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Digital Heritage in the New Knowledge Environment:
Shared spaces & open paths to cultural content

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Digital Heritage in the New Knowledge Environment:

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Blue Sky Digital Heritage: the Case of Greece

Introduction

The heritage of the geopolitical and cultural area of modern-day Greece spans several millennia. In order to even begin to tackle the issue of cultural heritage digitisation, three central questions need to be posed:
1. What is Greek cultural heritage?
2. For whose purposes does the cultural heritage sector exist?
3. Consequently, what do we want cultural heritage digitization to achieve (cf. Silberman 2004; Denning 2004)?

In addressing the first question, I define Greek cultural heritage as all human cultural production, past and present (including its digitization, cf. Huggett 2004), in the area of Greece. This broad definition is necessary, because there are different understandings in Greece as to what heritage is, as well as complex national, religious, historical and intellectual affordances of the public onto archaeological heritage in particular. Moreover, further nuances of Greek heritage are often either largely unknown or underestimated. These include the historicity of the natural landscape; the modern and postmodern biographies of artefacts, monuments and archives; and the current interaction between humans and heritage as a negotiable and historically situated condition.

As regards the second question, cultural heritage (especially archaeology) is overcoming its academically exclusive, elitist, state-bound, nationalist roots and embracing multiculturalism, inclusivity, public accountability and social justice. The cultural heritage sector nowadays not only involves traditional participants, such as professional archaeologists and archivists, informed enthusiasts and tourists, but also increasingly seeks to engage other, perhaps marginalized groups including the elderly, the disabled, the non literate, the incarcerated, immigrants, nomads and ethnic minorities. These developments are evident in legislative and structural changes of the sector worldwide.

Regarding the third question, we would need to put technology into perspective, as a facilitator of cultural heritage and not as an end in itself. We would also need to arrange digital structures in such a way, as to avoid perpetuating the socio-economic inequalities currently evident within and outside the Greek heritage sector.

The crux of this brief paper is therefore a "blue sky" conceptual framework for the digitisation of cultural heritage, i.e. as if starting anew. In addressing this issue, I will draw upon both Greek and international examples. I thereby hope to highlight several theoretical and practical issues, and contribute to a more holistic view of digitisation.

Knowledge, Experience, Interaction, Multiculturalism

To start anew with a heritage digitisation project, three further questions should be posed:
a) how should we produce and consume knowledge about heritage?
b) how can we, in this information age, experience and manage heritage?
c) how can we keep heritage 'alive', rather than simply revere, distance or ignore it?
These are, in my opinion, fundamental questions which the heritage sector, its practitioners and publics need to address in a 21st-century postmodern and postcolonial context, when local and global identities are in flux and when the information age moves at lightning speed.

Thinking along these caveats, one would, first of all, need to radically change current social, political and financial concepts and practices (which now impede transparency and multivocality), in order to ensure that anyone could participate in the creation of knowledge (cf. BRICKS). This could begin with remote data mining facilities, i.e. a digital infrastructure enabling automated data searches within and across institutions and geographical boundaries (cf. MINERVAPlus). For example, all published and unpublished artefacts should be digitally catalogued (cf. Williams 2008; cf. The Metropolitan Museum in New York), not only by transferring information from hard copy to computer, but also by revisiting stratigraphies, excavation diaries and archives, relevant publications (cf. EPOCH, Archive Mapper for Archaeology; EPOCH 2004, Showcases 3, 7; Delos; Perseus). Each catalogue entry would be hyperlinked to the stratum of the site where it came from and to accessible and downloadable publications containing relevant data. In essence, artefacts, monuments, sites and archives would not only be traceable as token entries (as is largely the case with Odysseus, the cultural heritage database of the Greek Ministry of Culture), but also as online research and knowledge tools. Thus, digital recording would become an inextricable part of the Greek heritage process. It would facilitate curatorship and broaden research. It would ensure that no artefacts go astray. It would also mean more transparency, with the removal of unnecessary bureaucracy and unequal access to unpublished material due to micropolitical issues (e.g. personal likes and dislikes of excavators towards researchers).

