INTERNATIONAL COUNCIL ON MONUMENTS AND SITES
HELLENIC NATIONAL COMMITTEE

PROCEEDINGS OF THE CONFERENCE ON THE OCCASION OF CELEBRATING
THE YEAR OF EUROPEAN CULTURAL HERITAGE 2018

Safeguarding the Values of the European Cultural Heritage

ATHENS, 2020

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Proceedings of the conference on the occasion of celebrating
the year of European Cultural Heritage 2018

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Edited by

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ATHENS, MARCH 2020

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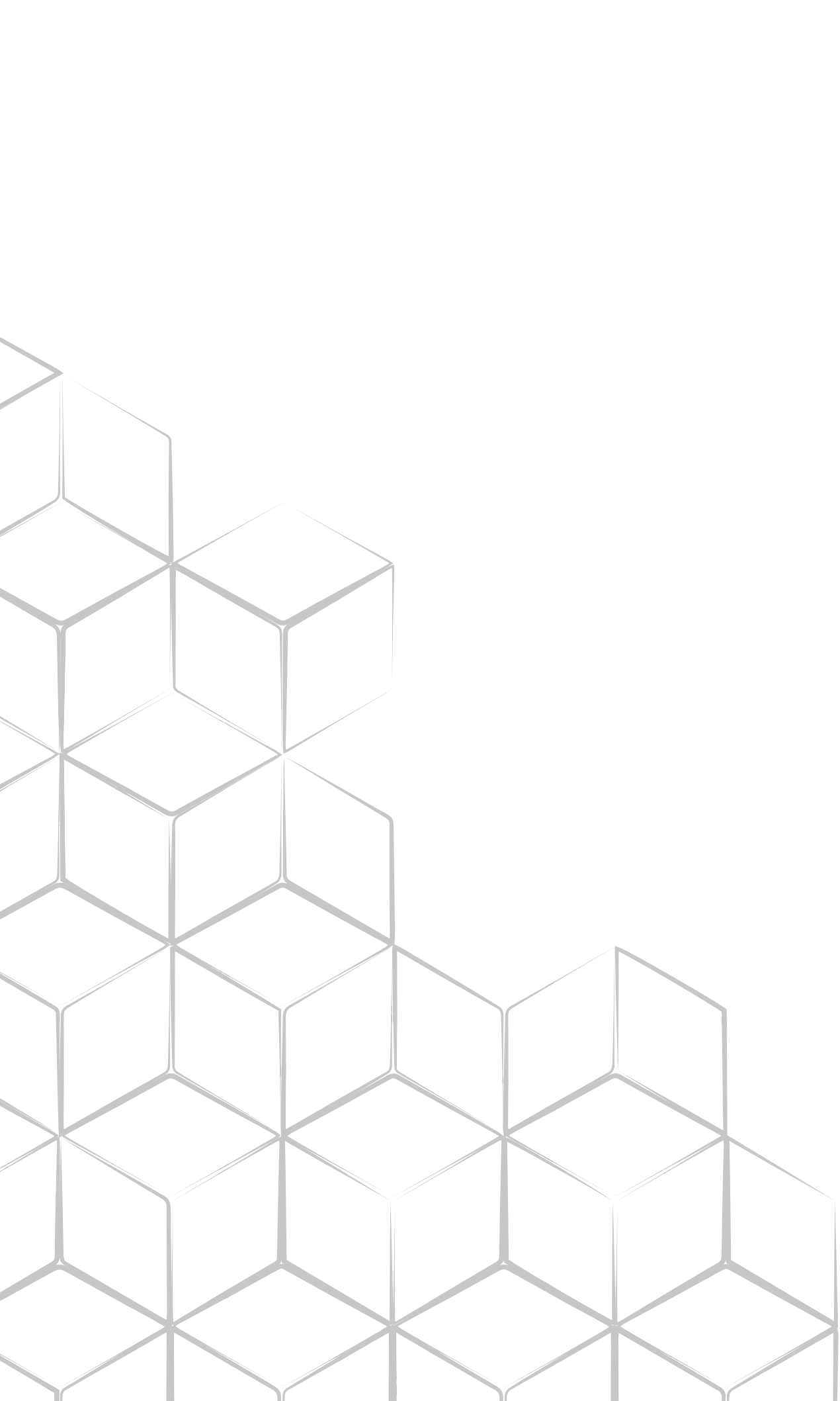

PROLOGUE

ICOMOS Hellenic has organized in September 2018 an international conference titled "Safeguarding the Values of the European Cultural Heritage" on the occasion of celebrating the European Year of Cultural Heritage 2018.

The scope of the conference was to share opinions and acquired knowledge between experts regarding the preservation of the cultural and historical value of the European heritage, to answer questions about the preservation of Europe's historical cities, archaeological sites, natural landscapes and integrated aspects of intangible heritage and to discuss principles and policies for their sustainable management.

Representatives of ICOMOS national and scientific committees, experts, academic scholars and professionals participated with papers and shared their views and experience on the protection and communication of the common, yet diverse, cultural heritage of Europe, especially in view of the current political, social and economic challenges.

The publication of the proceedings of this conference brings together expert opinions and experience concerning the future of the European Cultural Monuments and Sites and to establish new integrated approaches for their preservation and management that speak to the contemporary needs and concerns of young scholars and the broader society.

Elena Korka

Chapter One:
Conference keynote

Protecting cultural property during armed conflict: an international perspective[1]

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[1] This is a slightly modified and updated version of a chapter on the same topic in *Heritage under Pressure: Threats and Solutions. Studies of Agency and Soft Power in the Historic Environment*, (eds) Dawson, M, James, E, &Nevell, M, 2019 Oxbow, Oxford.Both draw on a number of similar articles, written for different audiences. Key earlier articles are referenced in the text.

[2] Peter Stone is the UNESCO Chair in Cultural Property Protection &Peace at Newcastle University. He is responsible for the choice and presentation of views contained in this chapter and for opinions expressed therein, which are not necessarily those of UNESCO and do not commit the Organization.

Introduction

Ever since the first time humans took up arms against each other, there has been destruction of cultural property. Some of this may have been intentional; much may have been the incidental impact of conflict – so-called 'collateral damage'. In most instances, we will never know.

What we do know is that, interestingly, while cultural property has frequently been a casualty of conflict, numerous military theorists and strategists, from Sun Tzu in sixth Century BCE China, to von Clausewitz in nineteenth century Europe, have argued that allowing the cultural property of your enemy to be destroyed (or worse, destroying it yourself) is bad military practice. Damage and/or destruction can lead to resentment, make subjugated populations difficult to govern, and become the first reason for the next conflict (Sun Tzu, 1998; von Clausewitz, 1997).

Admittedly, it is only relatively recently that such advice has been acted upon. For hundreds, if not thousands, of years armies were frequently paid by allowing them to loot indiscriminately. The restitution of cultural property removed as 'spoils of war' and for display and scientific study (i.e. looted, or pillaged,'officially' by the victorious generals/government) was introduced in the Treaty of Vienna following the Napoleonic wars (Miles 2011). Protection of cultural property during war (CPP) was first enshrined in law in the 1863 *Instructions for the Government of Armies of the United States in the Field* (the 'Lieber Code') which stated "Classical works of art, libraries, scientific collections… must be secured against all avoidable injury… " (Adjutant General's Office, 1863, Article 35). A number of international treaties, for example the Hague Conventions of 1899 and 1907 and the 1935 Roerich Pact, built on and developed this approach.

The First World War saw the unprecedented destruction of cultural property, partly through the increase in scale and impact of munitions and partly through the broadening of war to include bombardment of towns to both target military factories and supply lines and to lower morale amongst the general population. The war also saw positive action. In 1915 a Kunstschutz (art protection) unit was created in the German Army for the protection of historic buildings and collections (O'Keefe 2006). Capturing Jerusalem in 1917, the British commander Allenby instructed that "every sacred building, monument, holy spot,

shrine, traditional site … of the three religions will be maintained and protected" and, showing a nuanced understanding of cultural sensitivities, ensured that Muslim troops from the Indian Army were deployed to protect important Islamic sites (See http://firstworldwar.com/source/jerusalem_allenbyprocl.htm - accessed 19 January 2019, **Fig.1**). Someone on Allenby's staff was thinking about what sites needed protection to ensure a smooth occupation and which troops were best to use. This is an excellent example of CPP as good military practice. It took no additional forces (Allenby's troops all needed something to do). At a practical level there was almost certainly no military difference in Indian Army troops carrying out this duty rather than British troops. However, the use of Muslim troops showed sensitivity to the beliefs and values of a large section of the local population, thereby helping to 'disarm' those who were speaking out against the occupation.

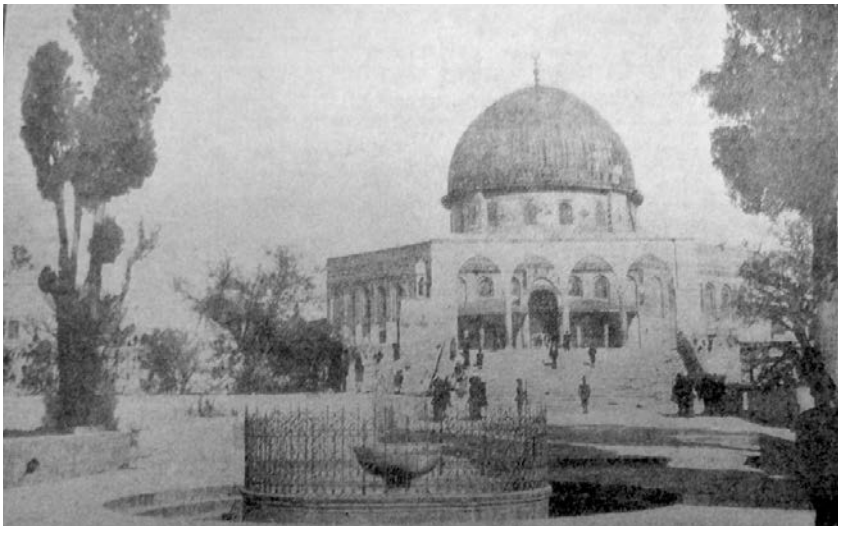

Fig.1: Protection of the Mosque of Omar in Jerusalem in 1917. Photo: © Courtesy of The Northumberland Gazette.

Despite, and because of, the enormous damage to European heritage, mainly along the Western Front in the First World War, the international community was still debating how better to protect cultural property during war on the eve of the Second World War. During the Second World War the protection of cultural property was seen clearly as part of the responsibility of the combatants, and the Allies, and some elements of Axis forces, took this responsibility seriously. In the German Army the Kunstschutz unit continued to operate, although some of its activities appear to have been more related to looting than protection(Headquarters Allied Commission 1945). The 'Monuments, Fine Arts, and Archives' unit was created in Allied forces and these 'Monuments Men' made enormous efforts to protect cultural property in all theatres of the war (see e.g. Edsel 2009 & 2013; Nicholas, 1995; Spirydowicz 2010; Woolley 1947). The unit had the full backing of

Eisenhower, the Supreme Allied Commander, who wrote, immediately before the Normandy landings, reminding troops that "Inevitably, in the path of our advance will be found historical monuments and cultural centres which symbolise to the world all that we are fighting to preserve. It is the responsibility of every commander to protect and respect these symbols wherever possible… " (Eisenhower 1944). Many cultural sites, buildings, and collections were, of course, destroyed: but as much as possible was done by the 'Monuments Men' to limit the destruction and much pillaged material was restored to pre-war ownership. The scale of destruction was partially the result of the continuing increased power of munitions and partly of decisions taken by both sides to actually proactively target cultural property as a means of warfare – for example in the Allied raids on Lubrick in March 1942 and the so-called Baedeker raids carried out in retaliation on historic targets in England by Germany (Bevan 2006).The international community, reacting to the intentional and collateral devastation of much of Europe by the war, built on previous treaties and, in 1954, developed the Hague Convention on the Protection of Cultural Property in the Event of Armed Conflict and its 1st Protocol[3]. It remains the primary piece on international humanitarian law relating to CPP.

Unfortunately, almost in parallel with the development of this international Convention, a key part of its potential practical support was dismantled. At the end of the war the conscript 'Monuments Men (and women)' went back to their civilian lives and, apart from somewhat limited interest, for example in US Civil Affairs units, little remained of the military's interest in CPP. Indeed, and equally detrimental to the protection of cultural property in the event of armed conflict, the heritage community's interest in the military had also all but disappeared. Some limited CPP work was done in the fighting in Macedonia (see e.g. Kila 2012) and the international community did respond to the deliberate targeting of and damage to cultural heritage during this conflict by producing the 2nd Protocol to the 1954 Hague Convention. However, it was not until the 2003 invasion of Iraq by the Coalition led by the USA and UK that the protection of cultural property during armed conflict was brought back into sharp focus.

At the time neither the USA nor the UK had ratified the 1954 Hague Convention[4]. In 2002, in anticipation of the invasion, six so-called 'think tanks' were set-up in Washington to plan for post-Saddam

[3] www.unesco.org/new/en/culture/themes/armed-conflict-and-heritage/convention-and-protocols/1954-hague-convention

[4] The USA ratified the Convention, but neither Protocol, in 2009; the UK ratified the Convention and both Protocols in 2017.

Iraq. One of these had a sub-committee on culture… which never met (Ricks 2006). As a result it appears that little was planned regarding CPP. No combat troops had orders to protect any cultural property or to stop looting,the national museum was not even marked on combat maps, and the few US civil affairs troops who might have played a role in protection were still in Kuwait or the USA when much of the early looting took place.

As is so frequently the case, a number of things had combined to allow this failure to happen; three are particularly relevant. First, the individuals planning the invasion - politicians and military alike - simply did not see culture, cultural property, or the cultural heritage as sufficiently important (Ricks 2006). Second, while the Coalition had enough troops to effectively and efficiently topple Saddam Hussein they did not have enough to provide a safe environment in which a new government could develop. CPP was very low on a list of things that might have been nice to do if the resources were available; they were not. Third, and perhaps most problematic, the cultural heritage community and the military had failed to maintain the close links that had saved so much European and Far Eastern cultural property during the Second World War.

2003-2013 – a personal story

I first became involved in CPP immediately before the 2003 invasion of Iraq (Stone 2005). My involvement epitomised the failure of both the armed forces and the heritage community to engage with CPP following the Second World War. I was only approached as, by utter chance, I was known personally by a key individual in the UK Ministry of Defence (MoD). The approach was too late to have any real impact and it was only the failure of the Iraqi armed forces to put up any meaningful defence that ensured that no major damage was done to the archaeological cultural heritage in Iraq during the major 'war' phase of the invasion. Unfortunately, the lack of planning noted above, and lack of realisation on the part of the Coalition of the importance of cultural heritage, provided the environment where large-scale looting, destruction of, and damage to archaeological sites and museums, libraries, archives, galleries, and other cultural institutions became almost endemic. By the end of 2003, I had a choice: to step away or try to engage more fully in an attempt to establish better CPP in any future conflict. I chose the latter and spent much of the next decade getting it wrong.

I argued for the importance of the physical evidence of the past as a crucial means of understanding that past. I argued for the cultural and academic importance of the past… soldiers could have their wars but they must protect the evidence of the past for those who wished to study and teach about it during peacetime. Not surprisingly, I made little headway other than to be quietly, perhaps reluctantly, accepted as someone with an interesting, but essentially irrelevant, point-of-view. I was invited to a number of military conferences, in retrospect partly to enable the military to say they were taking the issue seriously, and partly as some in uniform realised there might be something in what I was saying, but couldn't quite see the relevance to theirmilitary bottom line: the success of any given mission. An initial breakthrough came in 2011 when I was approached by the German Bundeswehr to attend a new inter-disciplinary conference entitled "Coping with Culture" set-up to establish better understanding of 'cross-cultural competences with regard to operational need'.

Looking through the conference information, which dealt mainly with issues such as and 'culture and religious diversity' and 'cross-cultural competences: training-concepts and methods', I, in retrospect naively, wrote back saying I was not sure I was the right person to attend! The response was fascinating: they felt I was exactly the right person as they wanted to know more about CPP and how it might impact on future military deployments. It was a topic really unknown to them, but one they wanted to understand better to see how, and if, it was something they needed to be aware of and incorporate into their planning. Suddenly there was military interest, if not commitment. I went and someone from the Blue Shield has been to all but one of these meetings since (and see below). In anticipation of the meeting, I developed my thinking and tested it on military colleagues and then in a paper on 'The four phase approach to cultural property protection' at the 2011 Archaeological Institute of America annual conference. This was refined over the next year and finally published in *Antiquity* and then republished in *The British Army Review* in 2013, as the 'four tier approach' (Stone 2013 a & b)[5]. The response was amazing: sitting in my office in Newcastle the phone went with the voice at the other end saying "Prof Stone, you don't know me but my name is Lt Col Tim Purbrick and I think we should speak". Tim had just read my *BAR* article and thought it was something that the MoD should be taking serious. That phone call led to the creation of a CPP working group and eventually to the establishment of a new CPP Unit, a modern version of the 'Monuments Men', in the British Armed Forces, to become fully operational in 2020/21 (Purbrick 2016).

5. I was asked to use the term 'tier' as the MoD already had a 'phase' approach.

The Four Tier Approach

The 'Four Tier Approach' was developed, with much input from colleagues in the UK MoD, the USA Department of Defence (DoD), the Bundeswehr, other European militaries, and NATO, to provide a policy outline and practical framework for the inclusion of CPP into military training, doctrine, and long-term planning (Stone 2013a). These 'tiers' are essentially the four necessary points of contact there needs to be a close relationship between heritage experts and the military if the latter are to protect cultural property effectively during conflict. Tier 1 requires the integration of CPP training within basic training for all military personnel. This does not mean a massive increase in training - an unrealistic, and probably unnecessary, aspiration. Rather, it means developing a level of training appropriate to rank and responsibility. For junior ranks this may be delivered, for example, through posters, packs of playing cards, and short films. More senior ranks, and when identified those with particular responsibility for CPP, will need progressively more detailed training. However, as a fundamental message all those in uniform should realise that, *in extremis*, protecting cultural property may save their, and others, lives. Tier 2 is introduced as soon as deployment becomes a possibility and the military needs an understanding of the cultural property they will encounter in a particular location; this is the time to provide or review specific information about cultural property to be protected in a particular theatre of operations. A number of countries have developed specific materials for this Tier, including the packs of country focused playing cards produced by the US, Dutch, and Norwegian armed forces - the latter with the support of the Norwegian Blue Shield (see below). Tier 3 is activity during conflict and Tier 4 post-conflict activity during what the military refers to as 'stabilization'. The approach provides a framework for future collaboration with the intention that CPP will be integrated as a core element of military planning in the future. It takes as axiomatic that the heritage community cannot sit back and wait for the next catastrophe, but rather must plan to mitigate the impact of the next war.

Lessons learnt since 2003

The first key lesson learnt was that if the heritage community want the military to take CPP seriously we have to present it as something that will be of benefit to them, and their mission success, and not a cumbersome add-on request from a bunch of specialist academics and professionals unnecessarily complicating the military mission. To be effective we must develop a partnership in peacetime, working at the long, medium, and short term, which will continue during armed conflict and post-conflict stabilisation, and which clearly shows the importance of CPP to mission success. It must put people, not objects and sites, first (CPP as part of international humanitarian law) and CPP must be set within the constraints under which the military work and acknowledging military priorities. The military must understand that cultural property (obviously more commonly referred to now as cultural heritage) is the tangible evidence of the past that helps to provide communities with a sense of place, identity, and belonging: it gives people a reason for living. It is frequently an early casualty, and has recently become a particular target, in conflict. Intangible cultural heritage, held in songs, stories, traditions, is kept alive by and 'in' people. While no-one should prioritise CPP over the protection of people, the two are inextricably interwoven and can be targeted together: "Where they burn books they will too in the end burn people" (from the 1821 play *Almansor* by Heinrich Heine). The protection of cultural property and intangible cultural heritage can also help communities re-establish themselves after conflict. By clearly setting out the parameters, both the military and heritage community should be able to understand the value of a closer relationship and should see how it can realise mutually useful end results.

