor of their living conditions.

The opposite metaphor could be expressed in paintings too. (**Slide 8**) In fact, in some paintings, sins were underlined by plant objects. Thus, appetite, lust, gluttony, excess, are traits that were put forward by painters to better criticize them or to make fun of a society that evolved amid such negative human characteristics. Pieter Aertsen, Frans Snyders and Jan Wildens' canvasses are particularly good examples. Market scenes show two worlds apart: one being the world of wealthy people and excess of food, characterized by the generosity and fertility of earth, represented by big piles of vegetables and the lady with a hat, certainly from the bourgeoisie, buying vegetables. And on the other hand, the second world was made of social hardship, poverty, and food scarcity, symbolized by the market sellers, in dark clothes and recluse positions. Root vegetables, parsnips, carrots, onions, etc., were significant during the 17th and 18th centuries: they were easy to grow, and they were considered as humble (but not noble) vegetables. Christian ideals at the time highlighted moral values such as moderation, sobriety, and temperance.
These critical views were also described in scientific literature such as herbaria or medical treatises. It was flagrant in "husbandry" and gardening treatises. Excess and gluttony were sins, as were drunkenness and lust. Excess was even seen as an illness and an imbalance of galenic humors in the body of a sick man or woman. (**Slide 9**)

[3] Read RIELLO, 2009, RIELLO and GERRITSEN, 2014, as quoted *in The Routledge Handbook of Material Culture in Early Modern Europe*, p.80.

Thus, human beings had to cultivate their garden, as said in *A New Orchard, and Garden* (1653) by William Lawson : "What else are trees, in comparison with the earth, but as haires to the body of a man?". In his horticultural treatise, William Lawson saw plants and trees as anthropomorphic reflections of the human body. If a man were healthy because of his humoral balance, then, one should treat the trees as a balance between tops (Lawson meant the branches and fruits) and roots:

> *I utterly dislike the opinion of those great gardners, that following their books, would have the maine roots cut away: for tops cannot grow without roots. And because none can get all the roots, and removal is an hinderance, you may not leave on all tops, when you set them : For there is a proportion betwixt the top and root of a tree, even in the number (at least) in the grouth. If the roots are many, they will bring you many tops […]*[4]

(**Slide 10**) As for social behaviors and symbolic meanings of plants, women were sometimes portrayed alongside men in suggestive positions, as Pieter Aertsen liked to paint them. At first glance, one only sees sellers or market gardeners, but at a second glance, one sees sexual attributes, external genitalia, through the image of vegetables and fruits. The roots thus represent male phallic attributes, melons and round fruits represent female attributes. Some vegetables and fruits were unrealistically painted out of the imagination of the artists. The symbolic value of such vegetal objects shows how people were thinking natural things from the Renaissance to the 18th century. The anthropomorphic resemblance with human organs was benefiting the new medical market of remedies and medicinal recipes. Such simples (or medicinal herbs) would see their status and value increase, while being described and displayed in medical treatises as scientific data.
By way of illustration, the parsnip or *Pastinaca*, "panais" in french, was a root vegetable of little interest and value. However, the seeds and roots became one of the most affordable and easily grown medicinal drugs on the market, after the rereading of medical treatises from Antiquity by Renaissance humanists which gave fertility powers to those parts of the plants, as Philip Miller, who was an English botanist from a Scottish descent, explained (**Slide 11**):

> *The Root and Seed of the second Sort [of parsnip] is sometimes used in Medicine; but it is seldom cultivated in Gardens, the Markets being supply'd from the Fields: yet the Druggists commonly sell the Seeds of the Garden Kind for it, which they may purchase at an easy Price, when it is too old to grow.*[5]

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[4] LAWSON, William, *A New Orchard, and Garden (…), Whereunto is newly added, the art of propagating plants, etc.* W. Wilson, 1653, p. 14-15.
[5] MILLER, Philip, *The Gardener's Dictionary: Containing the Methods of Cultivating ... the ... Garden, ... Conservatory and Vineyard. Abridg'd from the Folio Edition, Etc.*, Volume 2, 1735.

(**Slide 12**) In Adam Lonicer's *Kreüterbuch*, first published in 1557, Renaissance humanists already demonstrated and indicated how to grow soils more fertile by preparing the roots of plants and trees. This essential part of the plant would provide all the energy and vitality to a plant, because, as the physicians and naturalists of the 16th century believed, plants were feeding from the soil. In one of Adam Lonicer's illustrations, we can see a gardener holding a root in his right hand and a tool in his left hand. Other instruments and tools are lying on the ground: a shovel or a spade, a pickaxe, a smaller ax and what looks like a small hoe, serving as a root divider, all made for digging or cutting plants. Until the 18th century, gardening tools had shown little variations since the Renaissance (and even since the Middle Ages). Early modern utensils were nevertheless used with new technics, for horticultural and agricultural functions. (**Slide 13**) The continuously increasing number of herbs gardens, fields and plantations, and the growing demand for food in the 18th century, prefigured the massive use of tools and mechanical machines in the new agricultural system generated by physiocratic principles, later advocated by the Scottish philosopher and economist Adam Smith. Noël Chomel shows a revamped rake to remove roots from the ground in his *Oeconomical Dictionary*[6] in this new fashion for efficacy. It was used for cleaning up the soils before planting vegetables. Root vegetables, as we have seen in Jan Brueghel and Hendrick van Balen's *Garland of Fruits*, were also valued as livestock food. Beets and turnips were given to pigs, horses, cows, ewes, and goats, as described by Noël Chomel in the aforesaid dictionary.