One should also digitize cultural heritage for experiential reasons. Current technology supports multimodal and multicultural experiences, which would not only prove beneficial for the acquisition of cultural heritage knowledge, but would also expand the interpretations and horizons of the sector in innovative ways. For instance, there should be provision for digital interaction, either online (private or public computer terminal) or at a specific site (e.g. information point instead of the current occasional wooden or metal text displays). Assistive technologies (cf. Eternal Egypt) would customise a user's visits and not only recall them, but also store valuable data about patterns of cultural heritage experiences. One could navigate within 360º panoramas of a site online and click on 'hot spots' to get more information (cf. the Metis project; Eternal Egypt). He/she should be able to relate digital information to physical reality, develop educational wikis, volunteer and learn from a dedicated professional source (blog moderator, webmaster, public heritage practitioner; cf. EPOCH 2004, Showcase 6). Cultural heritage, experienced offline as a palimpsest of physical, discursive and ideological stimuli, would thus be experienced digitally in a similarly flexible way, through blogging (cf. Flickr; Facebook), text messaging, three-dimensional interaction with artefacts and sites, even SatNav entries (cf. project AGAMEMNON; EPOCH 2005; Eternal Egypt), without having to negotiate an intimidating, academically demanding cultural sector.

Such provision would also mean consistent multilingual support, together with thorough and interactive glossaries of heritage terms. This would include translations of all digital content, in English, German and Swedish, the languages of the main non-Greek tourist and retirement populations. It would also include translations in Albanian, Bulgarian and Romanian, the languages of the main immigrant populations living, working and experiencing heritage in Greece (cf. EPOCH 2004, Showcase 4). Content in all these languages would need to be moderated by professional linguists, so that it neither underestimated multilingual audiences, nor suggested lack of professionalism. A current example of the latter is the widespread erroneous translation of "Ενδεικτική Βιβλιογραφία" in the Odysseus online database not as "Suggested Bibliography", but as "Suggestive Bibliography" (="Ερωτικά Υπονοούμενη Βιβλιογραφία", e.g. http://odysseus.culture.gr/h/2/eh255.jsp?obj_id=912, accessed 29/8/2008).

In order for cultural heritage to be treated as a 'living' body of human endeavour and intellect, one would further need to show how past and current humanity fits into a broader, global and diachronic picture. This would include not only Greek citizens and expatriate Greeks, but all ethnicities currently living in and visiting Greece. Digitized, integrated geo-historical networks are one way to do this. These can be systems that show exactly what sites, monuments, museums and archives exist in an area, complete with their online artefact/archive catalogues, educational interactive materials, coordinates, landscape viewsheds, and hyperlinks (cf. Google Earth; Google Streetview). Although there is a similar function in Odysseus (the "Cultural Map of Greece"), by which a user can manipulate the plotting of sites, monuments and museums according to several parameters (including UNESCO sites), the map is still in its infancy, as it provides very basic information, is not hypelinked to most of the sites it lists and does not include any artefactual or other information. However, other similar recent applications, in line with wider EU digitisation initiatives, hold much promise, such as the Veria project (e.g. Garoufallou et. al. 2008).

Offline Affordances, Inclusive Digitisation

While acknowledging the requirements for cultural heritage digitisation, one should also be aware of digital affordances in the offline, physical and conceptual world. Indeed, when restructuring the heritage sector along digital parameters, one ought to anticipate the more general, offline changes this will cause, in terms of bureaucracy, access, employment and education. If all excavations, artefacts, monuments and archives were openly attributed to "project owners" (e.g. Ephors), this would make accountability more public and transparent, avoid word of mouth or nepotistic assignation of research permits, eliminate much bureaucracy and facilitate protection of publication copyright. Researchers could plan their schedules within limited heritage spaces without their fieldwork being continuously and bureaucratically postponed. Research permits, job applications and petitions for work experience or volunteerism would be traceable and would constitute evidence against discrimination (cf. ASEP). Three-dimensional laser scanning (cf. Laffineur & Anslijn 2003), displaying and printing of artefacts, sites and monuments would offer new experiences combining safe cultural object handling, on-the-spot visualisation and multivocal manipulation (cf. Larkman 2000; EPOCH 2004, Showcases 1, 2, 8). Goggles could be used to view virtual reconstructions while visiting a monument, therefore enriching a visitor's physical experience of it.