The importance of CPP to the military

Cultural property is important to the military for six reasons. First, any deployment must be fully aware of its legal responsibilities with regard to CPP under the 1954 Hague Convention and its Protocols; the wider law of armed conflict (especially the 1977 Additional Protocols to the Geneva Conventions and the Rome Statute);

international human rights law (where the UN Special Rapporteur for Cultural Rights is moving to make access to cultural property/ heritage a universal human right [Bennoune 2016]); and international customary law.

Second, military planners and commanders need to be aware of how cultural heritage may be used before or during a conflict as an integral part of political strategy or tactics. Numerous recent conflicts, from the destruction of opposition cultural property by all sides in the fighting in the former Yugoslavia (Chapman 1994; Walasek 2015), to the specific destruction of ancient sites and religious buildings and targeting of religious minorities by the so-called Islamic State, have moved targeting of cultural heritage firmly into those activities that potentially impinge on any deployment, and have been identified by some as a war crime worthy of prosecution (Bokova 2015). If important sites are allowed to be destroyed problems frequently follow (Ishakan 2018; Ishakan & Gonzalez Zarandona 2018). The destruction of the al-Askari Shrine in Samarra (**Fig.2**), Iraq, in 2006 has been credited with moving the conflict there from one responding to an international invasion to a full-scale sectarian civil war. That the mosque was left essentially unprotected was a reflection of a lack of planning that contributed to Coalition forces having to remain in Iraq for far longer than initially intended. It was not unavoidable 'collateral damage' but a predicable event that might have been anticipated –and avoided, as it had been in 1917 Jerusalem (see above).

Fig.2: The extensive damage to the al-Askari Shrine in Samarra, Iraq has been regarded by many as the tipping point that turned general unease with the Coalition presence in Iraq into a full scale, sectarian, civil war. Photo: © US Army, via Wikimedia Commons.

Third, while the looting of cultural heritage has been almost certainly an ever-present issue since war was first waged, it appears to have become a more organised and important aspect of modern warfare. The UN has reacted to looting in Iraq and Syria with a number of Security Council resolutions (1483 [2003] on post Saddam Iraq; 2199 [2015] on security and terrorism; 2347 [2017] on the destruction of cultural heritage in armed conflict; and 2368 [2017] on terrorism), that all identify looting as a significant contributory element to the funding of armed non state actors (ANSAs). Despite a number of claims by organisations such as UNESCO, no-one knows how much funding looting has contributed to funding ANSAs – but the overall figure *may* be as high as millions of US dollars. To allow such looting, without at least acknowledging it as an issue or attempting to mitigate it, can only be judged to be poor military strategy; failing to address a not-insignificant funding stream to your enemy.

Fourth, the nature of war has changed dramatically since 1945, and a military that has won a war now frequently finds itself being tasked to be responsible for helping to deliver an economically viable and stable post-conflict country before it can withdraw—in other words, the victor(s) must also win the peace (Hammes 2004). Cultural heritage is frequently an important element of tourism that benefits communities and countries by creating jobs and businesses, diversifying local economies, attracting high-spending visitors, and generating local investment in historic resources. With respect to the Middle East and North Africa (MENA) region specifically, a recent World Bank report noted the "highly valuable cultural endowments in all the region's countries" that opened up "major opportunities for development, providing a major source of employment, and thereby contributing to the reduction of poverty and the decrease of chronic joblessness" (World Bank 2001:vii). In other words, cultural heritage and its exploitation is perceived to be at the heart of the economic development of the MENA region. From a military perspective, allowing cultural property to be destroyed has the potential to undermine the economic recovery of a post-conflict country and may therefore lead to longer military deployments and, potentially, greater friction between the military and host community resulting in unnecessary military casualties.

Finally, CPP can be deployed as soft power or a 'force-multiplier'. There are sadly numerous recent examples of where Western troops failed to carry-out CPP effectively and antagonised local populations unnecessarily, in some instances, leading to an escalation of hostilities and casualties (e.g. Corn 2005; Curtis 2004; Phillips 2009). At the other end of the spectrum there have been examples of excellent

CPP. One positive story comes from Libya in 2011 where NATO change the weapon planned to be used to protect cultural property (and see below).

Given these reasons it is axiomatic that the military should take CPP as a serious responsibility. And they are beginning to do so; the heritage community needs to respond in-kind.

The Blue Shield – a heritage community focal point

Article 16.1 of the 1954 Hague Convention identifies a Blue Shield as the emblem of the Convention and the emblem to be used to identify property protected under the Convention. The 1999 2nd Protocol to the Convention established a 12 member Intergovernmental Committee to oversee its implementation and Article 27.3 of the 2nd Protocol, picking up the Emblem identified in the 1954 Convention itself, identifies the International Committee of the Blue Shield (ICBS) as an advisory body to the Intergovernmental Committee. The ICBS was formed by four of the major heritage organisations (the International Council of Archives, the International Council of Museums, the International Council on Monuments and Sites, and the International Federation of Library Associations and Institutions) and comprised only of the four Presidents of the Founding Organisations. This was an intentional decision taken to focus the power to act quickly and decisively in the hands of a small group, three of whom worked in Paris with the fourth a short distance away in The Hague (Boylan *pers. comm.* 22 November 2018). However, the ICBS essentially failed, for reasons political and financial too complex to discuss in this short article, to make an impact on the international stage. Since 1999 a number of national committees of the Blue Shield have been created with various degrees of activity and success.The disregard for CPP shown by the Coalition in many people's eyes, underlined the weakness of the ICBS and as a result, a number of the national committees of the Blue Shield came together to create the Association of National Committees of the Blue Shield (ANCBS). The ANCBS was founded in 2008 with the purpose of coordinating and strengthening international efforts to protect cultural property at risk of destruction during armed conflicts or natural disasters.These two organisations amalgamated in 2016 to become simply 'The Blue Shield' and the acronyms ICBS and ANCBS are no longer used.

Since 2016, the Blue Shield has been "committed to the protection of the world's cultural property, and is concerned with the protection of cultural and natural heritage, tangible and intangible, in the event of armed conflict, natural- or human-made disaster" (Statues 2016, Article 2.1). It is made up of nearly 30 national committees that elect an international Board at the organisations triennial General Assembly. The Board oversees general activity and, through a small Secretariat (currently based at, and funded by, Newcastle University in the UK) co-ordinates and delivers work internationally. While the primary context for the Blue Shield is international humanitarian law, and in particular, the 1954 Hague Convention, it works more generally within the context of the UN (e.g. Security Council Resolutions 2199, 2347, and 2368) and UNESCO's cultural conventions and wider cultural protection strategy (e.g. the 2003 UNESCO Declaration Concerning the Intentional Destruction of Cultural Heritage; the 2011 UNESCO Universal Declaration on Archives; and its 2016 Strategy for Reinforcing UNESCO's Action for the Protection of Culture and the Promotion of Cultural Pluralism in the Event of Armed Conflict). It is also informed by international initiatives regarding environmental disaster such as the Sendai Framework for Disaster Risk Reduction. Within this context, through its Statutes and Board decisions, the BSI Board sets the framework within which national committees operate, respecting "the principles of joint action, independence, neutrality, professionalism, respect for cultural identity and diversity, and works on a not-for-profit basis" (Statutes 2016, Article 2.2).

The BSI Board has broken down the organisation's work into six areas of activity, many of which clearly overlap, to give a framework within which national committees are encouraged to work, and present a coherent external agenda for the organisation.

1. Co-ordination

Co-ordination, both *of* Blue Shield and *with* other relevant organisations is essential if the organisation is to be effective. This ranges from 'branding', for example, introducing a standardised logo, based on the blue shield emblem of the1954 Convention (**Fig.3**) , to working with other international agencies such as UNESCO and NATO to better spread the message of cultural property protection. One example of this was working with the NATO affiliated Civilian/Military Centre of Excellence to produce *Cultural Property Protection Makes Sense: a way to improve your mission*, a 78 page, 'quick read' booklet outlining the importance of delivering high quality CPP on military

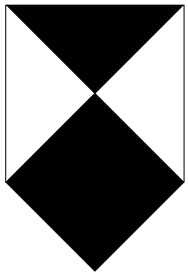

Fig.3:The UK Blue Shield logo. © Blue Shield.

deployment (CCoE 2015). More recently, as noted above BSI has been working with the UN Special Rapporteur for Cultural Rights in her attempts to make access to heritage an explicit universal human right (Bennoune 2016), and in 2018, European national committees, led by Austria and Belgium, supported by the UK, offered support to the EU regarding the draft EU Cultural Property Import Regulations (and see UK Blue Shield 2018).

2. Policy Development

In collaboration with national committees, and building on academic research and practical experience, the BSI Board has developed a number of policies. For example, the 4 tier approach was adopted as Blue Shield policy in 2014, the seven risks (see below) have been slightly re-cast as eight risks (see https://theblueshield.org/why-we-do-it/threats-to-heritage/), and a generic set of training tools is under construction for all national committees to use, following extensive testing with a wide range of armed forces. These policies define what the Blue Shield is doing, and crucially how, to mitigate the impact of armed conflict on cultural property and the wider cultural heritage.

3. Proactive protection and risk preparedness

While the major causes globally of destruction of cultural heritage are probably urban expansion, increase in land under cultivation, and the development of agricultural-related technologies, cultural property is damaged and destroyed specifically during conflict for seven reasons: [1] it is not regarded as important enough to include in pre-conflict planning; [2] through pillage/'spoils of war'; [3] through lack of military awareness; [4] as the result of collateral damage; [5] through looting; [6] through 'enforced neglect'; and [7] as the result of specific targeting. By taking proactive action with respect to these, the overall risk to cultural property should be reduced significantly without distracting from (indeed perhaps contributing to) the overall mission objectives (Stone 2016; In press).

There is no space to unpack all seven risks in this article, but the necessity for sufficient planning is quite clear. The 1954 Hague Convention unequivocally states that for effective CPP to be implemented during conflict, significant preparation needs to be completed in peacetime. Such activity obviously includes education and training of both the

armed forces and heritage communities – and the wider raising of awareness of these issues within the general public. Suffice it to say, if all seven risks were addressed prior to conflict and embedded within normal military practice, the impact of armed conflict or environmental disaster on cultural property might be significantly reduced.

In addition to education, the creation of lists of cultural property that we would hope would not be damaged during armed conflict has been undertaken. The production of such lists is, technically, the responsibility of States Parties to the Convention. However, in a number of recent situations this has been impossible and, led by the USA national committee, the Blue Shield has stepped in to produce lists as necessary. The author, with colleagues in the UK and Iraq, completed an initial list for Iraq in 2003. Similar lists have been produced for Libya, Mali, Syria, Iraq (far more detailed than the 2003 attempt), and Yemen. The aspiration for such lists is that they are transferred to the military's so-called 'no strike lists', a list of places that should not be targeted unless removed from protection by the enemy's use of them for military use. Lists are fraught with complications (Stone 2013c), for example, who should set the standard and specification for such lists and what should these be? How large should a list be? Too small, and important cultural property will, almost certainly, be lost; too large and the risk of the military ignoring the list increases as it will be seen as a threat to mission operations. Finally, while the Convention stipulates that all cultural property should be protected, it has proved to be extremely difficult to produce reliable lists of sufficient detail for libraries, archives, and art museums and galleries. Much more work needs to be done before there is an effective, efficient, and acceptable process for the development of such lists.

However, as an example of their value, and as mentioned above, the co-operation between cultural property experts and the military over the formulation of the No-strike list for Libya was perceived as a great success. In particular, the protection of the fortified Roman Farm at Ras Almargeb (**Fig.4**), where forces loyal to the Gadhafi regime, presumably hoping that NATO would take damage to cultural property into consideration, had established a communications and radar unit next to the Roman building, was seen as a significant success. The site was on the list of cultural places submitted to NATO and appears to have been added to the military No-strike list. As a result, NATO forces, with technology unavailable in 2003, were able to plan the precise destruction of the military targets with very minimal shrapnel damage the building. This proactive protection received significant positive media reporting – something that NATO were somewhat unused to. This led NATO to commission an internal Report on 'Cultural Property

Protection in the Operations Planning Process' that was published in December 2012 (NATO 2012). The Report recommended that NATO should: "…*create a cultural property protection policy featuring the commitment of the Alliance to protect cultural property, definitions of cultural property and cultural property protection and designation of roles and responsibilities inside NATO, including the creation of a cultural property advocate responsible for maintaining contact with internal and external cultural property protection sources of information and provide the flow of that information to the operational planners in the event of a crisis*" (NATO 2012, p. iv).

Fig.4: Ras Almargeb, where forces loyal to President Gadhafi stationed six vehicles of a mobile radar unit in the hope they would not be targeted because of the proximity to the Roman fort. All six were destroyed.
Photo: © Karl Habsburg.

No policy is yet in place, but a NATO affiliated Centre of Excellence is under consideration that is hoped will include CPP and a CPP Directive has been approved – essentially the first step to the establishment of a Doctrine.

4. Education, training, and capacity building

One of the major problems regarding CPP is that the close relationship between the military and heritage community, most recently clearly in evidence during the Second World War, was lost. More recent events in the former Yugoslavia, Iraq, and the increase in specific targeting of cultural property by groups such as the so-called Islamic State have prompted a review of this situation and a fair amount is being done, with the military frequently taking a leading role.
For example, some armed forces have re-introduced, or re-invigorated, contemporary versions of the Monuments Men, most recently with

the UK creating its new CPP Unit to be fully operational by 2020/21. These, usually middle ranking officers, are usually part of what different armed forces call Civil Affairs or CIMIC – civilian/military liaison and it is here where the relationship between cultural property experts and the military can be nurtured perhaps most easily. One, non-European, example of this is the Lebanese Armed forces who took the initiative and set-up an internal CPP unit in 2012. The unit took part in an initial training workshop in June 2013 in association with UNESCO and the Blue Shield. Perhaps most impressive of these units is the Carabinieri Tutela Patrimonio Culturale (TPC) (Carabinieri Command for the Protection of Cultural Property), a military/police organisation created in 1969 and dedicated to CPP (Rush & Millington 2015). The Carabinieri work primarily in Italy but have also deployed overseas during armed conflict (see, for example, Parapetti 2008) and have trained a number of other nations armed forces with respect to CPP (Rush & Millington 2015).

As noted above, in 2011 the Leadership Centre (ZentrumInnere Führung) of the German Bundeswehr (www.innerefuehrung.bundeswehr.de) organised the first of what has become an annual conference called 'Coping with Culture'. Despite the somewhat negative connotation of the title, the annual meetings (so far held in Germany, the Netherlands, Poland, Denmark, and Austria) have brought together predominantly members of the armed forces of between 10 and 15 European countries, with a smattering of cultural experts, to discuss a wide range of cultural issues facing the military – including CPP. In the UK a symposium 'Culture in Conflict', primarily attracting military staff and associated experts, has been held annually for ten years and includes CPP issues on a regular basis. Blue Shield International has led the CPP elements of both meetings over the last few years.

In the USA cultural experts, in liaison with the USA national committee of the Blue Shield, have worked with the DoD to create the Combatant Command Cultural Heritage Action Group which supports troops and the military mission by developing reference, education, and training tools for DoD uniformed and civilian personnel and contractors. In 2016 CPP was discussed specifically during the Australian DoD conference on 'ISIL and Middle Eastern Regional Dynamics'. Also in 2016, the Australian Red Cross organised a two-day conference on 'Protecting Cultural Property in Armed Conflict' that included a discussion with a number of government departments, including DoD, over the better implementation of the 1954 Convention. In the same year a workshop on the 1954 Convention was held by Pacific countries including representatives of the military and police. Space precludes mention of many other similar initiatives from around the world.

Over the last three years, BSI staff have presented at military, heritage professional, academic, and general public conferences, meetings, seminars, and workshops in more than 22 countries. We have also been refining and testing generic military training materials. Training has been carried out with various units of the UK's armed forces and, as noted above, others - including Australian, Austrian, Dutch, Fijian, German, Georgian, Polish, and USA armed forces. The Blue Shield, led by the Austrian national committee, trained the UN Interim Peacekeeping Force in Lebanon in 2014 and 2019 with BSI. A major step forward was taken in 2018 when BSI was invited to help plan and deliver major exercises, 'Blue Flag' for the US Air Force and 'Trident Jaguar' for NATO. This built upon previous involvement with USA exercises in Egypt led by the US national committee. Discussions are ongoing with NATO about establishing BSI's involvement across a number of key annual exercises.

5. Emergency response

Given the lack of proactive protection that has been carried out to-date, a critical aspect of CPP work has been, and will continue to be, emergency response. BSI, led by its President, Karl Habsburg, has carried out a number of emergency missions to countries impacted by conflict including Egypt, Libya, and Mali (see for example Blue Shield 2014). While these have been extremely useful, the full value of such missions will not be achieved until there is firmer funding available to support such activity.

6. Post-disaster recovery and long-term support

It is critically important that, once a conflict or environmental disaster is over, CPP activity continues. It is frequently at this point that much cultural property is damaged or destroyed as cleaning-up and rebuilding takes place. Often this work is done by those with no training in or understanding of CPP or the importance of cultural property to post conflict/disaster stabilisation. The frequent call on a country's armed forces to act as first responders following environmental disasters led the Blue Shield to add training related to natural/environmental disasters to its remit. It is here that the Blue Shield's work turns full-circle, as stabilisation flows directly into proactive protection, training and education.

Conclusion

We have come an astonishing way since 2003. The journey has not been without its difficulties but there is now a wide-spread consensus that the work of the Blue Shield and its partners is extremely important. The road in front of us is, however, far longer before CPP in armed conflict will become the norm.

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Chapter Two:

Folktales, myths and traditions: The integrated intangible aspect of european cultural monuments and sites

Historical cities and intangible cultural values. Carnival festivities, collective urban celebrations.

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Introduction

Nowadays, Carnival Celebrations represent festive events taking place in public urban space within historic cities and towns. Traditional ephemeral events, such as Carnival, are a particular form of ritual performance with a strong symbolic connotation and can therefore be considered "*intangible assets*" of our cultural heritage, after 2003 UNESCO Declaration. The "Convention for the Protection of the Intangible Cultural Heritage" (UNESCO, 2003) originates from the awareness that intangible forms of culture are fundamental identity and cultural diversity resources. Their importance does not lie in the traditional performance itself, but in the variety of knowledge and skills transmitted over generations[6]. Carnival festivities[7] in Europe, and specifically in small ancient towns, villages and hamlets in Southern Italy, feature ritual occurrences, being urban events, which involve the entire civic territory, public areas, streets, squares, traditional public retail market spaces, as well as wide areas in front of religious or civic buildings. These so-called "*luoghi"*[8], are an essential part of the urban value of historic centres. As a matter of fact, they represent the tangible assets of our cultural heritage and contribute to improving the quality of the urban landscape, where intangible qualities of popular celebratory traditions, ancient and folk music, cantatas and dances, and processions disguised with masks and traditional costumes are performed. The "ephemeral" heritage of Carnival events includes representation and expression of traditional practices, knowledge and know-how of local communities, conveyed through songs and music, myths and rituals, ideals and visions, dialect and idioms, arts and literature, standards and rules, traditions, shows, lifestyle. Moreover, *"original"* tools, objects, artefacts and masks are associated with the entire urban context as a whole and other single areas within it. The above are all fundamental signs of cultural diversity and human creativity, yet the broad participation of local communities is referred to as a highly significant value. Hence, Carnival is as a cultural expression, an opportunity of great interest for local communities, a chance of sociability and inclusion while encouraging a strong feeling of cultural identity among urban communities[9].

