GREEN-COVERED: THE SINT-PIETERSBERG AS A TERRARIUM OF CULTURES

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The Sint-Pietersberg is a hill stretching in continuity between Belgium and the Netherlands and is here adopted as an experimental *terrarium*. In the center of a perennial conflict of interests between nature conservation and industrial exploitation for the extraction of limestone blocks and powder, the recent history of the Sint-Pietersberg is an intense succession of actions and reactions between humans and nature. Here, after gradual withdrawal of limestone quarrying operations, a process of re-naturalization began, either from nature itself or through the artificialization of greenery. Progressively, exceptional natural beauty and biodiversity regained their place both in the surface and underground spaces, forming a unique lush landscape (Occhiuto 2021).

The text aims to compare different ways for nature to regain its place in man-made landscapes resulting from invasive underground resource exploitation. The focus is on the interactions in re-naturalization processes between phenomena of 'spontaneous nature,' freely formed and limitedly controlled, and phenomena of 'induced nature,' imposed and highly controlled. Focusing on aesthetic and cultural values, the text questions the significance of re-naturalization actions: is it enough to compose 'green landscapes' as desirable objects to be exploited to make the Earth more profitable? Or can considering 'natural systemic conditions' suggest other ways of intervening and caring for places, taking inspiration from what nature is already rebuilding and reconfiguring?

THE VERLOREN VALLEI AND THE ENCI-QUARRY IN THE SINT-PIETERSBERG

The limestone extraction processes can take place underground or on the surface, altering the landscape irreversibly albeit leading to different environmental and aesthetical impacts. In both cases presented in this text, open-cut quarrying began in the interbellum (SAHV 1985; Amendt 2010), during which the original above-ground landscape is literally removed and underground galleries from previous extraction phases disappear.

The first case is the *Verloren Vallei*, which can be defined as a small-scale open-cut quarry where the extraction processes came to an end within a few years (SAHV 1985, p. 63). The re-naturalization process has been taking place since the industrial use was ceased about eighty-five years ago, defining a spontaneous natural environment. The second case is the ENCI-quarry, which unmistakably manifests its 'operational landscape character' (Rosier 2022, p. 18) with the violent impact of its size, given by extraction operations protracted over almost a century.

Although the extractive process has only recently stopped, it was already from around 1939 (Nieste 1996, p. 125) that the re-development of the surrounding affected by quarring began, according to man-imposed and highly controlled natural development.

The processes of the quarry's re-appropriation by nature brought to life precious landscapes, thicker and lusher throughout the seasons, and visibly enriched from year to year. The presence of different species of flora and fauna, each with its own specific sound, rhythm, and frequency, lends an intense and unique flavor to every step in these landscapes. The character and materiality of the soil, the lightness and porosity of the vegetal mantle, the play of light and shadow, filters and determines the development of the space all around. In this impactful overall picture, only the attentive observer can grasp the complex combination of particular units characterizing the post-extractive landscape. Indeed, if in the case of the ENCI-quarry the re-naturalization processes are apparently spontaneous, on a closer look the landscape is to a large extent the result of management operations that have forced nature into overbearing development guides.

If, on the one hand, spontaneous re-naturalization is dominated by a continuum of ongoing evolutionary processes (Fromonot & Desvigne 2020), on the other hand, greening is subject to man-driven functional and aesthetic artifice (Lassus 1981), where man-desired natural values are imposed and "nature cannot remain itself" (Morton 2007, p. 81). In this regard, a distinction shall be made between 'system' and 'standard' possibilities for cultivating these soil and subsoil samples, setting the ground at the center of man-nature relationship (EC 2000).

POST-EXTRACTIVE LANDSCAPES

In 1938, in his extensive book on the Sint-Pietersberg, van Schaïk talks about several entrances of underground quarries in the midst of the forest, still visible "despite [open-cut] limestone exploitation has been eating through the most beautiful part of the forest for a few years". The text refers to the Verloren Vallei, *where* the open-cut exploitation revealed to the surface the full height and depth of the underground galleries, creating "a particularly beautiful effect amid the green frame" (van Schaïk 1983, p. 102). This area with exposed underground passages is characterized by a specific kind of landscape defined in French as *erablaies-tillaies à scolopendre*, outlined by van Schaïk as "a particularly beautiful piece of (cultural) landscape" (van Schaïk 1983, p. 412).

Les grandes fenêtres in the Verloren Vallei. The open-cut exploitation revealed to the surface the full height and depth of the underground galleries. Photo by Kevin Amendt, 2021.

Artificial lake and beach created during the first phase of re-naturalization of the ENCI-quarry. The affluence was so high that the project turned out to be unsustainable. Today, the site is no longer accessible. Photo by Kevin Amendt, 2017.

In this regard, cultural value is often attributed to the new vegetation covering the land, also referring to the land remodeled by English landscape gardeners in the 17th century (Repton 1800). Here, the cultural values are the experiences that people can still gain by walking through the site, without doing anything more: just to connect with the different states of the land, which is always changing.

While in the *Verloren Vallei* we can observe nature reclaiming its space wildly, partly precluding access to man, the decommissioning of the ENCI-quarry is accompanied by a man-driven transformation process, where exploitation of the territory has been 'green-covered.'

Indeed, if in the ENCI quarry, a vegetal colonization phenomenon known as 'primary succession' can be observed, we know that the results of this process are not entirely natural. In fact, the transformation of the slope into a chalk grassland was encouraged by its covering with limestone and an overlay of loss. Furthermore, "grass clippings from other chalk grasslands were laid out shortly after placement" (Majoor et al. 2020, p. 320). In addition to this, given the artificial ground level where a part of the area, a permanent mechanical water pumping system must be operated (Majoor et al. 2020, p. 321). Thus, the development process of this natural environment is entirely driven by man.