Inclusive Digitisation

Even though the EU has already instigated digital heritage services for disabled and elderly audiences, widespread structured exclusion occurs for them and other minority populations. Mobility-impaired audiences have no accessibility to most archaeological sites. Visually-impaired audiences do not have audio support online, they may, in extremely rare occasions, be provided with audio loops offline, and they never have access to haptic exhibits, e.g. three-dimensional replicas of artefacts, unless they buy them at a tourist shop. Moreover, non-literate audiences can neither read heritage descriptions and explanations online and offline, nor understand the deliberately technical language, a product of Greek diglossia, which elevates and distances the heritage sector. Incarcerated audiences have almost no access to heritage materials (although encouraged in art and craft production).

Non-Greek immigrants, even if their command of Greek is of a high standard, cannot relate to or benefit from much cultural heritage provision. Many are economically disadvantaged, so they are unlikely to use digital media which are not public or not flexible enough to cater for their work schedule. They have difficulty understanding specialist terminology in documents, online and offline exhibitions. They cannot find anything about how their heritage relates to that of Greece, and Greece's to

that of global humanity. Their cultural production, visible on rare occasions, such as multicultural days, is restricted to its more colourful and tokenistic aspects, rather than to its diachronic depth. The contribution to Greek cultural heritage by immigrant and nomadic (e.g. Roma) populations and their negotiation of space as a cultural heritage practice are completely ignored, social anthropology aside.

In order for these people to be included, not only in digital initiatives, but in the cultural heritage sector itself, a number of changes should be made. For disabled, non literate and elderly audiences, one should equip all cultural sites (physical and virtual) with digitally manipulated access (ramps, audio loops, multimedia etc.). One could further create online spoken versions, of heritage content, in all languages, as well as speech recognition for websites, information points and exhibits. For the visually-impaired and for all those who would like to experience culture beyond the visual and textual, haptic interfaces could be devised at exhibitions (cf. EPOCH 2005), three-dimensional replicas could be printed and put in front of confined displays. They should be able to handle selective three-dimensional replicas, created by prior laser scanning of the exhibited original. There should be a digital, interactive choice of information, including technical and non technical texts. Thus, someone could have a hypothetical digital screen, on which they can choose which language and which terminology shapes the text, and if they want to listen to the information. They would then use the screen/information point to download connected materials, recall similar exhibits etc. They would also have the choice of whether to hear sounds associated with the exhibit, e.g. smithing sounds connected to an ancient axe. For incarcerated populations, there could be moderated web access. This would facilitate streamed video documentaries, online heritage study and data mining (including use of free libraries), browsing of online collections, supervised heritage forums, networked volunteering petitions and initiatives.

For non Greek and nomadic audiences, one should, firstly, make equal, free and public Internet access a priority, in several forms (e.g. computer, mobile phone, information point, public digital notice board). Secondly, all materials should be translated and culturally adapted, to make web and heritage site experiences meaningful. Thirdly, outreach events should be organised, e.g. archives and excavation open days, with fluent translators. These could take place in either heritage sites (e.g. monuments, archives, museums) or in societies and religious places where these minorities lead their cultural life. Such events could be information sessions, e.g. explaining how to volunteer for heritage work, how to access free resources, how to customise heritage information on the mobile phone etc. They could be face to face and online public lectures about the historical ties of Greece with another country; cultural multimodal exchanges (e.g. web-streamed multicultural performances). There could even be Ministry-sponsored online colloquia between Greek and non-Greek communities regarding diachronic cultural ties. These people will thus be allowed to engage in online heritage data mining, employment and volunteering.