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[6] cf. The General Conference of the United Nations Educational, Scientific and Cultural Organization meeting in Paris, from 29 September to, adopted the Convention for the Safeguarding of the Intangible Cultural Heritage on 17 October 2003, which was ratified by the Italian Republic on 27 September 2007, by the means of Act 167; cf. www.unesco.org/en/convention and www.unesco.beniculturali.it

[7] cf. COLLETTA T., *Festività carnevalizie e città storiche* in "Territori della Cultura" 2018, CUEBEC online review.

[8] venues [NdT]

[9] UNESCO 2003 Convention for the Safeguarding of the Intangible Cultural Heritage recognizes that "*communities, in particular indigenous communities, groups and, in some cases, individuals, play an important role in the production, safeguarding, maintenance and re-creation of the intangible cultural heritage, thus helping to enrich cultural diversity and human creativity*".

Collective celebrations of carnival festivities, intangible assets in integrated urban conservation.

Traditional and popular traits of each town's festivities, have for long been adversely considered as aspects of folklore and superstition, while they are now being acknowledged as demo-ethno-anthropological assets of cultural heritage. Since 2003 collective Carnival celebrations have bestowed with significance of intangible assets of cultural heritage, thanks to their uniqueness and long-lasting ancient tradition of ritual practices, as well as to their original historical authenticity, not yet corrupted by strong tourist components. All Carnival rituals are indeed unique expressions, imaginative and creative performances, extraordinary sociable and inclusive opportunities among members of the same community, not only during the days the event, but also throughout the preparation stage. The wide participation of the local population and of cohesive social groups represents the identity of the historical venue where events take place. Therefore, Carnival festivities, need not only to be regarded as ephemeral heritage, but of fundamental intangible cultural value in the integrated approach of the historical urban landscape conservation[10]; they are part of a complex system featuring the urban identity, which can be identified with the *spirit of place* - the *genius loci* - that each city has inherited and preserved[11] (Fig.1).

Fig.1 . Capriglia Irpina.(AV). (Campania Region). The intangible values of The ritual Carnival ancient dance of "La Zeza". The genius loci of Mediterranean cities

[10] cf. for the 2011 UNESCO definition of *Historic Urban Landscape* – HUL www.unesco.org. and on the same subject Bandarin F., Van Oers R. (2012), *The historic urban landscape: managing heritage in an urban century,* Wiley Blackwell, Hoboken

[11] required safeguard of "genius loci" within the process of integrated conservation was stated in ICOMOS, *Quebec Declaration, 2008. cf.* www.icomos.org

It is well established that the ascribed "*value*" of historical towns and cities is the result of a two-thousand-year stratification and of a long cultural continuity. Not only it includes tangible assets, the so-called *saxa*[12] - before after urban space, walls and doors, streets and squares, market areas, urban fabric, and architecture as well as immaterial resources - cultural significance, the citizens' acknowledgement of their urban identity and belonging to the urban space, their ancient traditions and customs, religious and secular festivals, processions and ritual parades, economic activities, crafts, and finally human heritage, i.e. men and their community group[13]. The intangible cultural heritage values recognition in current integrated urban conservation programmes[14], draws upon the need for safeguarding all ancient local and urban traditions being part of secular and Carnival festivities. From this point of view, the intangible cultural heritage of European Carnival celebrations, and particularly those in Southern Italy, needs to be referred to within a conservative and value-enhancing perspective[15]. Moreover, the progressive transformation of festive events from a collective ritual, in which actors and audience tend to coincide, to a comprehensive performance in which the role of actors and spectators increasingly tend to differentiate, draws the attention to the need for maintaining the authenticity and original identity of Carnival festivities.

These celebrations represent an unlimited potential for the territory; as a matter of fact, not only they attract a large number of people within the territory itself who can cooperate to the good organization of these events, but also appeal tourist flows, coming into contact with different tangible and intangible heritage. Being eminently urban events, Carnival festivities are fundamental values of both tangible and intangible cultural heritage of historical urban territories hence closely related to urban conservation.

As far as the effects of the enhancement process are concerned, consequences are wide-ranging and distinctive and generate different territorial value development under cultural, economic, and social aspects, involving community identity, thus renewing and explicating

[12] *Saxa loquuntur* is a Latin phrase invoked to refer to messages deciphered. from the vestiges of the ancient past: "*stones speak*" [NdT]
[13] cf. ICOMOS "Florence Declaration" in 2014: *Heritage and Landscape as Human Values*, in www.icomos.org/2015/GA2014
[14] cf. ICOMOS "Charter" (2011): *Valletta Principles for the Safeguarding and Management of Historical Cities, Towns and Urban Areas,* adopted by ICOMOS-CIVVIH on 10 April 2010 and ratified by International ICOMOS Commission on December 2011.
[15] cf. COLLETTA T., *I valori demo-etno-antropologici delle feste come valori immateriali nella conservazione urbana integrata*, in COLLETTA T. (edited by), *Festività carnevalizie, valori culturali immateriali e città storiche. Una risorsa per lo sviluppo turistico di qualità del Mezzogiorno*, Franco Angeli, Roma 2018, chapter 4 pages 59-87.

the meaning of heritage itself. It is a propeller for local development and enriches the individual life of citizens, being an incentive in the field of culture and creativity and contributing to the generation and social strengthening of communities[16]. Actually, the stratified value of urban spaces and of the rich historical landscape, their multiplicity and the original essence inherited and preserved in each town or city, determine a strong attraction in the collective imagination and is a stimulus to visit them[17]. (Fig.2)

Fig.2. Castelvetere on the river Calore. (AV,Irpinia, Campania Region)). The large inhabitants partecipation a strong bond that links the people to their city.

Historic cities and carnival festivities privileged places of cultural tourism

Historical cities are privileged by cultural tourism flows for their concentration of memories of the past, being extraordinary venues, strongly branded by the peculiarity of ancient environments with a long-lasting tradition. They are an attraction for their urban stratification distinctiveness-often dating back two thousand years but providing continuity of performance, as in southern Italy- as well as for the complexity of their heritage and the historical urban landscape where they are located, for the genuineness of their extraordinary and

[16] cf. MONDINI G., RAMELLA GAL M., *Il patrimonio culturale. Promozione dei valori culturali materiali e immateriali e sviluppo locale*, in COLLETTA T. (edited by), cf. 10, chapter 3, pages 46-59.
[17] cf. COLLETTA T. (2012), *Città storiche e turismo culturale. Città d'arte o città di cultura? Marketing urbano o turismo culturale?,* Giannin, Napoli, particularly chapter I.

strong urban identity[18]. Nowadays, the main character of their cultural identity, is identified in the spirit of place or genius loci: identity of place and spirit of place, are mostly distinguishable in public spaces and historical squares, because of their particular atmosphere, featuring liveability and memories, displaying recognizable characters of public utilization. Public space in countless European historical towns and cities are the privileged venues for traditional long-established local events, as well as for Carnival celebrations, which are main vehicles for cultural exchange. Processions, costume parades and Carnival dance performances march past the most representative urban sites of the whole community: such as historical squares, wide and narrow alleys, market areas, religious and civil buildings. (Figg.3,4)

Fig.3. Montemarano (AV). (Campania Region) The historical symbolic traditions: the Carnival dance with the famous popular music of Tarantella Montemaranese and the famous masque of "Caporaballo".

Fig. 4. Mercogliano (AV) (Campania Region). The ritual carnival masquerade procession in the public route.

[18] COLLETTA T.,(Editor), *The role of the integrated conservation of cultural heritage for a creative, resilient and sustainable city,* Franco Angeli, Roma 2013, *particularly Introduction*

In recent years, historic towns and cities have been increasingly attracting tourism, generating new urban tourist flows, no longer looking only at their privileged destinations because of their unique and rich heritage, but also for their leisure "festivals", which can be considered the ultimate tourist attraction. Yet, the spirit of Carnival should not be identified just as a tourist attraction, on the contrary, it ought to be promoted as the prevailing and recognizable identity of that specific historic venue, thus, understanding the relevance of an integrated approach to urban conservation, i.e. including all assets of tangible and intangible cultural heritage. Traditional festivities, civic events, festivals and new grand design encourage new tourist flows and subsequently develop innovative economic activities, even though not all relating with culture. They therefore represent an important resource for economic growth, employment and social cohesion, an opportunity for the revitalization of urban areas and the promotion of sustainable tourism, enhancing the attractiveness of local manufacturing and economy to a diversified tourist demand. Hence, the importance of these assets becomes evident: the integrated enhancement process is based on the substantial coincidence of the concept of "territory" and "cultural heritage", envisioning a process, where the two areas refer to each other and are inseparably linked by a constant referral of actions and results.

Secular urban festivities historic "places", the risk of the tourist market

As true today as it ever was, festivals are the expression of the economic and cultural context that originates them, hence being natural that they also explicit progressive transformation, as Giuseppe Galasso stated concerning festivities in the South of Italy [19]. Over the centuries, celebrations have developed there an extreme significance, thus leading design innovation of collective celebrations from small to large scale, like the manual skills and creativity of local handcraft. Creativity, generated from the experimental collaboration between craftsmen and architects, musicians and composers, walk-ons and actors, breeds new attractiveness. Popular traditions (*the popular traditions of the "square"*), as are Carnival events, are rather important moments for local cultural heritage enhancement and communication, thus an opportunity to promote knowledge of cultural diversity and to increase dialogue between local communities and audience.

[19] cf. GALASSO G. (1982), *L'altra Europa. Per un'antropologia culturale del Mezzogiorno d'Italia,* Torino, particularly chapter III, *Le Feste,* pages. 64-121.

However, the continuity of authentic traditions in many historical secular festivals and Carnival festivities has often been lost: Carnival is a cultural resource of the venue and it becomes a tourist attraction. As a matter of fact, the peculiar scene of the festival, as emphasized by Mazzacane[20], is represented by the community everyday life context: streets and squares of the hamlet, town or city, especially when we refer to processions and costumes parades routes and stops. The traditional imageries are transformed, cast on the rose-tinted models broadcast on television and on the Web. As a result, local communities legitimately aim at a direct or indirect economic return from popular tradition - as a resource of the territory - in terms of tourism or advertising. Traditional festive performances subject to the "risk" of tourism marketing inevitably weaken their performative value and increase the spectacular-theatrical dimension of the event. Through the reversal of social roles, the abolition of conventions and good manners in everyday life, the exaltation of material and physical symbols to the detriment of immaterial and spiritual ones, and the production of an excessive emotional state (orgiastic feeling) Carnival amplifies some expressive elements, which are more or less explicitly present in all its displays.

Recognized as a secular event extraneous from any sacred dimension, Carnival has proved to be the most suited urban festival to interpret the present trend, where the cultural element still prevails as ultimate reason for the endurance of celebrations addressing the organizing community. This occurs for example in Montemarano in Irpinia (Province of Avellino), where he organization of Carnival still involves each participant to be "actor" and at the same time "spectator" of the ritual festive practice, which is repeated every year. (Fig.3)

The originality of each urban celebration must be considered as a positive, indeed essential, value, because it is a single stable element that confirms the recognition of that particular event in that specific venue, although elements of innovation are introduced year after year. Despite the insertion of creations and new devices it is utmost important that authenticity of the celebration remains preserved. (Fig.5).

The recognition of Carnival celebrations as intangible assets and the inclusion of several of them, both European and international, in the UNESCO World Intangible Cultural Heritage List (since 2003) has drawn new attention to these particular events. Furthermore, in 2015 also the Italian Ministry for Cultural Heritage and Activities (MIBAC), recognized the importance of "historical Carnivals" as demo-ethno-anthropological assets of the Italian intangible cultural heritage, to

[20] cf. MAZZACANE R. (1999), *L'UNESCO et la tutelle du patrimoine immatériel. Les fêtes traditionnelles*

be safeguarded in their integrity, along with their promotion and enhancement. For the first time, a dedicated contest has been called between institutions involved in the organization and management of Carnival celebrations to support the winners with adequate funding for the enhancement of these particular "cultural assets", thus fostering local communities with the opportunity for an economic return[21]. This call for papers for a contest between the "historical" Carnival festivals represents for all Italian regions, particularly rich of these events, a great opportunity to facilitate their promotion and enhancement and to protect their authenticity.

Fig. 5. San Mauro Cilento (SA) (Campania´ Region). The Carnival masquerade dance in the public urban spaces.

The risk that festivals are exclusively exploited for tourist purposes is indeed increasingly real in contemporary Carnival celebrations. The organizing communities do not look at them as an opportunity to reproduce images of past popular traditions, on the contrary they are trying to catch the gaze of "outsiders", visitors who turn to be only spectators of the ritual festive practice. We can mention for example the Carnival of Venice or Viareggio in Italy, or that of Nice, which despite having a long-lasting history, are held every year with new themes and new representations to attract new audience. Therefore, many of the events titled popular festivals, are often not the people's festivals anymore, but festivals for people, despite having had a centennial past and a popular origin, they are nothing more than a tourist attraction. The "battle of flowers" during the Nice Carnival is

[21] In December 2015 MIBACT (Italian Ministry of Culture) published a call for tender for a contest between institutions involved in the organization and management of Carnival celebrations. The call for papers addresses Italian historical Carnivals, whose celebration has taken place for more than 20 years and whose uninterrupted achievement has been proved. Eligible events should prove: a. historical authenticity of the event achieved since 1990, b. artistic and creative quality of future programmes, c. socio-economic impact on the territory, d. impact on tourist development, e. links with the surrounding cultural heritage, management and financial links with territorial stakeholders, f. international impact of the project (through European programmes such as Creative Europe, Europe for Citizens, European Heritage Label, UNESCO). cf. www.beniculturali.it

a clear example, but many other examples could be given. To reduce the risks inevitably associated with the tourist flows and incentive, it is utmost important to preserve and raise awareness of the historicity of the event as well as a thorough knowledge of the surrounding existing cultural heritage.

The risk of transforming the rituals of collective celebrations into ordinary performances exists, especially when we talk about Carnival parades. All around Europe, Carnival events' primary aims are show and entertainment; the ritual practice no longer finds a justification in itself, but in the fact that it is viewed and attended by tourists, observers, photographers, television specialists, cameramen, professionals or amateurs.

Carnival costumes themselves end up being chosen among the currently most relevant ones and festivals adapt to those aspects of common feeling able to recall a common imaginary to the elements of society; communities demonstrate the progressive decrease of the internal symbolic dimension and the increase of the external symbolic dimension. Carnival and its venue increasingly look at each other through "the eyes of the outsider", homologating the symbolic repertoire and the rich expressive potential of the traditional costumes and masks to identifications that are often trivializing, based on the caricatured deformation of current politicians or on topical issues. Evident and renowned example of the above are the grand parades of allegorical floats, more and more technological and larger in size, which are the attraction of the most famous historical Italian Carnivals: from Viareggio to Fano, and Putignano. Despite a long-lasting historical tradition, many Carnival festival find themselves in the need to differentiate from other similar events, to conform to the current show business, and to maintain or increase the consensus by enhancing the sense of amazement. This is the case especially in large cities, while it is easier for ancient festive traditions to be preserved in small towns, where the relationship between local populations and traditional ritual festivals is closer. This is more evident as explained below for the colourful costume folk festivals included in many historical Carnivals held in Campania and Southern Italy, which maintain their ancient ritual traditions and original music, thus preserving their original authenticity.

There are, however, due exceptions, which for their long historical continuity and their preserved integrity and authenticity have had their "Festivals" and "Carnivals" being recognized as of outstanding universal value and therefore enrolled in the Representative List of Intangible Cultural Heritage of Humanity of UNESCO[22].

[22] cf. COLLETTA T., *Le festività carnevalizie europee nella Lista dell'UNESCO del 2003*, in COLLETTA T. (edited by), *Festività carnevalizie cit,,* pages 70-84

Research on the historical carnivals of southern Italy

The research was conducted with support of the European Commission within the Creative Europe Programme of the European Union in the project: "Ephemeral Heritage of European Carnivals Rituals" in the years 2014-2017 by the Interdepartmental centre of research in Urban Planning "Alberto Calza Bini", of the University "Federico II" of Naples. As official partner of the Project the research centre has focused its interest on the relevance of the intangible "values" of the "festivals" cultural heritage in Southern Italy, aiming to safeguard their authenticity and promote their enhancement. The Creative Europe Project, called "CARNVAL", intended to pay great attention to ephemeral events of European carnivals and to implement a European network of creative and cultural organisations and institutions related to European Carnival rituals as festive events, to reinforce the idea of European cultural heritage and enhance the feeling of a common identity.

In this perspective, the Neapolitan working team (L. Fusco Girard, T. Colletta, A. Errico, L. Bello, T. Peluso) has focused its interest on the "rituals and festivals" of Southern Italy still performed in many historical towns and cities. The research has highlighted the rich and ancient traditions of the southern Carnival festivities, particularly in Campania, their historical rituals, the close relationship with urban space and the still-existing strong social cohesion of the local community, comparing them with the different experiences of Italian and European carnivals.

In Campania, Carnival Festivals are a collective celebration, symbol of a festive event that takes place in public urban space and involves the participation of the entire local population. Citizens live this opportunity to create a space of integration and sociability, encouraging not only the production of particular artistic "Carnival" expressions but also developing a strong spirit of identity. Urban identity and the spirit of place of traditional Carnival rituals are the main capital of intangible heritage of those communities and represent the existing expression of Southern Italian cultural values.

These existing expressions of traditional cultural values, with the rich tangible heritage often consisting in thousand-year-old urban stratification, are for ancient towns and cities a potential resource and an opportunity for development. The promotion of new forms

of "experiential" tourism, addressed to interested visitors can trigger new forms of qualified cultural tourism from which local economic development and sustainability can be achieved, though new receptive and catering, recreational, and manufacturing activities.

With a view to raising awareness on southern Italian Carnival festivals and disseminating the results of the European Project, the Interdepartmental centre of research in Urban Planning "Alberto Calza Bini" has organized a study meeting on the theme of intangible cultural heritage and ephemeral manifestations of Carnivals as essential elements of the "*spirit of place*" in Southern Italian urban territories. The study meeting on "*I Carnevali in Campania e nel Mezzogiorno*", took place at the Royal Palace in Naples in June 2017, and addressed the issues of protection, enhancement and promotion of historical Carnival festivities, regarded as important intangible heritage of our territory with a view to sustainable culture tourism for development. The different ways of celebrating Carnivals in Campania (processional dances, folk music, costume processions and parades of floats) were highlighted under different points of view including the reasons that closely relate them to the historical, social and cultural features as well as to current urban life. The participation of the entire population to the festive event establishes a pact of reciprocity among all citizens representing their urban identity.

Envisaging sundry interventions to raise awareness and to promote scientific reflection, as well as to perform a wide dissemination of the rich cultural heritage of the investigated festivals, the book "*Carnival celebrations, intangible cultural values and historical cities. A resource for quality tourism development in the South*"[23] has been published containing several entries.

The work aims to disseminate the current knowledge on the topic and to promote a space for intercultural dialogue between the scientific community, the local community and the future generations, in order to share the tradition of Carnival as a cultural resource of each territory and as a potential resource for a quality tourism development in the South.

The work is divided in three parts. The first one focuses on the historical and cultural value of the intangible heritage inherent to secular festivities and traditional Carnival rituals and the need to safeguard and transmit them to future generations, in relation to what was stated in the 2003 UNESCO Convention; it summarizes the activity of ICOMOS for the enhancement of the demo-ethno-

[23] *Festività carnevalizie, valori culturali immateriali e città storiche. Una risorsa per uno sviluppo turistico di qualità nel Mezzogiorno* see the note n.9

anthropological heritage of "festivals", of the genius loci of historical cities, of the skilful "conservative" work of ancient traditions, approaching integrated urban conservation. Special attention is paid to highest danger for traditional rituals of Carnival which is the risk of the exploitation of the festival for exclusively tourist purposes with the consequent transformation of the rituals in a show performance. Popular traditions (*the popular traditions of the "square"*) represent an important moment for the enhancement of the southern cultural heritage, but only the promotion of a qualified cultural tourism can trigger a local economic development, and constitute a real resource, in terms of propeller for new and sustainable receptive, recreational, productive, eno-gastronomic, and artistic-cultural activities etc. The close relationship between intangible cultural heritage and cultural tourism is unmistakably evident for the implementation of an innovative local development, in terms of circular economy, sustainable tourism and local development, as stated on several occasions during the *International Year of Sustainable Tourism for Development (2017)*.