Such technical and scientific knowledge about plants were exported to the new territories colonized by European settlers. Due to their particularly strong ability to grow in hostile, cold, damp, or hot climates, turnips, parsnips, onions, and carrots were brought in colonial settlements. However, it did not prevent the naturalists from discovering new types of roots in the field. (**Slide 14**) Cassava was one of those botanical discoveries in the "New World". Cassava is toxic and poisonous when not prepared correctly. Botanists observed how the Indigenous people from Canada, the Caribbean islands or in South America were using it. The nutritional quality of cassava became manifest when the settlers saw they could make flour for cooking recipes. Cassava went from being an obscure discovery to a scientific finding which mainly served as food for slaves, servants, and workers, but also for the rich colonists, who used it for the tapioca starch. The root was first encountered by the Spanish in Brazil but described by the French through what André Thevet had heard of after his long trip from 1555 to 1557. He gave a brief description in his book *Les Singularitez de la France antarctique* (1557), naming cassava « racines de Manihot ». Jean de Léry in his *L'Histoire d'un voyage fait en la terre du Brésil autrement dit*

[6] CHOMEL, Noël, *Dictionnaire oeconomique*, A Lyon, Chez Pierre Thened, 1709 (première édition), p. 869-870.

Amérique (1578) mentioned the cassava root as an edible resource. A century after, Maria Sibylla Merian, one of the first female botanists to travel, went to Surinam and might have been the first one to have given a realistic vision of the cassava in her watercolor drawing, compared to André Thevet's fantasist vision. If the leaves are looking roughly the same, the root is different from one drawing to the other. The engravers employed by Thevet adopted a European style and gave what I call "a carrot or parsnip look" to the cassava tuber.

(**Slide 15**) What is more, the cassava root allows us to study the relationships between slaves, Indigenous people, and European settlers. Jean-Baptiste Labat in his *Nouveau voyage aux isles de l'Amerique* (1724), wrote about his experience as a botanist and administrator in the West Indies from 1696 to 1704 (you can compare this description to the image I am showing you here) :

> *J'Ay di ten quelques endroits cy-devant que la Cassave & la farine de Manioc servent de pain à la plûpart des habitans blancs, noirs & rouges des Isles, c'est-à-dire aux Européens, aux Negres & aux Sauvages. […] Quand ces racines sont arrachées, les Negres destinez à cet ouvrage, en gratent ou ratissent l'écorce avec un méchant couteau comme on fait aux navets, & les jettent dans un canot plein d'eau où on les lave bien, après quoi on les grage, c'est-à-dire qu'on les réduit en une espece de farine fort humide qui ressemble à de la grosse scieure de bois, ce qui se fait en passant fortement la racine sur une rappe de cuivre, comme on passe le sucre. […] Le Negre qui grage met un bout de la planche où la grage est attachée dans un canot ou auge de bois, & appuye l'autre bout contre son estomach, il y a à côté de lui un panier où sont les racines bien gratées & bien lavées, il en prend une à chaque main, & la passe & repasse sur la grage en l'y appuyant fortement, jusqu'à ce qu'il l'ait réduite en farine.*[7]

The task of grating the cassava root must have been tedious to do. The materiality of the cassava unveils information about the European domination on slaves and the hybridization, cultural blending and mixing of knowledge between the enslaved African people (featured on this image by their skilled labor force), the Indigenous people (which are symbolized here by the transmission of the cassava flour technic

[7] LABAT, Jean-Baptiste, Nouveau voyage aux isles de l'Amerique, 1724, p. 1127-128. Translation: « *I have already told before that Cassava & Manioc flour serve as bread for most of the White, Black & Red inhabitants of the Islands, that is to say: to Europeans, Negroes & Savages. […] When these roots are pulled up, the Negroes intended for this work, scrape or rake the bark with a sharp knife as we do with turnips, and throw them into a canoe full of water where they are washed well, afterwards. They are grated, that is to say, they are reduced to a very moist kind of flour which resembles coarse sawdust, which is done by passing the root strongly over a copper stroke, as we do with sugar. […] The Negro who grates, puts one end of the board where the grater is attached in a canoe or wooden trough, & leans the other end against his stomach. There is, next to him, a basket where the roots are scraped & well washed, he takes one in each hand, and passes it again and again on the grater, pressing it strongly, until it has been reduced into flour.* »

through objects like the basket or the canoe/trough) and the European settlers (whose presence is shown here in the European forms of houses and shelters).

To conclude, roots make me travel through times and places. Printed books, paintings and engravings show different aspects of the same vegetal object. Early modern texts reveal more of a process originating from scientific methods and rational thoughts. Whereas paintings impart a more detailed idea to the technics and gestures which were used at that time. Materiality emerges from both written and visual dimensions of the root part of the plant. They serve as real indicators and illustrations of scientific notions and technics and they reinforce the image of social and cultural conditions around the plant object to help us write a natural history of the roots along with a history of human mentalities.

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