A digital future for the cultural past and present of Greece

From the above conceptualisation, a tentative schema, at least for a web-based gateway, can be suggested here (Fig.1). I do not profess that this illustrates accurately or conclusively all the aforementioned ideas, but that it can be used as a mind-map.

My analysis and schema, however, also raise another three issues, which render my proposal highly unlikely. Firstly, a large part of the frequent rigidity of the Greek cultural heritage sector is due to micropolitical struggles, a more general phenomenon of the Greek public sector. It, however, impacts on heritage digitisation in several ways. It limits the speed at which people can respond to the global information technology developments. It discourages interdisciplinary dialogue. It creates ownership struggles, which, in turn, impede those striving to organise and implement open-access digital initiatives. An unimpeded Greek heritage digitisation would not treat cultural objects as power levers for audiences, researchers and staff (thus replicating some offline conditions), but as openly accessible resources. Assigned "project owners" would be publicly accountable, but not possessive. All cultural heritage institutions would allocate resources for large-scale digitisation. There would be a need for codification of unwritten heritage etiquette and ethics. Everyone would be afforded equal rights for cultural heritage production and consumption.

Secondly, most of the digitisation ideas described above exist already, either in the Greek or the international heritage sector. The problem in the Greek case is that digitisation is currently still fragmented. This does not, by any means, imply that it is not organised or well-designed for the long term. It implies, however, that the current circumstances betray the organic (and therefore uneven) evolution of online materials; the compartmentalisation of digital provision; and the lack of interoperability. Unimpeded Greek heritage digitisation would require simplification of a frequently replicated and perplexing bureaucracy. It would also require close and interdisciplinary collaborations between:

- the Ministry of Culture (monuments, artefacts, sites etc.)
- the Ministry of Education (archives, public libraries, academic institutions, educational materials)
- University Departments (job openings, volunteerism, project reports)
- The Ministry of Labour (job applications)
- the Government Gazette (where all state jobs are advertised, but are notoriously difficult to locate)
- the Ministry of Press and Information (information diffusion, public awareness of heritage projects)
- the Ministry of Foreign Affairs (multicultural provision)
- the Ministry of Justice (heritage projects for the incarcerated)
- and the private sector (e.g. IT specialists).

Finally, funding is possibly the largest hurdle to the digitisation described herein. The heritage sector is financially deprived,

despite generous financial support from the Ministry of Culture, the Fund of Archaeological Resources and Compensations (ΤΑΠΑ), ticket and merchandise sales, private organisations, the National Lottery, the EU etc. An unimpeded Greek heritage digitisation, as described above, would need to fund the online recording and publication of 'raw' materials on a huge scale. From a state point of view, an investment in cultural capital would produce social capital, in the form of national pride and a grounded sense of identity; as well as economic capital, in the form of tourism, foreign investment and international affairs leverage.

It is hoped that the digitisation of Greek cultural heritage, already visibly changing the landscape of this sector, can progress as an interdisciplinary, outward-looking, socially aware and multimodal institution. The heritage it represents deserves this.