The second part of the volume deals with the cultural values of Carnival festivities and the different ways of considering Carnival traditions in an intercultural dialogue, as well as the opportunities offered by the Creative Europe Project "*Ephemeral Heritage of the European Carnivals Rituals*" to implement the attractiveness and competitiveness of Carnival festivities and the spirit of identity of the historical cities of Campania as a potential cultural resource of the place for a quality tourism development. The focus is on Carnival festivities as an urban event, highlighting the close relationship between the ritual itineraries of Carnivals and the current road network in the concerned towns and cities, with a special glance on their public space. The strong existing links determine the close correspondence between the safeguard of events and the revitalization of streets and squares, and of major monuments of those cities - historical buildings that have very often been restored and turned into exhibitions of the ancient Carnival traditions, as it has happened for the ancient baronial mansion in Acerra, now *Pulcinella Museum*. The carnival event can be a propeller for the promotion of tourism and at the same time can trigger the development of neglected geographical areas, through festive tourism, leading to significant economic benefits for local communities, in a proper sustainable development.

The third part focuses on the historical Carnivals in Southern Italy and in particular in Campania, on the rich cultural heritage of Carnival and its tangible and intangible value, on the routes of historical rituals and processional routes, on anthropological readings, on ancient artistic heritage, on cultural associations and foundations, on creative and

cultural industries related to the organization and management of Carnival celebrations. Particular attention has been paid to the stock character of Pulcinella, traditionally the "mask" of southern Italian Carnival. In this sense, the aim is to raise awareness on ancient "historical" Carnivals in Campania by informing, communicating and promoting them to a wider public and to the main stakeholders (professionals, governments, national NGOs, regional and municipal institutions, etc.).

The purpose is to promote the rich heritage of historical towns and cities in Campania, their tangible and intangible assets, not only as tourist attractions, but as a rediscovery of ancient symbolic traditional celebrations aiming to safeguard them and to achieve a sustainable tourism, according to the *approach of integrated urban conservation, expressed in the "Principles of Valletta"* (ICOMOS, 2011).

The fourth part of the volume concludes with the case studies and a rich iconographic and photographic repertoire of the selected Carnivals of Campania, which have been included in the CARNVAL project network of European Carnival celebrations. The files of the above mentioned selected Carnival celebrations of Campania are published and divided into the areas reflecting the districts of Campania (Neapolitan Area, Caserta, Benevento, Avellino, Salerno) and enriched with news about the tangible cultural heritage, the organizational and economic management, as well as with information on existing foundations, associations, museums and dance or music schools within every Carnival location we studied.

Summing up, the message that most of these "festivals" should convey is that they are common heritage, which lives in people and with people, image of their past and hope for their future: cultural heritage and at the same time economic resource, to be protected and safeguarded in its integrity and authenticity, in a single common cultural area of European identity, a fundamental resource in the European Year of Cultural Heritage that opened in 'year 2018 and for which the volume was awarded the Logo.

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Chapter Three:

Digital documentation technologies in the service of preserving the european cultural heritage

Contemporary Technologies for the Documentation of Cultural Heritage: CIPA' s Perspective

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1. Introduction

Cultural Heritage, tangible or intangible is recognized by humanity as the most important carrier of historic memory for mankind. However, it is not respected and protected as it should be in all cases. Hence, Cultural heritage is in great danger as it may be destroyed, lost, altered, forgotten for a number of reasons. The main sources of danger are natural hazards, violent actions, such as wars, terrorism etc., looting, illicit trafficking, vandalism, modern construction activities, globalization, modern way of life and indifference, urban population growth and many more.

The ideal way to protect Cultural Heritage is to constantly take care of it through certain protective actions. Such actions, as dictated by the numerous International Conventions adopted by UNESCO, ICOMOS (International Council of Monuments and Sites) and other bodies are:

- **Documentation** (Geometric, Architectural, Historic etc.), involving 2D and/or 3D for archiving, for studies, for planning protective interventions etc.
- **Accurate measurements,** suitable forrestoration actions, reconstructions, structural studies, protection etc.
- **Monitoring** of its state, involving recording deformations, state of materials, assessing pathology etc.
- Proper **Management** of its data for sustainability, risk management etc.
- **Preservation** possibilities specially suitd for fragile objects (e.g libraries etc.)
- **Public Outreach**, which involvesvisualization, dissemination, raising awareness of the public and many more

Consequently, their thorough study, preservation and protection is an obligation of our era to mankind's past and future. Respect towards cultural heritage has its roots already in the era of the Renaissance. During the 19th century archaeological excavations became common practice, while they matured in the 20th century. Over the recent decades, international bodies and agencies have adopted resolutions concerning the obligation for protection, conservation and restoration of monuments. The Athens Convention (1931), The Hague Agreement (1954), the Chart of Venice (1964) and the Granada Agreement (1985) are some of these resolutions in which the need for the full documentation of the monuments is also stressed, as part of their protection, study and conservation. Nowadays, all countries of the civilized world are using all their scientific and technological efforts

towards protecting and conserving the monuments within or even outside their borders assisting other countries. These general tasks include geometric recording, risk assessment, monitoring, restoring, reconstructing and managing Cultural Heritage. Indeed, it was in the Venice Charter (1964) that the necessity of the Geometric Documentation of Cultural Heritage was firstly set as a prerequisite. In Article 16 it is stated "… *In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs…"*.

1. 1 Interdisciplinary Cooperation

The geometric documentation has been the responsibility of experts concerned with the care of the Cultural Heritage. Traditionally these mainly belonged to the field of archaeology and architecture. However, over the past thirty or forty years more and different specialists developed an interest for the monuments, as they were able to contribute to their study, maintenance and care. Among them are surveyors, photogrammetrists and geomatics engineers in general, as the technological advances have enabled them to produce interesting, alternative and accurate geometric documentation products. Until the end of the 19th century, architectural heritage had been a matter of national concern only and most of the laws regarding the protection of historic buildings, in Europe at least, date back to that period. Countless associations existed in each country, but their scope never went beyond national borders. Cultural internationalism, as we know it today, was an outcome of the First World War, with the creation of the League of Nations, and most of all the Second World War, with the creation of the United Nations Organisation and the establishment of the UNESCO. The Athens Conference (1931) on restoration of historic buildings was organised by the International Museums Office, and the Athens Charter, drafted by Le Corbusier at the fourth Assembly of the International congresses on Modern Architecture (1933) was published anonymously in Paris in 1941 both represent a major step in the evolution of ideas because they reflect a growing consciousness among specialists all over the world, introducing for the first time in history the concept of international heritage.Today the mentality is gradually changing and traditionally involved experts, like Archaeologists and architects, tend to accept and recognize the contribution of other disciplines to the agenda of Cultural Heritage. Hence it is rapidly becoming an interdisciplinary and intercultural issue.

UNESCO (1946) and the Council of Europe have formed specialized organizations for taking care of mankind's cultural heritage. ICOMOS (International Council for Monuments and Sites) is the most important one, but also CIPA-Heritage Documentation (International Committee for Architectural Photogrammetry, initially: Comité International de PhotogrammétrieArchitecturale), ISPRS (International Society for Photogrammetry & Remote Sensing), ICOM (International Council for Museums), ICCROM (International Centre for the Conservation and Restoration of Monuments) and UIA (International Union of Architects) are all involved in this task (Figure 1). The Venice Charter was born from the need to create an association of specialists of conservation and restoration independent of the already existing associations of museologists, ICOM. In 1957, in Paris, the First Congress of Architects and Specialists of Historic Buildings recommended that the countries which still lack a central organization for the protection of historic buildings provide for the establishment of such an authority and, in the name of UNESCO, that all member states of UNESCO join the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM) based in Rome.

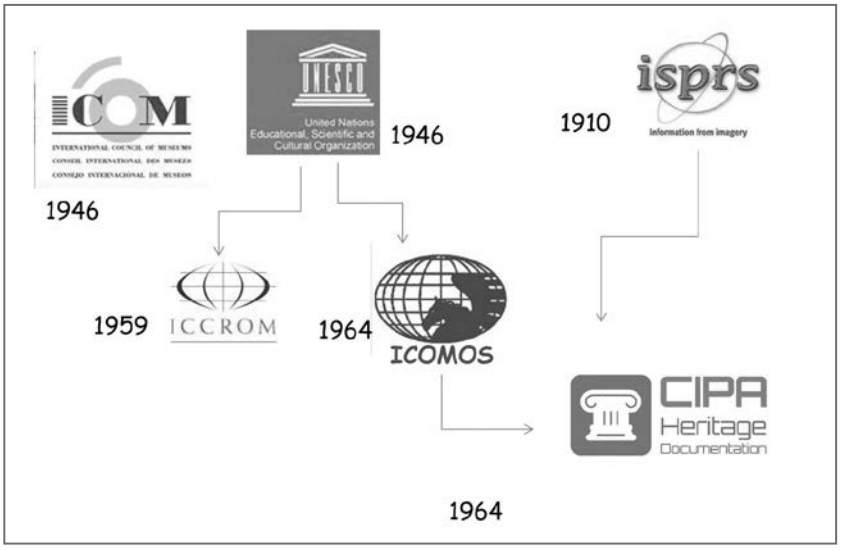


Fig. 1: International Organizations involved in Cultural Heritage (© Authors)

ICCROM is an intergovernmental organization dedicated to the conservation of cultural heritage. Its members are individual states which have declared their adhesion to it. It exists to serve the international community as represented by its Member States, which currently number 133. It is the only institution of its kind with a worldwide mandate to promote the conservation of all types of cultural heritage, both movable and immovable. The decision to establish the International Centre for the Study of the Preservation and Restoration of Cultural Property was made at the 9th UNESCO General Conference in New Delhi in 1956, at a time of mounting interest in the

protection and preservation of cultural heritage. It was subsequently established in Rome in 1959 at the invitation of the Government of Italy. ICCROM aims at improving the quality of conservation practice as well as raising awareness about the importance of preserving cultural heritage. The Second Congress of Architects and Specialists of Historic Buildings, in Venice in 1964, adopted 13 resolutions, the first one being the International Restoration Charter, better known as Venice Charter, and the second one, put forward by UNESCO, provided for the creation of the International Council on Monuments and Sites (ICOMOS).

1. 2 CIPA Heritage Documentation

CIPA Heritage Documentation was founded in 1964 as an International Scientific Committee (ISC) of ICOMOS and ISPRS (International Society for Photogrammetry and Remote Sensing) and hence is a dynamic international organization that has twin responsibilities: keeping up with technology and ensuring its usefulness for cultural heritage conservation, education and dissemination. These two sometimes conflicting goals are accomplished in a variety of ways, through (cipa.icomos.org):

- Encouraging and promoting the development of principles and good practices for recording, documentation and information management of cultural heritage;
- Leading and participating in international training programs for conservation and informatics professionals, students and site personnel;
- Advising government bodies, regional authorities, non-profit groups and institutions on tools, technology and methods for using technology;
- Sponsoring an international network of professionals in both the fields of technology and cultural heritage for scientific research but also applied practical experience;
- Providing a platform with the bi-annual International Conference for the exchange of ideas, best practices as well as scientific research papers.

In the recent past CIPA undertook the RECORDIM initiative, recognizing that there are critical gaps in the fields of heritage Recording, Documentation and Information Management between those who provide information for conservation and those who use it,

i.e. providers and users of contemporary documentation information. In response, the International Council on Monuments and Sites (ICOMOS), the Getty Conservation Institute (GCI) and CIPA together created the RecorDIM (for Heritage Recording, Documentation and Information Management) Initiative partnership. The purpose of the initiative (started in 2002 and closed on 2007) was to bring information users and providers together to identify the nature of the gaps between them, to develop strategies to close the gaps and to recommend a framework for action. The involvement of contemporary Digital Technologies (ICT) in the domain of Cultural Heritage has increased the gap between Providers, i.e. those who master these techniques and are able to apply them and the Users, i.e. those scholars traditionally concerned with the Cultural Heritage. This gap was caused mainly due to the mistrust of the latter towards contemporary technologies and lately ICT. However systematic efforts have been applied, like CIPA's RecorDIM (http://cipa.icomos.org/index.php?id=43) which have managed to narrow if not bridge this gap.

This current effort concerned with the 3D virtual reconstruction of monuments is motivated exactly by this endeavour to bridge this gap. This will only be done through deep understanding of each other's needs and through proper exploitation of ICT with the benefit of Cultural Heritage always in mind. In addition, the notion of virtual reconstruction is introduced and its use for bringing the reconstructed monuments into a museum environment is investigated.This interdisciplinary approach to the issue of Cultural heritage has opened vast new possibilities and led to new alternative products for the benefit of monuments. These new possibilities include, among others, the production of 3D models, virtual reconstructions, virtual restorations, monitoring of constructions and the applications of serious games for educational and dissemination purposes.

Digital surveying and geometric documentation of cultural heritage requires the cooperation of several disciplines and expertise in order to produce results that sufficiently satisfy the high demanding environment of conservation, restoration, research and dissemination. It should not escape our attention that resources are frequently inadequate while the infrastructure used (equipment, hardware and software) is expected achieve the maximum possible benefit.

2. Digitization of cultural heritage

Nowadays, the rapid advances of Digital Technology (DT) also referred to as Information Communication Technologies (ICT), have provided scientists with new powerful tools. We are now able to acquire, store, process, manage and present any kind of information in digital form. This may be done faster, more completely and it may ensure that this information may be easily available for a larger base of interested individuals. Those digital tools include instrumentation for data acquisition, such as scanners, digital cameras, digital total stations etc., software for processing and managing the collected data and -of course- computer hardware, for running the software, storing the data and presenting them in various forms.

The introduction of digital technologies has already altered the way we perceive fundamental notions like *indigenous, artifact, heritage, 3D space, ecology* etc. At the same time, they tend to transform the traditional work of archaeologists and museums as they are so far known. In other words, DT redefines the relationship to CH, as they enable universal access to it and they also connect cultural institutions to new "audiences". Finally, they appeal to new generations, as the latter are, by default, computer literate. In this way we experience a "democratization" of cultural information across geographic, religious, cultural and scientific borders. Cultural Heritage is nowadays, an international, interdisciplinary and intercultural responsibility.

The introduction of Digital Technologies may contribute to all traditional steps of Archaeological practice. It goes without saying that the degree of contribution of Information and Communication Technologies (ICT) is different in the various stages and in the various cases. Modern technologies of remote sensing and archaeological prospection assist the touch less and rapid detection of objects of interest. Spectroradiometers or ground penetrating radars or even the simple processing of multispectral satellite images may easily lead to the rapid location of underground or submerged objects of interest. Contemporary non-contact survey technologies, such as photogrammetry, terrestrial laser scanning and digital imaging, may be used to produce accurate base maps for further study, or 3D virtual renderings and visualizations. The collected data may be stored in interactive databases, georeferenced or not, and be managed according to the needs of the experts. Finally, ICT may assist in the presentation stage, by producing virtual models, which may be displayed in museums or be included in an educational gamification or serve purposes of enabling handicapped persons to admire the treasures of the World's cultural heritage.

The use of Digital technologies in preservation and curation in general of cultural heritage is also mandated by UNESCO. With the *Charter on the Preservation of the Digital Cultural Heritage*(UNESCO 2003) this global organization proclaims the basic principles of Digital Cultural Heritage for all civilized countries of the world. At the same time numerous international efforts are underway with the scope to digitize all aspects of Cultural heritage, be it large monuments, or tangible artifacts or even intangible articles of the world's legacy.

The impact of digital technologies to the domain of Cultural Heritage has increased speed and automation of the procedures which involve processing of the digital data and presentation of the results. At the same time accuracy and reliability has been substantially enhanced. However, most important is the ability to provide to the users new and alternative products, which include two dimensional and three-dimensional products, such as orthophotos and 3D models. 3D modelling, on the other hand, is the process of virtually constructing the three-dimensional representation of an object. The use of 3D models is highly increased nowadays in many aspects of everyday life (cinema, advertisements, games, museums, medicine etc.).All in all, the digitization of the world's Cultural Heritage whether it is tangible, or intangible is now possible.

3. ICT at the service of cultural heritage

The integrated documentation of monuments includes the acquisition of all possible data concerning the monument and which may contribute to its safeguarding in the future. Such data may include historic, archaeological, architectural information, but also administrative data, past drawings, sketches, photos etc. Moreover, these data also include metric information which defines the size, the form and the location of the monument in 3D space and which document the monument geometrically. The geometric documentation of a monument, which should be considered as an integral part of the greater action, the integrated documentation of Cultural Heritage may be defined as (Georgopoulos & Ioannidis, 2004):

- The action of acquiring, processing, presenting and recording the necessary data for the determination of the position and the actual existing form, shape and size of a monument in the three-dimensional space at a given moment in time.
- The geometric documentation records the present of the

monuments, as this has been shaped in the course of time and is the necessary background for the studies of their past, as well as the care of their future.

The geometric documentation of monuments actually is the orthogonal projection of a carefully selected set of points on -usually- horizontal or vertical planes, in order to record all geometric properties of the monument in the best possible way. The action of selecting those points implies deep knowledge of the monument and its structure, as well as mastering of the traditional and contemporary techniques for determining the position of these points in 3D space. This implies that all determined points lie in a common reference system in 3D space, which is a great advantage for further studies. In this process notions as scale of the final documentation product and accuracy of positioning the points are of utmost importance and are directly related to the data collection method.

For the geometric recording, several recording methods may be applied, ranging from the conventional simple topometric methods, for partially or totally uncontrolled surveys, to the elaborated contemporary surveying and photogrammetric ones, for completely controlled surveys. The simple topometric methods are applied only when the small dimensions and simplicity of the monument may allow it, when an uncontrolled survey is adequate, or in cases when a small completion of the fully controlled methods is required. Surveying and photogrammetric methods are based on direct measurements of lengths and angles, either on the monument or on images thereof. They indirectly determine three-dimensional point coordinates in a common reference system and ensure uniform and specified accuracy. Moreover, they provide adaptability, flexibility, speed, security and efficiency. All in all, they present undisputed financial merits, in the sense that they are the only methods, which may surely meet any requirements with the least possible total cost and the biggest total profit. To this measurement group belong complicated surveying methods with total stations, 3D image based photogrammetric surveys and terrestrial laser scanners (TLS). All these methods manage to collect a huge number of points in 3D space, usually called point cloud, in a very limited time frame.

All these techniques can be categorized in different ways. The experience shows that the most efficient method is to characterize them by the scale at which they can be used as well as by the number of measurements they can be used during data acquisition. Practically, this means that they are related to the object size as well as to the complexity of the object. Böhler& Heinz (1999) proposed and developed a system to summarize all existing techniques in terms

of scale and object complexity. This is adapted to include modern technologies and is shown in Figure 2 (Böehler& Heinz, 1999).

According to this figure, the metric surveying techniques are organized considering the scale of the outcome which is a function of the object size and the representation based on the required details. The complexity of the survey can be conveyed by the number of recorded points. In practice, this ranges from one single point describing the geographic location of a single cultural heritage object, to some thousands of points (e.g. a single CAD drawing of a simple monument) or to a few millions of points (e.g. a point cloud) for the detailed representation of a cultural heritage site. In Figure 2 the methods depicted in blue use images, while the yellow ones do not.

