



Geoheritage, Geodiversity and natural landscape enhanced and protected through anthropogenic activity: a case study using the Chaîne des Puys and Limagne Fault, Afar and Mexico City

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The UNESCO World Heritage (WH) committee called in 2014 for all thematic geological and volcanological studies to be revised in light of a widening gap between current dogma and the progressive geoheritage science views. We discuss question of natural sites and anthropogenic activity. The Chaîne des Puys and Limagne fault UNESCO WH project is the basis of this presentation, but we also the Afar Region of Ethiopia and UNAM campus, Mexico City. It is now difficult to find any totally 'natural' (devoid of human influence) landscape. This very definition of natural ignores that humankind is a geological force, and humans are part of the natural process. The UNESCO WH guidelines recognise this in paragraph 90: 'it is recognized that no area is totally pristine and that all natural areas are in a dynamic state, and to some extent involve contact with people'. A geological landscape, may be large enough to accommodate human occupation without significantly changing landforms: this is the case of the Chaîne des Puys and Limagne fault. Human activity works in some ways to protect geological landscape: regulating vegetation and erosion. The aesthetic nature of humans may work to enhance the landscape's visibility by organisation of land use, and ceremonial use based on the sense of place. Humans also exercise economic activity such as quarrying and mining, which if uncontrolled can seriously modify a landscape. However, isolated works may not have an impact, or may even enhance the value of the site by uncovering geological features that would not naturally be seen. In the Chaîne des Puys only 0,3% of the land surface has been worked by artisanal methods and certain sites, like the Lemptégy volcano have been extracted with the view of enhancing the landscape's scientific value without detracting from the aesthetic. The site preserves its natural, scientific and aesthetic qualities, because of the human presence. The local population have always been and continue to be the guardians of the exceptional universal value of the site. The Afar is an example of anthropogenic influence on a natural site, where traditional salt extraction has no impact on a natural site constantly renewed by the environmental activity renews the landscape. Introducing modern usage however requires greater levels of protection, and closer monitoring. UNAM campus is urban, but small pockets of superbly preserved lava from the Xitle volcano provide an opportunity to observe an important natural hazard in the heart of the city. This example shows how resistant natural features are at a small scale. In conclusion, it is clear that anthropogenic influences on landscape are omnipresent and the definition of natural landscape as devoid of any human presence has little meaning. Human activity needs to be acknowledged to be an essential part of geodiversity. The current revisions called for by UNESCO ask the geoscience community to take a greater part in this process, and our community should use this opportunity to make a stronger impact in the world heritage process.