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Bibliography

•AGAMEMNON, http://services.txt.it/agamemnon/.
•ARCO project, http://www.arco-web.org/TextVersion/Description/Description1.html.
•ASEP, Ανώτατο Συμβούλιο Επιλογής Προσωπικού, http://www.asep.gr/.
•BRICKS, Building Resources for Integrated Cultural Knowledge Services, http://www.ist-world.org/ProjectDetails.aspx?ProjectId=5c1063cc20464fd0a33d91ef40b6f99f.
•Delos, http://www.delos.info/.
•Denning K., 2004, "The Storm of Progress" and Archaeology for an Online Public, *Internet Archaeology* 15 http://intarch.ac.uk/journal/issue15/denning_toc.html.
•Epoch, http://www.epoch-net.org/index.php?option=com_content&task=view&id=212&Itemid=357, accessed 29/8/2008.
•Epoch, "Archive Mapper for Archaeology", http://www.epoch-net.org/index.php?option=com_content&task=view&id=222&Itemid=338.
•Epoch 2004, Showcases 1, 3, 4, 6, 7, in Cain K., Chrysanthou Y., Niccolucci F., Pletinckx D., Silberman, N. (eds.) 2004, *Interdisciplinarity or The Best of Both Worlds: The Grand Challenge for Cultural Heritage Informatics in the 21st Century,* Selected papers from VAST2004, *Archaeolingua,* http://public-repository.epoch-net.org/publications/VAST2004/.
•Epoch 2005, D.2.3.1: *Report on Horizontal Integration,* Ename Center For Public Archaeology and Heritage Presentation, 29 April 2005, http://public-repository.epoch-net.org/deliverables/D2.3.1-Report%20on%20Horizontal%20Int.pdf.
•Eternal Egypt (the Supreme Council of Antiquities, Egypt, the Egyptian Center for Documentation of Cultural and Natural Heritage (CultNat) and IBM), http://www.eternalegypt.org/EternalEgyptWebsiteWeb/HomeServlet?ee_website_action_key=action.display.home.
•Flickr, http://www.flickr.com/.
•Garoufallou E., Siatri R., Balatsoukas P., 2008, "Virtual Maps - Virtual Worlds: Testing the Usability of a Greek Cultural Map", *Journal of the American Society for Information Science and Technology* 59(4): 591-601.
•Google Earth, http://earth.google.com/.
•Google Streetview, http://maps.google.com/help/maps/streetview/.
•Greek Ministry of Culture, http://www.yppo.gr/0/gindex.jsp#.
•Huggett J. 2004, "The Past in Bits: Towards an Archaeology of Information Technology?", *Internet Archaeology* 15 http://intarch.ac.uk/journal/issue15/huggett_index.html.
•Larkman B., 2000, "Debriefing the Land. The Use of Non-immersive Virtual Reality Technologies to Record, Navigate and Analyse Artefact-rich Landscapes". *Internet Archaeology* 8 (visualisation issue), Summer, http://intarch.ac.uk/journal/issue8/index.html.
•Laffineur R., Anslijn J.-N., 2003, "Laser plotting and 3D reconstruction of archaeological remains. From the river Meuse to the Aegean Sea", in *METRON, Measuring the Aegean Bronze Age, Proceedings of the 9th International Conference,* New Haven, Yale University, 18-21 April 2002 (eds. Polinger Foster R. Laffineur K.), *Aegaeum* 24, 355-6.
•Metis project, http://www.stoa.org/metis/.
•The Metropolitan Museum of Art, http://www.metmuseum.org/home.asp, accessed 7/8/2008.
•MINERVAPlus,http://www.ist-world.org/ProjectDetails.aspx?ProjectId=47b94f2fa31d4f7687cecaaf33a7f80c.
•ODYSSEUS, the cultural heritage database of the Hellenic Ministry of Culture, http://odysseus.culture.gr.
•Pauwels M., 2000, "The Use of Imagery and Symbols on the Internet – intercultural aspects", in Lynch D., Pilbeam A. (eds.) (2000) *Heritage and Progress, From the Past to the Future in Intercultural Understanding,* SIETAR Europa Congress 1998, Bath, 268-75.
•Perseus, http://www.perseus.tufts.edu/.
•Silberman N., 2004, "Beyond Theme Parks and Digitized Data: What Can Cultural Heritage Technologies Contribute to the Public Understanding of the Past?", in Cain K., Chrysanthou Y., Niccolucci F., Pletinck D., Silberman, N. (eds.), 2004, *Interdisciplinarity or The Best of Both Worlds: The Grand Challenge for Cultural Heritage Informatics in the 21st Century,* Selected papers from VAST2004, *Archaeolingua*: 9-12, http://public-repository.epoch-net.org/publications/VAST2004/09-12.pdf.

•Williams I. 2008, "British Museum takes collection online, Ancient history meets cutting edge technology", *Information World Review*, 15 February 2008, http://www.iwr.co.uk/information-world-review/news/2209807/british-museum-takes-collection.