Recording techniques are based on devices and sensors which perform the necessary measurements either directly on the object, or indirectly by recording energy reflected from the object. In the latter category one may broadly distinguish between active and passive sensors. Active sensors send their own radiation to the object and record the reflectance, while passive ones rely on the radiation sent to the object from some other source. Usually, the latter are image-based sensors, which record the visible light reflected from the objects of interest.

Terrestrial image-based survey comprises all those methods, techniques and technologies that are using images in order to extract metric and thematic information from the object imaged. Within this section the most important image-based digital technologies supporting the digital surveying and documentation of cultural heritage will be discussed and presented. The main concern will be given to digital cameras and sensors, especially the new entries, the contribution of

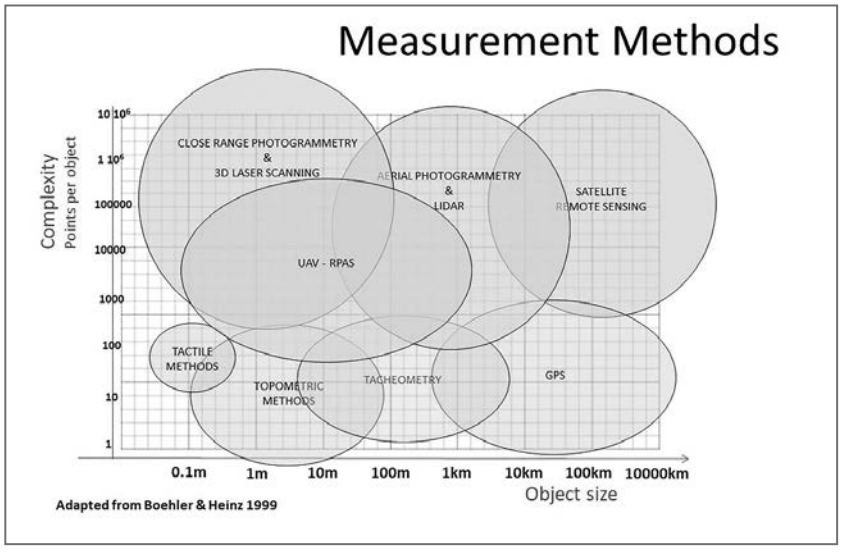


Fig.2: Three-dimensional survey techniques characterized by scale and object size and complexity (adapted fromBöehler& Heinz, 1999)

the Unmanned Air Vehicle (UAV) or Remotely Piloted Aircraft Systems (RPAS) or Unmanned Aerial Systems (UAS), but also the useful role that Image Assisted Total Station (IATS) technologies are playing in the recording, monitoring and documentation of cultural heritage.

Nowadays, contemporary technologies have integrated traditional and modern measuring and data acquisition techniques with advanced management and georeference software. This software is also known as Geographic Information Systems and enables the storing, managing and correlation of information collected, always referring it to its geographic location. This combination has led to what today is known as Geoinformatics or Geomatics.

4. Selected examples

In order to illustrate the above, some representative examples of Cultural Heritage Digitization will be presented. They include (1) the first attempt to produce 2D documentation products from 3D textured models andthe complete geometric documentation of a prominent Athens monument based entirely on image-based techniques, (2) the successful attempt to digitize a collapsed traditional stone bridge for assisting the restoration study and (3) the rehabilitation of the Holy Aedicule in the Church of the Holy Sepulchre in Jerusalem.

4. 1 3D geometric documentation of the Tower of Winds24

The Tower of the Winds is in the Roman Agora of Athens, Greece, on the northern foot of the Acropolis hill. Its name is related to its form and appearance, because at first glance one may see a tower-like eight-sided structure with a wide frieze decorated by relief figures of the Winds. According to Vitruvius, at the top of the roof there was a rotating brass Triton that indicated the direction of the wind. It probably functioned as a sundial, when there was sunlight. The external form of the monument is classified in the Corinthian order, mainly due to the column capitals, while the inside is of the Doric order, which is more austere and rigid in forms.

24. Adopted from Tryfona& Georgopoulos 2016

The astronomer Andronicus from Cyrrhus, in ancient Syria, was the one who designed and built the Tower of the Winds most probably in the middle of the 1st century B.C. The Tower of the Winds is an octagonal tower, all made of Pentelic marble, with approximately 3m long sides, 12m height and 8m external diagonal. It rests on a crepidoma with a three-level stylobate and it is covered with marble slabs thus forming an octagonal prism. The figures of the Winds appear as reliefs on the top of each side of the tower, on the frieze. The building has two entrances, one to the right and one to the left of the north side. In front of both entrances there are crowning pediments, which are each based on a small porch with two Corinthian columns (Mastrapas, 1992; Newsroom DOL, 2011).

The Ephorate in charge of the monument requested specific drawings at a scale of 1:50 in order to geometrically document it and provide the basis for their restoration studies. This request combined with the accuracy requirements of the large scale, dictated the use of appropriate instrumentation and processing procedures. These drawings included:

1. Three (3) horizontal section plans of the monument at different levels, i.e. at 1m, 8m and 10m from the stylobate.
2. Eight (8) vertical cross section plans of the monument, intersecting each side in the middle and including orthophotos of both sides of the interior of the monument.
3. Eight (9) elevations with orthophotos of the eight (8) exterior facades.
4. A site plan of the area of the Tower of the Winds.
5. Top view of the roof, i.e. the bird's eye view.

The objective of this work (Tryfona, 2015, Tryfona& Georgopoulos 2016) is to meet the above requirements, mainly through the production and exploitation of point clouds that will be produced almost exclusively from digital images of the entire building, with the help of contemporary algorithms. The horizontal and vertical section plans will emerge from the point clouds and from very few geodetic measurements. Orthophotos will be produced from the digital images, the point clouds and the mesh, for each section plan and elevation. A survey network was established to ensure the connection of each side of the monument in 3D space and to provide the minimum geodetic information for the proper geometric documentation, while at the same time ensuring the required accuracy. The network refers to an arbitrary local coordinate system to avoid deformations of the shape or the size of the Tower of the Winds that can be caused by projections of a national mapping reference system.

The main bulk of data were the digital images. They were taken using a calibrated Canon 1Ds MIII full frame DSLR with various fixed lenses (16mm, 24mm, 50mm etc.). These images were taken with the camera handheld or on a photographic tripod, but also from a special aluminium tripod able to hoist the camera at a height of approximately 8m and also from the scaffolding which was constructed as the restoration works progressed. In total 1300 images were taken of the outside and the inside of the monument.

The coordinates of all the surveyed points were calculated and referred to each of each elevation projection plane. As the acquired images were too many to be processed together, they were inserted to the appropriate software in chunks, one for the exterior and one for the interior of the monument. The processing for each chunk was performed using masks in order to avoid redundant information and deleting unnecessary images. The point clouds were edited by deleting unnecessary points and noise and then, the chunks were merged, resulting to the creation of two integrated parts, which included the exterior and the interior of the monument.

A small number of the points that were measured in the field were used in the point clouds to achieve the georeference. Thus, the point clouds acquired coordinates (X, Y, Z) in the arbitrary coordinate system that was defined at the beginning. This enabled the separation of some georeferenced chunks, from the georeferenced point clouds. This separation was necessary, because of the low availability of RAM (8GB) and the large amount of information necessary to be processed. Subsequently, the creation of the surface for each chunk followed and the inevitable holes were filled using another piece of software, i.e. Geomagic v.12. To sum up, the generated surface and the images enabled the production of the orthophotos for each surface required. Some radiometric corrections were necessary and were performed using standard image processing software.

Some problems that occurred during the whole process should be mentioned. Firstly, there were some omissions for the completeness of the sections, i.e. projections and other details. Some extra shots were taken, to cover these omissions. Also, more problems occurred during the aligning of the images. Due to the small overlap and because of focusing and lighting problems, some images could not be aligned. This problem was solved with some extra shots that had greater overlap and with the use of special artificial lighting and a tripod, for better illumination and stability.Moreover, some difficulty arose while creating the surface, i.e. the mesh, of outside and inside parts of the monument from the merged and georeferenced point clouds. On account of the large volume of information (>10 GB), the data

processing was not able to be performed with the computing power available. The solution came with sectioning of the georeferenced point clouds, exterior and interior, into smaller chunks, with less volume.Additionally, after the creation of the surface there were some holes that needed treatment. Appropriate software, namely Geomagic Studio 2012, was used to elaborate the mesh and fill the holes. Finally, some issues occurred in the orthophotos. There were lighting problems and redundant information which were also fixed with the same software (Geomagic Studio v.2012).In Figure 3some examples from the resulting drawings are given.

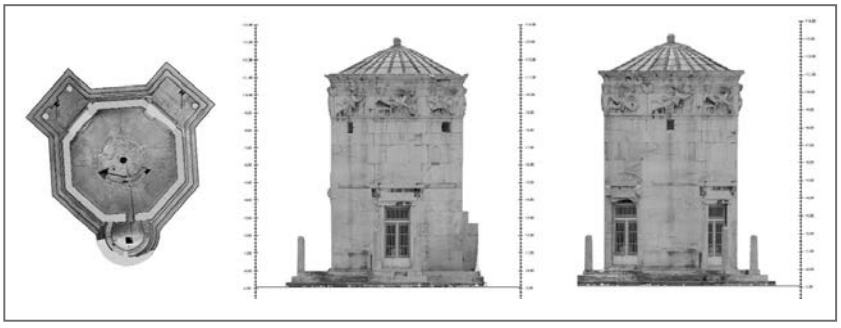


Fig.3: The horizontal section plan at 1m from the stylobate (left), the northwest façade of the Tower of the Winds (center) and the north façade of the Tower of the Winds (right)

After the processing of the images, the point clouds, the orthophotos and the required products for the geometric documentation of the Tower of the Winds were made possible. In conclusion, it has been shown that the rapid evolution of technology can greatly help mapping in such detail and accuracy.

For achieving even better results with such a process, the following actions are proposed:

- Better lighting and focusing when acquiring images in the field, for a better monitoring of the object.
- Uniform distribution of measured ground control points, as in some areas there was an excess of information and in other areas lack of observations.
- More available RAM and computing power for faster results.

4. 2 The restoration of a collapsed bridge[25]

A variety of arched stone bridges exist in the Balkan area, built mainly in the 18th and 19th centuries or even earlier. Just in the Epirus region in north western Greece there are more than 250 magnificent examples of such historic structures spanning over the rivers and streams and

[25] Adapted fromStathopoulou et al. 2015

bridging them with one to four arches. Such structures were built for pedestrian and animal passage, as the rivers did not allow easy crossing, especially during winter (Leftheris et al., 2006).

The stone bridge of Plaka over river Arachthos was a representative example of the monuments. It was built in 1866 by local Greek stonemasons in order to facilitate transportation and trade needs (http://www.petrinagefiria.uoi.gr/). It was the widest stone bridge in the area of Epirus with 40 m span and the biggest single-arch bridge in the Balkans with a height of 20 meters. Next to the main arch, there were two smaller ones 6 meters wide, the so-called relief arches.

Apart from its significant size and age, the stone bridge of Plaka was a renowned stone bridge in Greece because of its emblematic historic meaning. Firstly, it was the border between free Greece and the occupied part of Greece by the Ottoman Empire between 1881 and 1912. During World War II the bridge was bombed by the German army with partial damages. At the same period, representatives of the various armed groups of Greek Resistance signed the Treaty of Plaka on this very bridge. Unfortunately, in February 2015 the emblematic stone bridge collapsed after severe flooding and fierce water volumes coming from the mountains.

Before the implementation of any actions, a thorough geometric documentation is necessary, as clearly dictated by the Venice Charter (1964). For that purpose, the Laboratory of Photogrammetry undertook two tasks (a) to produce digital three-dimensional drawings from a documentation study conducted in 1984 using traditional surveying techniques (Karakosta et al. 1984) and (b) to produce a textured three-dimensional model of the Plaka Stone Bridge in order to geometrically document its shape and size before the collapse. This 3D model would be produced from existing images taken by visitors of the bridge over the years. These documentation products will form the basis for any eventual reconstruction study.

Common image-based 3D modelling of the current state of a monument requires data acquisition in the field. Surveying, photogrammetry and laser scanning techniques can be combined to produce a full and accurate 3D model of the object. Such approaches cannot be applied in cases of sudden loss of cultural heritage objects due to several reasons such as fire, earthquakes, floods, looting, armed conflict, terrorism, attacks etc.

Modern photogrammetry and computer vision techniques manage to create useful and accurate 3D models of objects of almost any size and shape, by combining robust algorithms and powerful computers.

Multiple images depicting the object from different viewpoints are needed and the so-called SfM and MVS procedures are implemented. These images do not necessarily need to have been captured by calibrated cameras, though. Compact or even mobile phone cameras can also be used. Moreover, capturing geometry is nowadays flexible, in contrast with the traditional strict stereo-normal case of the past. A variety of recent studies are examining the creation of 3D models of cultural heritage objects and sites with the use of SfM algorithms (Barsanti&Guidi 2013, Kersten &Linsteadt 2012, Remondino et al. 2012, Santagati et al. 2013). The lack of images or other surveying data in lost cultural heritage objects has led to the use of random, unordered images acquired from the web. However, few projects, many of them EU funded, make use of data available in the web for such a purpose. Some recent studies are dealing with the 4D (space-time) virtual reconstruction of Cultural Heritage objects using web-retrieved images (Kyriakaki et al. 2014, Makantasis et al. 2014, Santos et al. 2014). An approach for diachronic virtual reconstruction of lost heritage based on historical information integrated with real metric data of the remains was proposed by Guidi& Russo in 2011.

For image-based virtual reconstruction many images from different points of view are required. As already implemented in similar cases in the past, the contribution of people that have visited the area for tourism or other reasons and have taken pictures was sought. Crowdsourcing has already been used for applications in the cultural heritage domain (Oomen&Aroyo, 2011). However, none of the similar actions produced a metric product like the present one.The key aspects of a project like the present one, concerning crowdsourcing information can be summarized as follows:

The project has a time limit

- The contribution of the users is of one type of content, i.e. images or video sequences.
- Special information (metadata) about the viewpoint of the images, the equipment used, or the time taken could be useful.

To provide a suitable framework for the above, a website has been developed using the Drupal CMS. Drupal is a Content Management System (CMS) with proper functions for community websites and has been used for educational and research crowdsourcing purposes (Kaliampakos et al. 2015, Munoz-Torres et al. 2011). More specifically, the website developed includes five sections: (a) a news and announcements page, (b) a general info page, (c) a submit content (images) page, (d) a submit page for volunteers and (e) a blog

page. To collect the images, the "submit images" page is the only section utilized, since it also provides the required information to the contributors.

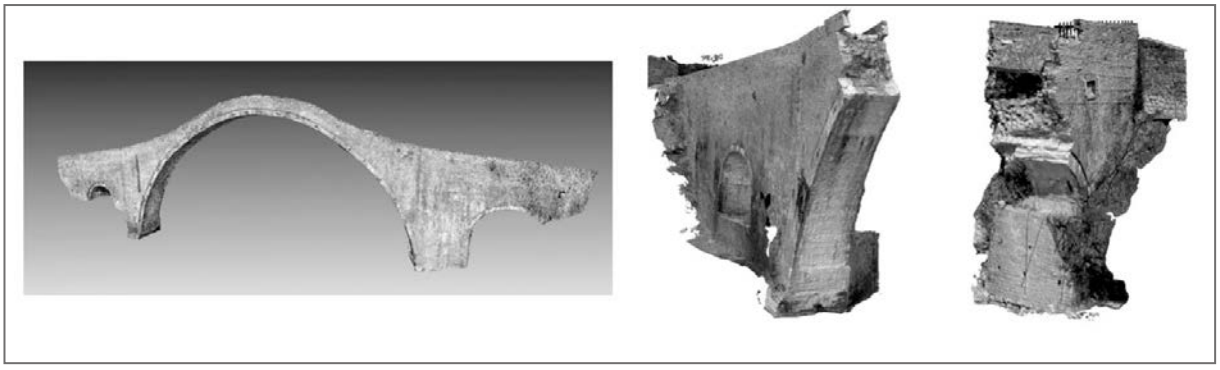
Within the first month of its operation the website has been visited around 2800 times (Table 1). More than 470 images were uploaded to the platform during these sessions by more than 130 contributors. Apart from the uploaded content, approximately 200 images and 15 videos were collected through other means, mainly by ordinary mail delivery, by contacting the contributors.

Most of the collected images were of high resolution, correctly focused and without significant perspective or optical distortions. However, we had to cope with some special challenges in order to exploit as much as possible the rest of the images, which had many different problems. In addition, most of the collected photos were taken facing upstream and mainly from the east riverside due to landscape inaccessibility. This causes gaps and difficulties for the algorithm to converge to a stable geometry. After a thorough and careful sorting, it was established that less than 60 images fulfil the needs of the project in terms of viewpoint, image resolution, lighting conditions, occlusions etc., which corresponds to 10% of the total contributions.

The selected data have been processed using commercial as well as free software. VisualSfM is a free GUI application for 3D reconstruction that implements SfM and PMVS along with other tools (Furukawa & Ponce 2010, Furukawa et al. 2010, Wu 2007, Wu et al. 2011,Wu 2013). In this case study, a dense point cloud was produced by 51 images.

In order to improve the results, a masking procedure was applied on the images while processed in AgisoftPhotoScan. Therefore, background elements that are subjected to temporal changes and obstacles (people, trees, mountains etc.) have been excluded during photo alignment. This has as result less noisy dense point clouds. A mesh has also been created, followed by the texturing procedure (Fig. 4).

Fig.4: A view of the textured mesh created in AgisoftPhotoScan and the3D models of the remaining parts of the bridge (© authors)



The experts working for the restoration proposal needed also the documentation of the current situation. Hence during a campaign some months ago, data was collected for the creation of the 3D models of the remaining pedestals. They were imaged with a high resolution DSLR and some Ground Control Points (GCP) were measured. Using again SfM/MVS software the three-dimensional models were produced (Figure 4) and served as a detailed geometric basis for the restoration proposal.It should be stressed that the wide promotion of the 3x3 Rules proposed by CIPA (Waldhäusl& Ogleby1994) and revised in 2013, available at the relevant webpage (www.cipa.icomos.org) would ensure the existence of more useful images and related metadata for the Plaka Stone Bridge, as the public would be more aware of the eventual future significance of their souvenir images. This may be useful in the future for other monuments in similar situations.

4. 3 Geometric Documentation of the Holy Aedicule[26]

The Church of the Anastassis (Resurrection) or of the Holy Sepulchre, as it is mostly known to western visitors, lies majestically in the heart of the Old City of Jerusalem, and has a very long history spanning over seventeen centuries. The first church in this site was erected by Saint Helen, the mother of Emperor Constantine the Great, when she discovered the Holy Cross at the beginning of the fourth century A.D. Since then, a lot of constructions, modifications, additions, renovations and alterations took place, the major one being that imposed by the crusaders in the 12th century A.D. when they conquered the Holy Land.The Church of the Holy Sepulchre in Jerusalem comprises within its walls, among others, the main large Greek Orthodox church, the Catholicon, the Holy Rock of Golgotha, the Tomb of Christ and the place where the Holy Cross was discovered. Adjacent to these main places of worship and pilgrimage are numerous little chapels, monk cells, store rooms, corridors and staircases, extending to approximately 8000 sq. metres in plan area and to about 35 metres of height difference. The main building complex has common borders with the Greek Orthodox Patriarchate, the Syrian Patriarchate, the Roman Catholic Monastery, the Ethiopian Monastery and a series of little souvenir stores.

Today the Church complex is a living monument and it is visited every year by thousands of pilgrims. All different Christian Communities

[26] Adapted from Georgopoulos et al., 2017

are represented and active within its walls. Greek Orthodox, Roman Catholic Franciscan, Armenian and Coptic priests and monks and others are coexisting in harmony worshipping the same God. The monument is divided into sections each one "belonging" to a Community. There are, of course, sections of it common to everybody. All Christian Communities respect this unique state of ownerships while it is hardly sensed by the visitors. It constitutes the Status Quo of the Church of the Holy Sepulchre, which has its origins in historical tradition.