In this sense, the *Plan of transformatie* written in 2009 by the *Stichting Ontwikkelingsmaatschappij ENCI*, can be seen as the design concept for the composition of a *terrarium* defined within the former quarry area.

CONCLUSION

For both the underground and the surface landscape generated by centuries-old limestone quarrying in the Sint-Pietersberg, we may conclude that "a cultural product with a peculiar, almost perfect, aesthetic balance has been created unconsciously, unintentionally answering to the same laws that exist in nature." (Diederen 1982, p. 7).

This observation strongly connects our brief study to the principles of the European Landscape Convention (EC 2000), which calls for attention to the perception that is set between people and places. Hence, new relationships can slowly emerge from the care given to perception (not sight, not function). For this reason, the vegetation cover cannot be reduced to a technical layer cladding the surfaces exposed by previous operations. And it is not to be considered as a strategy of embellishment either, taking care of the visual aspect of the place, nor their economic values.

The *terrarium* thus acquires the meaning of giving time to accompany natural phenomena in their development, but also allowing the population to re-tame the places to give them a cultural meaning, a sense of belonging associated with man-made landscapes' evolution in time.

“Pyramids” in the ENCI-quarry.
The decommissioning of the ENCI-quarry is accompanied by a man-driven transformation process, where a specific and symbolic landscape is pre-defined. Photo by Chiara Caravello, 2023.

‘Sint-Pietersberg’ in Dutch or ‘Montagne Saint-Pierre’ in French.

Exploitation of the Sint-Pietersberg for the underground extraction of limestone began from the 13th century until the beginning of the 20th century, when open-cut quarries took hold and continued to the present day. Cfr. K. Amendt, *De afgraving van de Sint Pietersberg en een ingangspartij zuidelijk van Lichtenberg*, in “SOK Mededelingen”, 53, July 2010, pp. 22–47; J. Silvertant, *Caestert: een mijnbouwarcheologische erfgoedsite*, Scientific report of the Institute Europa Subterranea 3, Institute Europa Subterranea, Valkenburg aan de Geul 2010; D.C. van Schaik, *DE SINT PIETERSBERG. Met een aanvullend gedeelte van 1938-1983*, EF & EF b.v., Thorn 1983.

The Sint-Pietersberg is an area that lends itself to experimentation with different approaches, from conservative (respecting long-term natural processes) to interventionist (altering the natural rhythm to reach short-term goals). Facing these two positions, a living *terrarium* emerges as an experimenting field for landscape research, based on iterative in-situ actions.

While the shape of the underground galleries is directly determined by the mining technique employed and it remains stable over time due to the constant environmental conditions in the underground (excluding exceptional phenomena such as collapse or flooding of portions of the galleries), the spatial configuration of the landscape on the surface is determinedW both by the drastic marks left by open-cut extraction and by variable environmental conditions. In addition, the increased visibility of these landscapes draws higher public attention and a consequent greater need for redevelopment to ‘heal the open-cut wound’ and ‘return Earth to the people’.

The Dutch name ‘Verloren Vallei’ can literally be translated in English as ‘Lost Valley’.

Approx. 200 x 40 meter. Data according to measurements taken by the author on the Geoportal of Vlaanderen - Digitaal Hoogtemodel Vlaanderen II, multidirectionale hillshade 0,25 m. Available online at: https://www.geopunt.be/ [accessed 7 August 2023].

Approx. 1800 x 1300 meter. Data according to measurements taken by the author on the Geoportal of Vlaanderen - Digitaal Hoogtemodel Vlaanderen II, multidirectionale hillshade 0,25 m. Available online at: https://www.geopunt.be/ [accessed 7 August 2023].

The open-cut extraction stopped in 2018 (Majoor et al. 2020, p. 303).

Van Schaïk mentions in particular the entrance of Caestert, one of the most ancient underground quarries in the area along the border between Belgium and the Netherlands.

Author’s translation.

Author’s translation.

Among others, the largest and most majestic entrances to be seen today in the Verloren Vallei are known in French as *les grandes fenêtres* (literally: the big windows), probably because of both the fact that originally they were not entrances and due to their position halfway up the limestone outcrop.

We would like to thank Raphaël Magermans of the *Département de la Nature et des Forêts - Service public de Wallonie* for the information. Cfr. *G1.A41a - Erablaies-tillaies à scolopendre*, Portail Wallonie. http://biodiversite.wallonie.be/fr/g1-a41a-erablaies-tillaies-a-scolopendre.html?IDC=951 [accessed 7 August 2023].

Author’s translation.

According to the *Encyclopaedia Britannica*, primary succession is “the evolution of a biological community’s ecological structure) in which plants and animals first colonize a barren, lifeless habitat. Species that arrive first in the newly created environment are called pioneer species, and through their interactions they build a simple initial biological community.” Cfr. “Primary Succession | Definition, Stages, & Facts | Britannica.” https://www.britannica.com/science/primary-succession [accessed 19 July 2023].

This is a rare process that can only exist where fertile soil is lacking on the surface, for example due to a volcanic eruption or after the retreat of a glacier (Majoor et al. 2020, p. 306). Author’s translation.

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Author’s translation.

Document without author reference available online at: https://www.enci.nl/nl/plan-van-transformatie [accessed 7 August 2023].

Note that the plan was defined nine years before the final closure of the ENCI open-cut quarry in 2018.

Author’s translation.