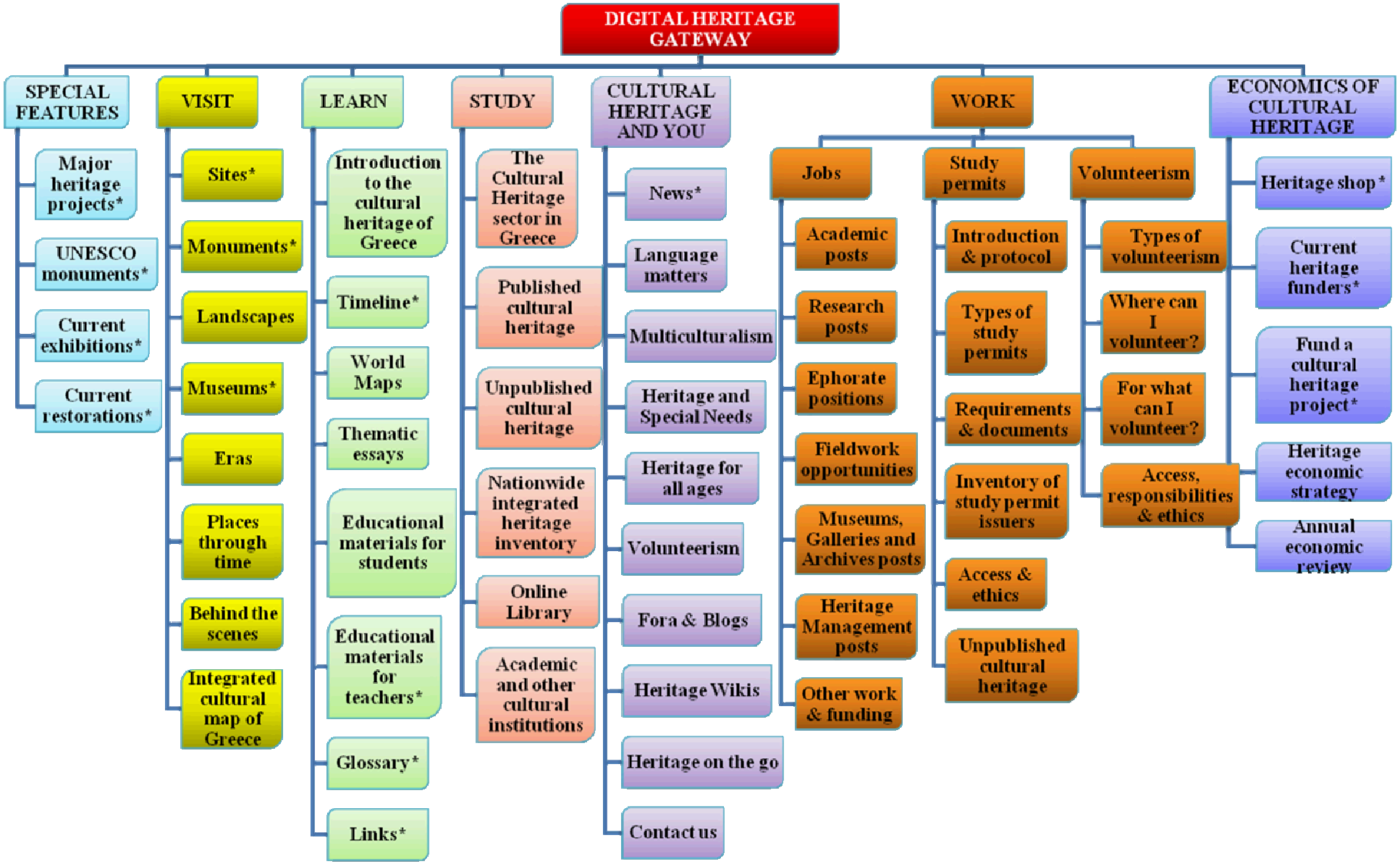
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Figure 01