The Tomb of Christ is in the Church of the Holy Sepulchre in Jerusalem. The original Holy Rock is covered by the Holy Aedicule, a majestic little structure situated within the large complex of the Church of the Holy Sepulchre in the centre of the Rotunda, a 25m tall cylindrical building. The Holy Aedicule is the latest in a series of constructions and additions to the initial Crusader Aedicule which had occupied the same site for centuries (Biddle 1999). Responsible for the design and reconstruction of this latter one was the architect Komnenos in the early 19th century. The present form of the Holy Aedicule, which exists without significant alterations since 1810, is a result of repair and restoration of the earlier building after the catastrophic fire of 1808. It has approximately a length of 8.3m, a width of 5.5m, and a height of 6.7 m plus a dome of 6.0m on its roof.

In 1927, this construction was badly damaged by an earthquake which also weakened the dome over the Rotunda and other parts of the complex. Marble slabs cover the outside surface of the Aedicule, while it is also surrounded by a metallic construction erected by the British in 1947 which provides support and stops the collapse of the Holy Aedicule. Timber wedges were inserted between the steel girders and the load-bearing stone walls of the Holy Aedicule. It appears that this steel girdle is no longer functional, as lately deformations were observed especially as far as the Komnenos' marble slabs are concerned. The inside the Holy Aedicule is a complex structure with two very confined, highly ornamented rooms.

However, the state of preservation of the Holy Aedicule continued to deteriorate due to the water and humidity transfer phenomena within, around and below the Aedicule structure, due to incompatible past interventions and due to the successive earthquake activity, to the extent that proper conservation, reinforcement and repair interventions were needed to rehabilitate the Holy Aedicule. The first task of the interdisciplinary team of NTUA was to perform the geometric documentation of the Holy Aedicule, as foreseen in the Venice Charter (article 16). This documentation was, of course, part of a wider range of technical studies of the interdisciplinary team of NTUA engineering experts.

In the past, several efforts for the geometric documentation of the Church of the Holy Sepulchre and the Holy Aedicule in it took place. Already since the 60's the Franciscan monk Corbo, documented, mainly as an archaeologist, a large part of the Church using of course the then available technological means (Corbo 1981). Later (Biddle 1999) a team of British experts documented in high detail the Holy Aedicule. In the years 1993-1999, the Laboratories of General Geodesy and of Photogrammetry of NTUA undertook and executed the complete geometric documentation at a scale of 1:50 of the Church of the Holy Sepulchre for the Greek Orthodox Patriarchate (Balodimos et al. 2003, Georgopoulos &Modatsos 2002, Lavvas 2009). Finally, in the years 2007-2009 a team of Italian experts embarked on terrestrial laser scanning for the complete 3D documentation of the Church (Tucci &Bonora 2011).

For the current geometric documentation of the Holy Aedicule before the restoration works, several campaigns were necessary. The first one took place in May 2015 (Moropoulou&Labropoulos 2015) and the second one in January 2016. Data acquisition included geodetic measurements, digital image acquisition and terrestrial laser scanning around and inside the Holy Aedicule.

This present geometric documentation aims at the production of the necessary base material on which the structural and material prospection studies will be based. For the needs of this documentation it was decided to produce a high-resolution three-dimensional model and to perform specialized high accurate geodetic measurements for the production of conventional 2D base material on one hand and for the documentation of the deformations and deviations of the construction today on the other. Due to the peculiarities of the object of interest, the crowds of pilgrims always present inside and around the Aedicule, most of the works for the data acquisition took place after the closure of the Church. The methodology implemented for the production of the above described products applied the most contemporary geomatics techniques and specialized instrumentation. Briefly, an automated 3D imaging methodology based on high resolution digital images, terrestrial laser scanning and high accuracy geodetic measurements were implemented. These data were georeferenced to an already existing local plane projection reference system from previous work of NTUA (Balodimos et al. 2003).

Specifically, the geometric documentation produced an accurate three-dimensional (3D) model with the use of photogrammetric and geodetic methods, both for the interior and the exterior of the Holy Aedicule through images and scanned data collection for the reconstruction of the model in actual scale. This was realized via data

processing (sorting of images, orientation, export 3D cloud points, dense point cloud processing, creation of surfaces and grouping them), for reconstructing 3D scenes of increased reliability and high accuracy. From this 3D model, the production of sections at specific positions was also possible, supported by suitable geodetic measurements.

For the image-based approach, digital image sequences from varying distances were collected using a calibrated professional Canon EOS-1Ds Mark III full frame CMOS digital camera with 21MP resolution (5616x3744 pixels) and 6.4μm pixel size, aiming to reconstruct the 3D scene of the Holy Aedicule through structure from motion (SfM) and Dense Image Matching (DIM) techniques. These techniques are the state of the art in reconstructing 3D scenes and offer high reliability and high accuracy as a cost and time effective alternative to the use of scanners. For this purpose, different lenses with a varying focal length (16mm, 50mm, 135mm and 300mm) were used. The image acquisition took place under low natural lighting conditions and during the night, exploiting the existing artificial lighting. No additional light sources were used (flash, studio flash, etc.). Therefore, the use of a photographic tripod was necessary since in some cases, the exposure time was up to 30 seconds. 3.757 images in total were captured requiring up to 59.3GB of hard drive space. Image acquisition was carefully planned so that all details of the object were imaged on at least three consecutive images. Control points were not measured but were extracted from the drawings of previous documentation effort(Balodimos et al. 2003). However, a selection process was applied in order to ensure a highly accurate result according to the requirements of the study and the significance of the object. Finally, distances were accurately measured on the Holy Aedicule in order to scale the final 3D model. Problems in the acquisition processes such as lighting conditions and camera-to-object relative positioning as well as difficulties in the alignment step and mesh optimization are also encountered without reducing the accuracy of the final results. These problems included, among others, the large distances between the object and the camera, the poor or inadequate lighting, the continuous population of the area by pilgrims, the smoke from the candles, which create faded areas on the images or unpredictable optical deformations due to the refraction effect caused by the temperature difference of the air.

In addition, laser scanning was also employed, in order to cover the areas where image acquisition was impossible, like e.g. the dark and smoked interiors of the two domes of the Holy Aedicule and the two staircases leading to the construction's roof. The two techniques act complementarily to each other. For this procedure, the terrestrial laser scanner FARO 3D X 330 was chosen as it is a lightweight third

generation scanner, which uses the phase shift method for measuring the distance. It has the ability of collecting one million points per second with an accuracy of 2-3 mm in its space position. It can record points 360 degrees around the vertical axis and 300 degrees around the horizontal axis. For the complete coverage of the Holy Aedicule special scanning strategy was designed, in order to avoid gaps in the point clouds on one hand and to record all necessary details on the other. For that purpose, it was necessary to acquire overlapping scans from different scan positions. In total 58 scans were needed, of which 13 around the Holy Aedicule, 8 on top of its roof, 8 in the two staircases, 10 from the Rotunda Gallery and 19 in the inside. The total number of points collected was 65 million for the outside and 42 million for the inside. The density of the scans was selected to 1 point every 5 mm, in order to record all fine details, even those necessary at a later stage. The time required for each scan varied depending on the distance of the scanner to the object, a fact which differentiates the total number of points necessary. In any case the time for each scan was not more than a few minutes.

The creation of the final accurate three-dimensional model from the digital images is a complicated procedure requiring large computation cost and human effort. It includes the already mentioned collection of geometric data in limited space and time, the selection of the images, the 3D point cloud extraction, the creation of the surface, the noise filtering and the merging of individual surfaces. It is important to note that in such cases, the detail of the surface is very important, thus the noise filtering must be a carefully implemented procedure. The initial data were processed using various software packages in order to produce the final accurate 3D model of the Holy Aedicule. After the careful selection of the necessary images and the creation of thematic folders, the radiometric correction of the imagery took place aiming at their quality improvement by minimizing the effects of the shadows and dark areas. Then, the images are imported into the software that implements SfM and DIM techniques. Subsequently, the dense point cloud is exported and imported to another software package in order to be subjected to a time-consuming process for removing outliers.

Finally, the processed point clouds are merged and exported again in order to be scaled. The SfM technique for the orientation of the images and the 3D point cloud extraction procedure were realized usingAgisoftPhotoScan® software, which has been extensively evaluated for increased accuracy in prior research internationally but also of the Laboratory of Photogrammetry. For the full coverage of the Holy Aedicule and the creation of a complete 3D model, images were captured from many different locations. It is important to note

that for every part of the 3D model, the sparse point clouds consist of 10.000 to 60.000 points. After an inspection of the alignment results, the generation of the dense point cloud model took place. At this stage, the AgisoftPhotoScan® algorithms, based on the estimated camera positions calculate depth information for each camera to be combined into a single dense point cloud. It is noted that the dense point cloud of each part of the 3D model of the Holy Aedicule consists of about 35.000.000 points and the entire model of about 280.000.000 points (Fig. 5). At this stage, colour is attributed to each point based on the images where it appears. In the outside coloured point cloud of the Holy Aedicule is presented.

Fig.5: The coloured point cloud of the Holy Aedicule(© author)

The processing of the Holy Aedicule point cloud was realized within the Geomagic Studio®, Meshlab® and Cloud Compare® software. Also, to sort out the outliers, several filtering algorithms are applied using the above-mentioned software packages. In addition, algorithms were applied in order to make the point cloud uniform in terms of point spacing and reduce its density. Finally, the processed dense point clouds are wrapped into meshes. Through the created 3D model, it is possible to identify vulnerable and destroyed areas of the Holy Aedicule with not physical access on them.

The laser scanner data were thoroughly examined for their completeness in situ, i.e. before the departure of the team from

Jerusalem.For that purpose, test registrations of the point clouds were performed in order to establish this possibility on one hand and their completeness on the other. After these tests, additional scans were required sometimes from very unconventional scan positions. The final point cloud registration was performed in the Laboratory of Photogrammetry of NTUA. As the volume of data was huge it was decided to perform the registration separately for the inside and outside parts of the Holy Aedicule. For the point cloud registration, at least three points are required.This role was undertaken by the special targets, whose coordinates in the common reference system were carefully determined, as ICP (Iterative Closest Point) algorithm does not provide reliable results in such cases. Hence after registration the point clouds were also referenced to the common system. The accuracy achieved for the registrations was of the order of 2-3mm.

For registering and georeferencing the three-dimensional models of the Holy Aedicule which were produced with the methods described to the common reference system, specially targeted points were put in suitable positions on inside and outside of the Holy Aedicule but also in the surrounding area. In total 38 control points were used.

Accurate geodetic measurements were performed in order to assess the verticality of structural elements, like the iron girder set up by the British in 1947 and some of the pillars of the monument. For that purpose, a local 3D network was established at the site around of the Holy Aedicule in order to support the creation of the 3D model of the Holy Aedicule and to determine probable deformations and displacements of the monument. The above-mentioned geodetic network connected with the old geodetic network which had been established the period 1993-1999, in the framework of the Geometric an Architectural Documentation of the Church of the Holy Sepulchre in Jerusalem(Balodimos et al. 2003).

For checking the eventual deviations and deformations of the structural elements several measurements were performed. A longitudinal section of the upper dome of the structure, four horizontal sections of the same dome at 6.0m, 8.0m, 8.8m and 12.0m from the floor, two horizontal sections of the pillars and the marble supports of the Aedicule at 0.7m and 4.4m from the floor. In addition, special accurate measurements were conducted in order to establish the deviation from the vertical of the steel pillars of the cage built by the British.

Moreover, the change of the position of each the five basic columns at the north façade and the counterpart columns at the south façade of the Holy Aedicule, was determined from the corresponding position that the British as registered in 1947. These measurements led to the

important conclusion that the upper dome of the structure does not present any significant deformations, as all sections were concentric circles within 7mm. This was also established by examining the longitudinal section of dome.The horizontal sections of the pillars revealed deviations between 40 and 90 mm. These results were also verified from the 3D model produced.

5. Concluding remarks

With the presentation of a few characteristic implementation examples, it has been shown that digital contemporary technologies can contribute decisively to the conservation of Cultural Heritage. The final products are 3D models and virtual restorations or reconstructions of monuments that either do not exist today or are at risk. Consequently, digital technologies and interdisciplinary synergies are of utmost importance. Equally important are the discussions and suggestions of scientists who have studied the monuments from an historical and archaeological point of view, proving once again that such interventions are a multi-disciplinary process.

Virtual reconstructions, virtual restorations, monitoring and 3D models on the other hand support many other disciplines involved in cultural heritage. They help architects and structural engineers in their work for monuments especially in cases of restoration, anastylosis etc. Archaeologists and Conservationists have a very good tool at their disposal for their studies. Many applications can be generated from a virtual reconstruction like virtual video tours of the monument for educational and other purposes for use by schools, museums and other organizations, for incorporation into a geographical information system (GIS) for archaeological sites, for the design of virtual museums and the creation of numerous applications for mobile devices (e.g. mobile phones, tablets etc.).

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Sustainability of Cultural Heritage through new technologies

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Under the trend of technological progress, the methods used for interpretation, documentation and promotion of cultural heritage have evolved significantly over the last decades. Modern technology and the digital revolution have fundamentally altered the way in which cultural images and applications are produced, distributed and accessed. The evolving field of using Information Culture Technologies (ICT) for the benefit of cultural heritage has produced in a short period of time a wide range of applications for scholarly research, public information and marketing as well as management of cultural sites. It has also provided new tools for cultural heritage preservation, as well as access, interaction and knowledge sharing. In terms of documentation and interpretation in particular, the contribution of sciences such as physics, chemistry, biology, earth sciences, mathematics, statistics and computing are regularly used to enlighten specific questions in regard to the archaeological data. This multidisciplinary field engulfs the discipline of Archaeometry, which is a combination of archaeology by ultimate aim (*αρχαίον*) and natural science by approach (*μέτρον*), thus introducing a new scope to the solution of questions.[27] In regard to cultural issues observes and documents artifacts and monuments in terms of dating and covers various research topics including remote sensing techniques, conservation and restoration, mathematical methods, environmental rehabilitation, biological and social anthropology etc. Archaeometry techniques can document and communicate ancient artifacts, places and practices faster, in greater detail and better perception amongst a broader public than ever before.

Modern technology has also provided a variety of non-intrusive field archaeological techniques including aerial photography, geophysical and geochemical surveys, metal detecting and geographical information systems (GIS). Thus archaeological work, which is by nature costly in time and money, is assisted by efficient methods which, in most cases, require a small amount of equipment and less labor expenses[28].This is in accordance with the provisions of the European Convention on the Protection of the Archaeological

[27] Reindel, Markus & G.A. Wagner, (2009), *New Technologies for Archaeology, Multidisciplinary Investigations in Palpa and Nasca, Peru*, Springer Science & Business Media, p.2.

[28] For more information about non-intrusive archaeological survey techniques see Imogen Burrelli "What are non-intrusive archaeological survey techniques, and how they are used to archaeological advantages during excavations" in The Post Hole, Issue 36, March/April 2014, p.8-13. Available at http://www.theposthole.org/sites/theposthole.org/files/downloads/posthole_36_261.pdf (accessed 29 April 2018).

Heritage (Valletta-Convention), which states that nondestructive investigation methods should be applied wherever possible (Article 3)[29].

Within UNESCO[30], the specialized cultural agency of the United Nations, systematic efforts are made to ensure that all countries benefit from scientific and technological progress and innovation. This approach is in consistence with the United Nations 2030 Agenda for Sustainable Development, with its 17 Sustainable Development Goals. Within this framework the Organization promotes ICT that address specific challenges for the preservation of cultural properties, such as the impact of climate change and natural hazards. The 2005 Convention on the Protection and Promotion of the Diversity of Cultural Expressions recognizes that the protection, promotion and maintenance of cultural diversity are an essential requirement for sustainable development for the benefit of present and future generations and therefore promotes the use of new technologies and encourages partnerships to enhance information sharing and cultural understanding. In addition to the various investigations that have been carried out to date, the Parties to the 2005 Convention are gradually including digital applications in their quadrennial periodic reports, as they move forward in drafting operational guidelines exclusively focused on this topic.

The International Council on Monuments and Sites (ICOMOS)[31] on the other hand, which is the competent professional network that works for the conservation and protection of cultural heritage sites around the world, as well as the official technical consultant to UNESCO, is also promoting the use of modern technologies such as digital image processing, digital orthophoto production, terrestrial laser scanning and 3D model processing in order to fully document the existing architectural heritage. Therefore, in case a monument is destroyed or damaged and in order for the cultural managers to be able to be able to reconstruct, at least digitally, it is necessary for a full scanning project to have taken place beforehand. Although the subject of an actual reconstruction is still debatable among scholars the perspective of being able to retrieve, with the use of modern technology, data

[29] The European Convention for the Protection of the Archaeological Heritage (revised) replaced and updated the original London Convention of 1969. It reflected the change in the nature of threats to the various types of archaeological heritage It established a pool of new basic legal standards for Europe, to be met by national policies for the protection of archaeological assets as sources of scientific and documentary evidence, in line with the principles of integrated conservation

[30] The United Nations Educational, Scientific and Cultural Organisation (UNESCO) is a specialized agency of the United Nations (UN) whose main objective is to contribute to peace and security by promoting international collaboration through educational, scientific, and cultural reforms in order to increase universal respect for law and human rights along with fundamental freedom proclaimed in the United Nations Charter (www.unesco.org).

[31] www.icomos.org

concerning a ruined or extant monument with the use of modern technology is undoubtedly worth wile. The introduction of digital technology in the field of preservation and documentation of monuments has engaged extensive conversation on principles of reconstruction of cultural heritage and has contributed in somewhat shifting the overall negative position towards it. According to the Burra Charter (Australia)[32], reconstruction can only be accomplished when a site is incomplete through damage or alteration, and enough evidence exists to reproduce the earlier state of the fabric of the monument. And this is where ICT come into the picture. The information system generated by the use of digital photogrammetry and Geographical Information System leads to the efficient use of data, in a cost efficient way, which is very valuable for saving cultural properties. The loss of many monuments due to armed conflicts raging across Syria, Iraq and other countries in the Middle East has spurred the international scientific community and many cultural organizations to apply all available technologies, such as 3D scans, drones, lid methodology and satellites. Even individuals were encouraged to post photographs of monuments and sites before destruction thus providing valuable tools to prevent the possible permanent loss of data for cultural heritage.

The application of Information Culture Technologies has definitely influenced several aspects of heritage preservation and enhancement management policies. In earlier years, both UNESCO and ICOMOS were generally opposed to reconstructions, following the provisions of the Venice Charter, with very few exceptions (for example the reconstruction of the historic centre of Warsaw in 1980's and the Mostar Bridge). The theoretical framework for adopting new technologies and archaeometry in the field of culture protection and preservation has been formally introduced within ICOMOS with the approval of the Interpretation and Presentation of the Cultural Heritage Sites Charter, also known as Ename, which was the first international text ratified by ICOMOS to recognize the importance of using virtual reconstructions in the field of archaeological heritage. Among others, it recommends that "Visual reconstructions, whether by artists, architects, or computer modelers, should be based upon detailed and systematic analysis of environmental, archaeological, architectural, and historical data, including analysis of written, oral and iconographic sources, and photography. The information sources on which such visual renderings are based should be clearly documented and alternative reconstructions based on the same evidence, when available, should be provided for

[32] First adopted in 1979, the Burra Charter is periodically updated to reflect developing understanding of the theory and practice of cultural heritage management. The current version of the Burra Charter was adopted in 2013, Available at http://australia.icomos.org/wp-content/uploads/The-Burra-Charter-2013-Adopted-31.10.2013.pdf (accessed 29 April 018).

comparison" (Article 4.2.). Through this text archaeometry became officially the prime collaborator of cultural sciences.

Furthermore a special Committee has been established, ICOMOS International Scientific Committee on Interpretation and Presentation of Cultural Sites, with the task to study the evolving technologies and techniques of data interpretation and presentation, to evaluate their potential to enrich contemporary scientific discourse and to focus on the experiential dimension of visits to cultural heritage sites, particularly by means of various media and methods of public communication.

In 2009, the London Charter[33] on the Computer-based Visualization of Cultural Heritage was signed and approved and until today it constitutes the most important document of the international community in the field of cultural heritage and new technologies.

The Charter of Krakow (2000) on the Principles for the Conservation and Restoration of Built Heritage[34], included for the first time, in article 5, a specific recommendation for the use of new technologies in the field of archaeological heritage "In the protection and public presentation of archaeological sites, the use of modern technologies, databanks, information systems and virtual presentation techniques should be promoted". This addition, unprecedented in other previous charters, marks an important turning point in the use of information technology as a tool in the regular work of conservation and presentation of archaeological heritage. Consequently it should be considered as an important milestone in the history of virtual archaeology, leading through these new tools to the sustainability of cultural resources.

Several issues regarding the implementation of modern technologies to assist archaeological research have been thoroughly examined and evaluated by experts and cultural organizations in an effort to draw an effective framework with respect to the cultural heritage ethics. Under this perspective, for example, the European Archaeological Council (EAC), realizing the new possibilities that digital technologies are opening up for the promotion and presentation of archaeological research and investigation, EAC has organized in 2016, on the occasion of its annual meeting, a conference titled "Digital Futures: Archaeology in Europe" with the scope to explore developments in

[33] The London Charter was conceived, in 2006, as a means of ensuring the methodological framework of computer-based visualization for researching and communicating cultural heritage. Through extensive consultation with expert networks and the ensuing publication of successive drafts it was finally signed in 2009. So far it has been translated in 9 languages.

[34] Available at http://smartheritage.com/wp-content/uploads/2015/03/KRAKOV-CHARTER-2000.pdf (accessed 1 May 2018).

digital technologies and to consider how they may become embedded in general archaeological policy and practice over the next few years. It has also drafted guidelines for the use of Geophysics in Archaeology that provide an overview of the issues to be considered when undertaking or commissioning geophysical survey in archaeology.

During a meeting of EAC in Athens the use of technology for a better conception of monuments, sites, museum objects and others offering new methods of enjoyment and education was considered as essential for the sustainable management of heritage appreciation.

Culture Technologies und Sustainability

According to the above, it becomes, by now, easy to perceive that the new technological evolution has dramatically reshaped the value chain, in the way that it impacts the sustainability of the systems of governance for culture. Cultural Heritage has a historical, social, and anthropological value and it is considered as an enabler of sustainable development. Under this perspective it has been included in the United Nations' Sustainable Development Goals (SDGs) 11 and 8, which focus on the protection and safeguarding of heritage and the promotion of sustainable tourism respectively.

Culture, on the other hand, contributes significantly to a more balanced and sustainable urban or regional development and economy, providing many opportunities for social interaction and economic growth of host communities[35]. It is, indeed, widely acknowledged that the various aspects and methods of new technology represent a remarkable and valuable tool in terms of economy. Even though the traditional methods of research, assessment and collection of archaeological data are still being used, sciences and archeometry come to the aid of professionals in order to assist conservation, archaeology, restoration and so many other others, but also to save time and money. Geophysical surveys and remote sensing activities, for example, are nowadays often implemented before the dig in order to provide substantial indications as to the existence of antiquities, a piece of information which would otherwise take long periods of trial trenches to obtain and by sequence large amounts of money and human resources. The documentation of the finds is also easily assured with the use of 3D representations, laser scanning and several other

[35] See Jan van de Borg, "The impacts of culture on the economic development of cities", European Institute for Comparative Urban Research (draft), September 2005, Available at https://www.wien.gv.at/meu/fdb/pdf/intern-vergleichsstudie-ci-959-ma27.pdf (accessed 29 April 2018).

imaging techniques of high technology. Collections data can be far more detailed and stored in far less space than ever before. Databases can hold complete descriptions along with photographs and links to the raw elements of analysis and interpretation. In addition, the artifact can be compared to previous data to track any changes, such as deterioration or fading[36]. The three-dimensional building models are also increasingly necessary for urban planning within areas including buildings and structures of cultural heritage. In a sense it is perhaps the only though method preserving for the condition of a monument in view of natural and man provoked hazards.

Furthermore, the services of cyber crime, established in many countries, have the potential to counter illicit trafficking in cultural goods by monitoring online illicit markets of antiquities. During the last decades internet and web applications are used to locate sellers and buyers of cultural properties, whereas, with the help of modern technologies, efforts have been undertaken to strengthen available information, including by collecting police and court statistics on trafficking, theft and clandestine excavation of cultural goods through the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems[37] (UNDOC). One the other hand, laboratory tests of high accuracy are also employed against all sorts of fake provenance documentation.

Equally important is that ICT applications amplify the access of people to cultural information and services, since the public can enjoy them more easily, quickly and cheaply. The current trend to access internet via mobile phones has increased by millions the number of people who can have access to cultural platforms and webpages, thus eliminating significantly the geographical and even social barriers. In terms of economy, ICT provide a great opportunity for cultural industries, especially of tourism and computing, to adopt a sustainable and cultural-social centric approach and to develop into attractive and profitable stakeholders.

Conclusion

Cultural heritage is without doubt a particularly complex field. The protection and preservation of archaeological sites, ancient monuments, vernacular architecture, industrial installations, cultural

[36] Anderson, Gretchen and Giovanna Fregni, (2009), Technology as a tool for archaeological research and artifact conservation, Objects Specialty Group Postprints, Volume Sixteen, p.97, Available at http://resources.conservation-us.org/wp-content/uploads/sites/8/2015/02/osg016-08.pdf (accessed 29 April 2018),

[37] 13th United Nations Congress on Crime Prevent ion and Criminal Justice, Doha, 12-19 April 2015, (Item 5 of the provisional agenda), p. 8, Available at https://www.unodc.org/documents/congress/Documentation/A-CONF.222-12_Workshop3/ACONF222_12_e_V1500663.pdf

and historical landscapes and many other forms of cultural property is and should be the object of many disciplines. The integration of cultural management services with Archaeometry and Information Culture Technologies has already shown the successful impact in many of the processes of documenting and monitoring, interpreting and communicating the data, enhancing many aspects of the research, building capacity and achieving public involvement in the integration of the past into our lives. This new interdisciplinary approach has the potential for addressing the new challenges the heritage sector faces and securing its long-term sustainability and preservation, thus fulfilling the provisions of Article 5 of the London Charter *"Strategies should be planned and implemented to ensure the long-term sustainability of cultural heritage-related computer-based visualisation outcomes and documentation, in order to avoid loss of this growing part of human intellectual, social, economic and cultural heritage".*

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A case study of applying terrestrial laser scanning technology in undergraduate survey studio at Salmatomruk Panagia Kyria Tou Ouranou Church

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In the past decade, the rapid development of new technologies enabled the usage of recent and newly emerging digital tools, one of which is terrestrial laser scanners, in the analysis of historic structures, urban areas, and archaeological sites. Today the above-mentioned digital tool is more affordable as well as accessible, providing faster and more precise surveys as well as being used in new constructional capabilities. This article stems from the experience of an implementation of terrestrial scanning technology within the curriculum of a course in our architecture faculty. In the 2017-2018 Spring semester, in an undergraduate survey studio, this technique was used for the documentation of a 19th century Greek Orthodox Church, namely Panagia Kyria tou Ouranou. It was an experimental work to make a reconnaissance of implementing the latest technology of TLS (Terrestrial Laser Scanning) and comparing the obtained results with.

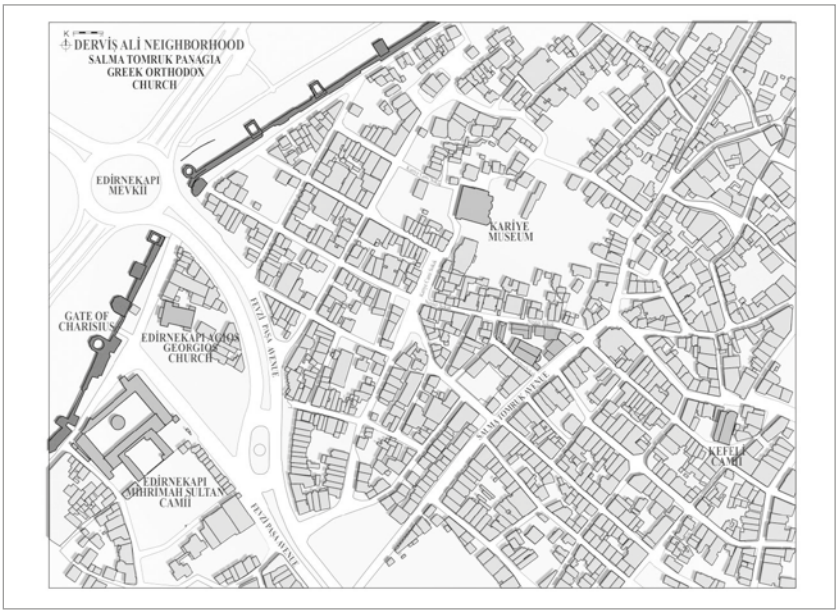

Fig.1: The church with the surrounding monuments in the nearby environment.

The afore-mentioned church is located in the Salma Tomruk neighbourhood at Edirnekapı, in the Fatih District on the Historical Peninsula in Istanbul (**Fig.1**). It is located in close proximity to Charisius Gate from which the neighbourhood takes its Turkish name "Edirnekapı" in the Ottoman Period. The Charisius Gate is a part of the Land Walls of Istanbul, dating back to 5th century CE. The Land Walls, which were built by Byzantine Emperor Theodosius II, are included in the UNESCO World Heritage List. They represent an important stratum of the historical city and the constitute examples of military structures with their building techniques, materials, and architectural style. The other important monuments in the vicinity are as follows: The Kariye Museum is a Middle Byzantine structure which

was used to be the katholikon of the Chora Monastery that was established by Metochites (Ousterhout 1987, 1). The structure was transformed into a mosque during the Ottoman Period and since 1934 it is used as a museum. Kefeli Camii which is located to the east of the Panagia Kyria Church is also a Byzantine structure dated to the 9th century, which was also used as a church by Latins after the conquest of Istanbul by Mehmet II before it was transformed into a mosque in 1640 (Ayvansarayi 2001,40). Mihrimah Sultan Camii to the southwest of the Panagia Kyria Church is an important edifice of Architect Sinan as an outstanding representative of 16th-century Ottoman classical style architecture. And finally, it is worth mentioning Edirnekapı Hagios Georgios Church, which is also a 19th century structure like the Panagia Kyria that was rebuilt on the plot of a pre-existing Byzantine church.

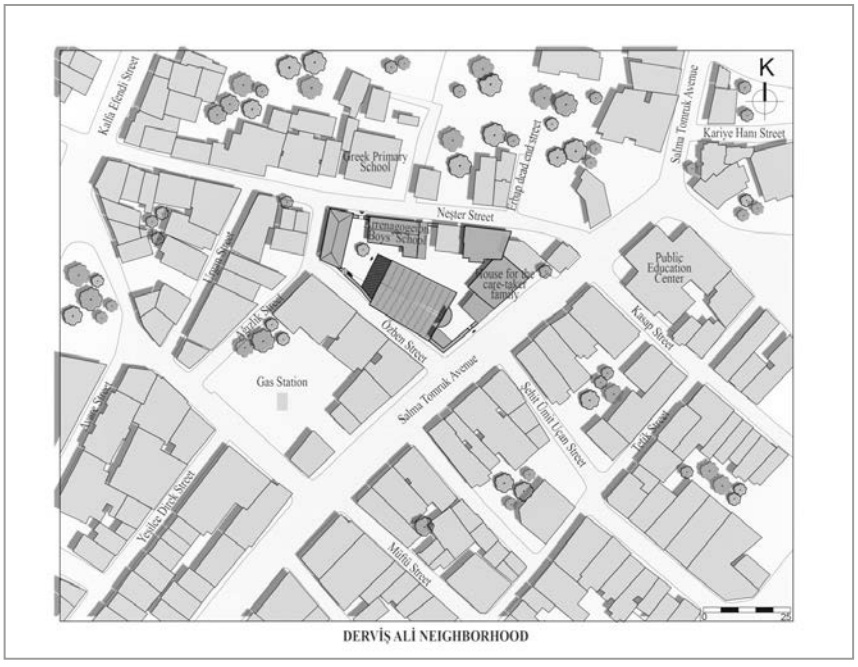

Fig.2: A close-up of the nearby vicinity of the church.

The Panagia Kyria church is located in a courtyard which the church shares with the house of the caretaker family and a boys' school. The courtyard has three entrances: one from the east, one from the south and one from the north (**Fig.2**). The east entrance is availablefrom Salma Tomruk Avenue, south entrance from Özben Street and north entrance from Neşter Street. The church is neighbouring two schools, one primary and one secondary school (arrenagogeion). The primary school is located out of its courtyard facing the north entrance and located on Neşter Street. While the arrenagogeion which is located in the same courtyardlies to the north of the church, adjacent to the courtyard wall. The church is adjacent to the courtyard wall from its south facade. The house of the caretaker family for the church is

located to the northeast corner of the courtyard.The terrain is sharply inclined from west to the east.The different levels in the courtyard are connected through stairs.

According to its inscription, the church was rebuilt in 1834 during the tenure of Patriarch Constantios (1830-1834) and its architect was a master-builder called Theodoros (Karaca 2001, 203). According to Janin, the church was rebuilt upon the remnants of a pre-existing Byzantine church which was used to exist here (Janin 1969,223). The naos which is rectangular in plan and has three naves is preceded by a narthex which houses the agiasma of St. Kyriake. Another agiasma is located inside the naos, reached by descending through five steps. The naves of naos are separated by five columns on both sides of the main nave. The main apse protrudes semi-circularly on the east from the main structure.

The facades of the church are simple. On the eastern façade, the rubble masonry is visible. On the other facades, rubble masonry with ashlar blocks on the corners is discerned and also spoliated elements are distinguished within the wall fabric.

Fig.3: Panoramic photos obtained from Faro 150 S laser scanner.

The scanning was accomplished with a Faro Focus S 150 Terrestrial Laser Scanner and paper checkerboards were used as targets. FARO's portable FocusS Laser Scanner series enables one to capture fast and accurate measurements of complex objects and buildings. A built-in 8 megapixel, HDR-camera captures detailed imagery easily while

providing a natural colour overlay to the scan data even in extreme lighting conditions (**Fig**. **3**). Focus S 150 is designed for mid-range measurements up to 150 m which is convenient for architectural surveys.

The parameters used for the scanning change the quality of the scanning but since the data obtained by laser scanners is extremely bulky it can be spelled in gigabytes; it should be kept in mind that unnecessarily big data cause problems of processing and obtaining orthographic-photos. Therefore the parameters such as resolution, scan quality, colour, and exposure metering should be carefully chosen for optimal results.

The scanning process was planned by Mine Esmer and Hayriye Ismailoğlu. The students helped with placing the paper checkerboards on site. The checkerboards were placed on vertical surfaces at different levels and on different planes so that the scanner by using them as targets places itself and sets the scanned data in order. In every scan, there should be a minimum of three targets intersecting with the previous scan so that during the registration the software can correlate two consecutive scans. A hand-drawn sketch was prepared by Ismailoğlu on-site in order to plan the scanning and to write manually the scan numbers which would be helpful during the processing operations. There were 15 scans, 14 of which were inside the structure and one of which was from the west of the entrance facade (**Fig. 4a**).

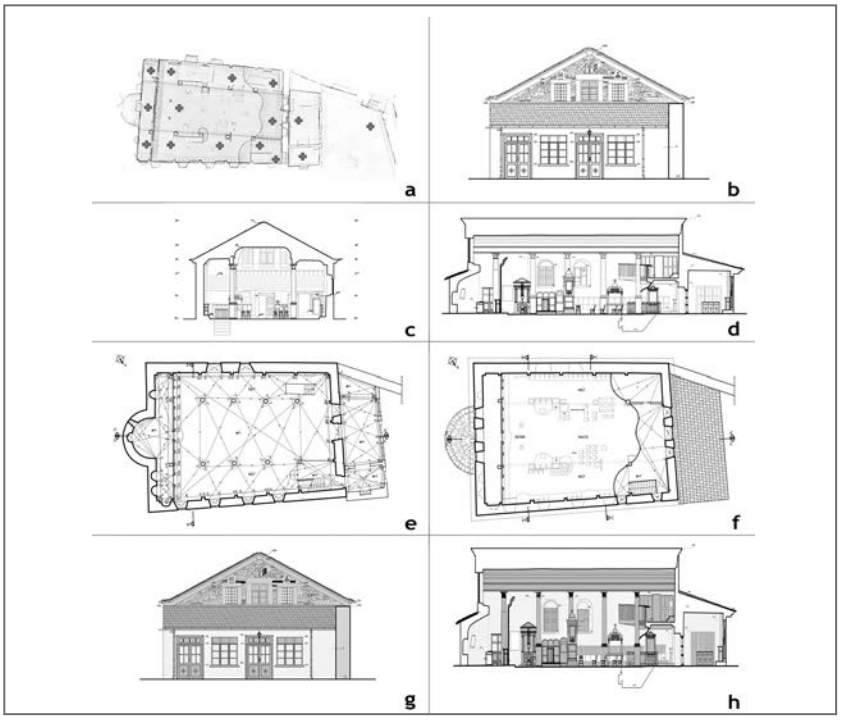

Fig.4: The overview map and survey drawings prepared by the students: a. Overview map on which scanning locations are shown by red plus signs, b. Eastern façade of the church, c. South-north oriented cross-section looking towards the west, d. East-west oriented cross-section looking towards the south, e. Ground floor plan, f. Gallery level plan, g. Eastern façade with material analyses, h. East-west oriented cross-section looking towards the south with material analysis.

For scan data processing users have a variety of choice to leverage the software tools most beneficial to their own workflow. The point cloud data captured with FARO Laser Scanners can be used with various software packages. Our data was processed with Faro Scene software and orthographic photographs were obtained by the same programme. These orthographic-photos were drawn with AutoCAD in order to obtain measured survey drawings in terms of a site plan, plans, cross-sections, and facades (**Fig 4**). Also, a video was produced from the point cloud by a Faro-Scene video application which works with the Scene software.

A comparison of the resulting work obtained from the survey studio with previous drawings of the structure detected in Karaca's book show us that technology provides us with very precise surveys (**Fig.5**). More detailed and precise documentation was possible through laser technology which enables us to keep a better record of the cultural heritage. On the ground floor plan, it is clearly recognized that the walls are not placed orthogonally. These different angles between walls of historic structures may be often be seen due to placing the structure on previously existing structures which are thought to be the case seen here, as shown in **Figure 5a**. Also, the comparison of the cross-sections presents that the previous one is lacking details and the inclination and height of the roof are not correct. The details of the gallery's parapet and western wall openings are also missing.

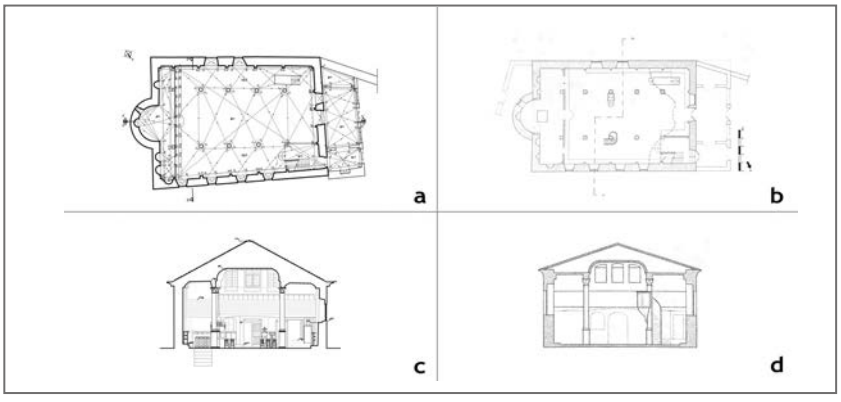

Fig. 5: A comparison of our survey data with the previously published data: a. Our ground floor plan, b. The ground floor plan in Zafer Karaca's book, c. Our cross-section, d. The cross-section in Zafer Karaca's book.

During the semester, the students both used laser technology products such as the panoramic and orthographic photographs and the traditional measuring, and photogrammetric methods as well, for preparing the survey drawings. For the undergraduate studio, the students were expected to solve problems of locating the structure which lies on an inclined terrain. Since not all of the facades could have been scanned, but only the western one, the students also used Agisoft Photoscan Professional software in order to form a model of the structure for the survey of the remaining three facades. The

inclined terrain on which the structure is located was a challenge for the students to work out the different levels the structure is laid on and show this on their survey drawings. They also prepared material and deterioration analyses which are part of analytical surveys of historic structures which convey the current condition of a structure in maximum detail and most precise measurements.

At the end of the analysis, a huge problem of humidity was detected in the structure for which urgent precautions must be taken in order that the precious wooden interior of the church with icons, joinery, and furniture do not suffer from it. The humidity was so high that our paper targets were moistened and fell from the walls due to dampness. A drainage system is suggested to be implemented for the structure in an emergency.

Furthermore, it is worth bearing in mind that it is crucial to take record of these valuable cultural edifices of the 19th century, which have their roots in the Byzantine Era. In case of any natural or man-made hazard, the survey of these precious structures gains major importance. Many of the churches do not have an up-to-date and detailed survey, although they are adorned with very delicate carpentry workmanship, icons as historical pieces of art, hagiographical and other liturgical data. Due to TLS technology, the time spent on site is minimized, whereas the accuracy of the data is maximized. Also in highly decorated structures like the Panagia Kyria Church, in which also documentation without touching the surfaces carry major importance, the TLS is indispensable. The point cloud obtained through the scanning process is a navigable and measurable 3D data which supply an opportunity of inspecting the structure as if on site once the scanning is complete.

Obviously, the new technologies offer us a wide range of possibilities. And it seems inevitable not to adopt new technologies and make use of them both in education and for the preservation of cultural heritage. The experience with terrestrial laser-scanning has been both fruitful and educative for us and for the students. Terrestrial laser scanning is becoming well-known for architects and conservators of monuments and it is used as the main tool for data collection for the necessary documentation (Kwoczyńska et al. 2016, 264). Therefore it seems that eventually the training for usage of TLS technology will be included within the curriculum of architectural departments in the very near future.

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Chapter Four:

European cultural heritage and sustainability. Initiatives and best practices

Geophysical prospection: the invaluable tool at the hand of archaeological research and the promotion of archaeological sites

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Introduction

Geophysical prospecting is widely used all over the Globe to detect and map buried ancient remnants. It comprises an integral part of the archaeological survey and it is extensively cited in any text or introductory book on the field archaeological methods. Practically it is consisted of an ensemble of different methods, which are all based on the different physical properties that the antiquities have with respect to the environment in which they are hosted in. In fact, the discernible physical properties create disturbances on natural or artificial fields which can be recorded and thus lead to the detection of their sources (causative structures). Further, techniques of processing and interpretation of these anomalies have been developed which allow assessment of the shape, dimensions and the burial depth of the subsurface structures. Consequently, these attributes may lead to the recognition of the identity of the structures, but taking also into account clues from the Archaeology, History, landscape, etc. of the site. For example, when investigating the area of an ancient cemetery, is reasonable to convey the detected subsurface structures to tombs if they have the suitable dimensions.

Assuming that the concealed structures are remnants of ancient human occupation, or underground ancient structures like tombs, we finally aim to image them. Nowadays this is feasible both in the 2D (two dimensional) or 3D context.

On one hand, we may apply mapping techniques, either resistance, or magnetic or electromagnetic. Under favorable conditions, the geophysical survey is yielding a final image of the ground view, which would resemble the result that would have been drawn if an excavation had taken place. The context of having a final product which would be more easily interpretable and understood by non-experts was given by the pioneering work of Scollar et al. (1986; 1990). In other words, the outcome of the application of geophysical prospection can be a precise image that resembles the plane view of the concealed antiquities. This approximates the plane view that could have been drawn if excavation had taken place and the ground view of the unearthed ruins was drawn. Clearly, if the case is such, then interpretation can be carried out by all involved parts, i.e. geophysicists, archaeologists, land developers, local authorities, etc.

An example is given in **Figure (1)** where the plane view of the buried ancient remains is easily recognized (Tsokas et al., 1994). The particular example is from the site hosting the ruins of ancient Europos in Kilkis Prefecture (Region of Macedonia, North Greece). Resistance mapping took place at a topographical table where once upon a time the ancient city of Europos stood. It is immediately evident that the ancient urban complex is revealed in this map. The use of images, like the one of the example, is valuable for the archaeological research: Excavation can be better planned and directed towards specific targets. Next, conclusions can be inferred based on the combined interpretation of the findings at the archaeological trenches and the final geophysical images.

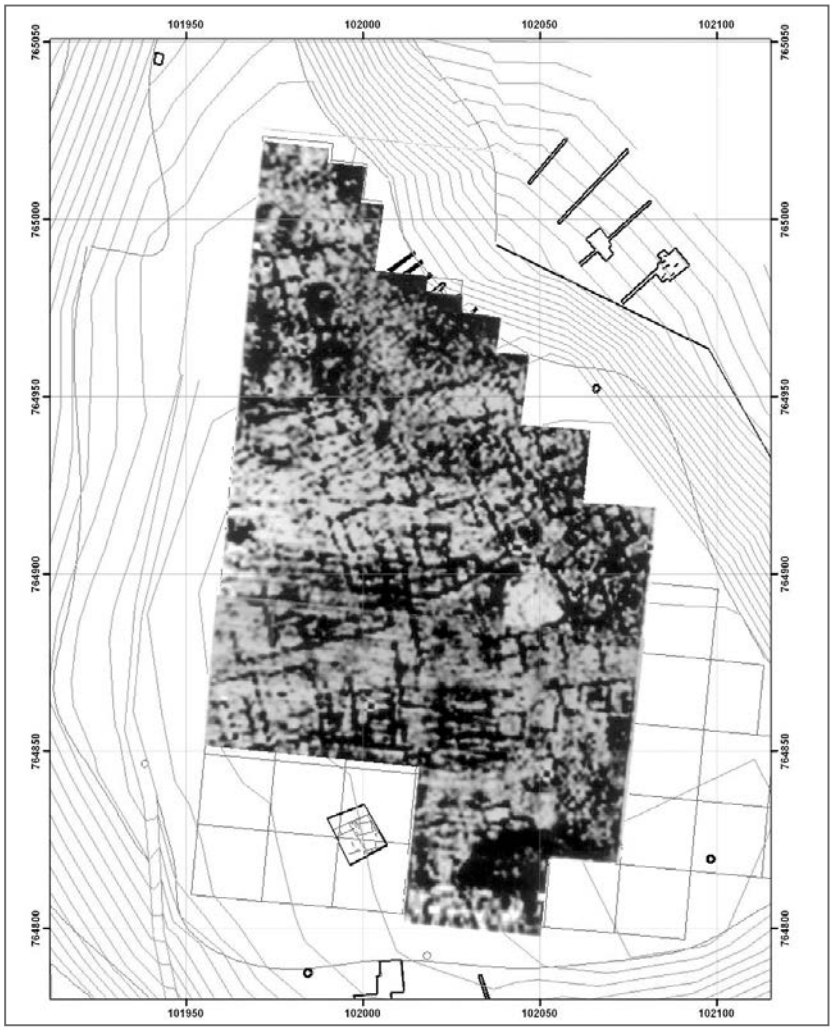

Fig. 1: The ancient ruins comprise resistive structures buried in a relatively conductive environment. Thus they create high resistance anomalies which are mapped by geophysical prospecting. In the particular example shown in this figure, the subsurface resistance has been mapped and its distribution is depicted in a grey scale. The darker tones indicate areas of high resistance which are presumably caused by the concealed ancient ruins. The example has been drawn from the exploration of the site hosting the ruins of the ancient city "Europos" in N. Greece (Tsokas et al., 1994). The closed rectangular anomalies reflecting the presence of remnants of foundation walls of ancient buildings articulate into a broader network, which reflects more or less the shape of the ancient urban complex.

As mentioned earlier, the geophysical methods have been modified and adapted to the archaeological setting. In these respect, the tomographic techniques that the Geophysical Prospecting employs are also applicable for the 3D imaging of the concealed ancient vestiges.

Numerous successful applications of the tomographic approach at archaeological sites have reported so far (e.g. Tsokas et al., 2012).

Figure (2) shows the distribution of the resistivity at 1 m depth level at the site of ancient Argilos (Region of Macedonia, N. Greece, at the mouth of river Strymon). The survey took place during the February of 2013 (Bonias et al., 2018). The distribution was inferred from the 3D inversion of the data. The high resistivities form very clear patterns. In fact, these patterns are linear and they tend to form rectangular shapes. Therefore, they are attributed to subsurface resistive features such as the ruins of ancient foundation walls or other antique structures. Note that the high resistivity anomalies align very well with the unearthed ancient ruins.

Fig.2: Resistivity distribution (slice) at the depth of about 1.0 m in ancient Argilos (Bonias et al., 2018). This result has been obtained by slicing the volume of the 3D resistivity distribution which was yielded by 3D data inversion.

The Exploration Geophysics Lab. of the Aristotle University of Thessaloniki has conducted numerous surveys in Greece and abroad. Among the sites investigated, are included Aegae (Verghina), Dion, Europos, Mitrou island, Samothrace, Elis, Marathon, Santorini, the center of Athens and Piraeus, the Acropolis of Athens, Kastas Hill in Amphipolis etc. Also, sites have been explored in Italy, Spain, Jordan, Egypt, Russia, Kuwait and Cyprus. Further, the members of the Exploration Geophysics Lab. have participated in large fundamental research projects on the development of the archaeological prospection. This is easily witnessed by the number of publications in the relevant international scientific journals.

Application of geophysical prospecting is cost and time effective since large areas are covered in a swift and reliable manner. Further, due to the relevant legislation in most of the European Countries, the

geophysical images comprise evidences of the presence of concealed antiquities. Therefore, they can be even used in the courts to support cases of expropriation of lands. The relevant Greek law was published in ΦΕΚ 153, 28/6/2002.

The geophysical imaging of the subterranean antiquities can be also seen as a contribution to the sustainability of the particular province hosting the archaeological site. At first, the relatively large areas that have been explored by geophysical means do reveal their concealed secrets. Therefore, the potential of the archaeological heritage can be assessed and the land use can be designed more rationally. Second, but not minor aspect, the subsurface images of the parts not yet excavated can be displayed alongside the unearthed antiquities to show up the entire potential of the sites.

The present paper focuses exactly on the aforementioned consideration. The geophysical images are viewed as part of the best display of the integrity of the antique installations, diluting the misconception that it consists only of the unearthed part. I.e., the parts of the ancient human constructions that the visitors can usually see at an archaeological site are the vestiges that have been shown up after the excavations. On the other hand, because it is very rare the whole sites to be excavated, the ancient remnants that are still beneath the ground constitute the major part. Clearly, since the geophysical investigations are the only way to have subsurface images. They can complement the puzzle and provide information about the entire area that the site covers.

The geophysical mapping methods

For many years, geophysical surveying techniques have been employed in archaeology to map the subsurface at sites of archaeological interest, prior to (and often instead of) traditional scientific excavation. Geophysical techniques are significantly less costly than excavation and can be used swiftly and effectively. Further, the increased cost of the conservation of the excavated sites is another factor that renders the so called geophysical prospection ideal for obtaining invaluable archaeological information without jeopardising the integrity of the cultural inheritance. I.e., we obtain information about the lay out of the buried ancient remnants and leave the site intact. In this case, we postpone the excavation for the future hoping that the financial conditions will improve, or some development plan will arise that will allow the maintenance of the antiquities.

Most importantly, bearing in mind the limited funds which are usually available for archaeological activities, the archaeological prospection is the only way for effective excavation planning and thus for taking full advantage of the available funds.

Basic construction works (i.e. road building, tunnels etc.) in many countries are being delayed by encountering archaeological findings in their route. Archaeological geophysics offers an effective way to speed up construction works and to plan development activities more efficiently.

There is an increasing need for non-destructive archaeological site evaluation techniques which provide quantitative information about subsurface features. Geophysical techniques hold the promise of increased quantities of experimental information and consequently more detailed and more reliable insights into the subsurface without the need for excavation.

Among the various geophysical mapping methods employed for archaeological purposes the resistivity and magnetometry approach are undoubtedly the most popular and they are used worldwide. The first method consists in inserting current into the ground and measuring the distribution of potential at the ground surface. The second consists in recording the spatial variation of the Earth's magnetic field. They are both based on the search for spots where the fields show anomalous behavior. This is the usually the evidence of the presence of in-homogeneities in the subsurface.

As mentioned at the introduction, the main aim is to convert the measured distribution of the subsurface resistance, or resistivity, or some parameter of the Earth's Magnetic field, or some electromagnetic component into a form that is more easily interpretable and understood by non-experts. In other words, we seek a precise image that resembles the plane view of the concealed antiquities (Scollar et al., 1986; 1990). This approximates the plane view that would have been drawn if excavation had taken place and the plan view of the unearthed ruins was drawn. Therefore, interpretation can be carried out by all involved parts, i.e. geophysicists, archaeologists, land developers, etc.

The approach described above has been in use for more than 65 years. It is considered successful since it yields resistivity and magnetic 'maps' which reveal the location of potential archaeological features via 'anomalies' and provides images that show clearly the ground view of the buried antiquities. Additionally, these "mapping" methods are relatively cheap, easy to implement, and (most importantly) produce results which seem to be easily interpretable.

Coming back to the example of Figure (1), the same result is repeated in **Figure (3)** where the satellite view of the site is also presented. The area is nowadays consisted in arid rural lands but the subsurface hosts the vestiges of what was once upon a time the "intra muros" urban complex of the city of "Europos". The geophysical image shows clearly that a sizeable archaeological potential is underneath the ground surface. This potential has not been exploited yet but if unearthed, maintained, perhaps partially restored and displayed; it could become an attraction for visitors. In this case, it would benefit the local society by the creation of new working positions, development of touristic infrastructure, etc.

Fig.3: Left: Subsurface resistance distribution of area hosting the vestiges of the walled part (intra muros) of the ancient city "Europos" in N. Greece (Tsokas et al., 1994).Right: The red polygon outlines the surveyed area, i.e. the area of the result of the picture at left. The situation is how it looks nowadays. Limited excavation has been done and the rest of the land is still used for soft farming. The ruins revealed by the result of the left hand side are resting in the underground waiting the future excavations.

Usually, the area covered at the ancient times cannot be entirely excavated since such an operation may demand very long time and unlimited means. To understand the extent of these issues, I remind that complete excavations, preservation and display of the antiquities may require two or more generations. I also emphasize that this is the usual case for the archaeological sites in the South European and Middle East countries which have a vast archaeological heritage.

The survey at the cemetery of the Roman Era of Europos comprises another example. It is situated at the foothill of the topographic table of Figure (3). The resistance prospecting at this particular area yielded the distribution of resistances displayed in Figure (4). Its interpretation is straight forward since pronounced high resistivity anomalies are surrounded by a rather uniform low resistivity environment. The "twin probe" electrode arrangement was used having the roving electrodes 1 m away one from the other, and 1 and 2 m, in line and cross line spacing respectively. Therefore, it was a low resolution survey aiming only to detect and map the position and the areal extent of big monumental tombs. Presumably, each one of the well-defined in space high resistance anomalies has been caused by such a

concealed structure. On the other hand, the relatively sizeable blurred anomaly at the west side of the image was attributed to a hidden gravel deposition. In fact, after the excavations, the aforementioned interpretation proved true in all its predictions.

The geophysical investigations guided the excavations (headed by Dr. Thomais Savvopoulou) to the revelation of many monumental tombs, unfortunately all of them almost completely looted. However, the area was recreated to an excellent archaeological park (**Fig.5**) contributing to the development of the particular province of the Greek State. The plate shown in **Figure (5)** introduces the visitors to the whole adventure to unearth and promote the monuments, from the geophysical image to the final stages of designing the shelters and organize the accessibility and promotion of the site.

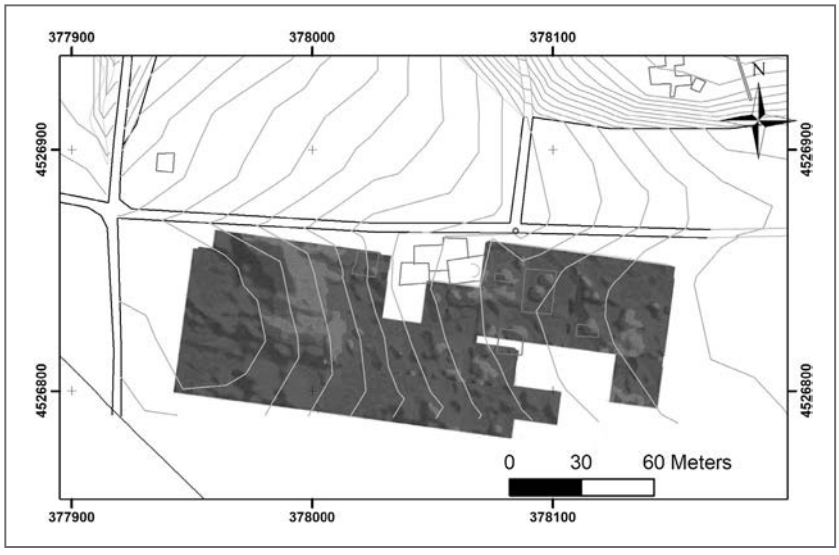

Fig.4: The resistivity distribution yielded from the geophysical survey of the area of the cemetery of the roman period of the ancient city "Europos" in N. Greece (Tsokas et al., 1994). Hot colors represent high resistance values whereas the cold ones depict the low values,

Fig.5: Part of the archaeological park that was created after unearthing the monumental tombs at the cemetery of Roman Era of ancient Europos (prefecture of Kilkis, Region of Macedonia, N. Greece). The whole narrative is explained at the plate where the geophysical image is also shown to point out that there are still buried monuments. Courtesy of Dr. Thomais Savvopoulou.

Methods capable of producing both 2D and 3D subsurface imaging

During the 90ties, two modern subsurface imaging methods were introduced for the geophysical investigations of archeological interest, namely the Ground Penetrating Radar (GPR) and Electrical Resistivity Tomography (ERT). Both these methods are capable of obtaining information about the depth extent of the subsurface features and in this respect they are considered as advancement of the mapping methods.

Using the GPR method, an electromagnetic (EM) pulse is emitted by an antenna called transmitter. This pulse, is partly reflected when it encounters media with different electrical properties, and partly propagated into deeper layers. The reflected waves are recorded by an antenna called receiver, which is either in a separate antenna box, or in the same antenna box as the transmitter. The GPR unit measures how long it takes for a reflected signal to return to the receiving antenna, as well as its strength. Hence, measuring this time interval and estimating the velocity of pulse propagation in the subsurface, it is possible to determine the location of underground reflectors.

When collecting data in the field, in real-time, as the GPR antennas are moved on the ground surface, a two dimensional (2D) radargram is built up by time-domain traces. This is the typical way of GPR data display. The horizontal axis of the cross-sectional view is the horizontal distance along the survey line, while the vertical axis is the two-way travel time of signals. If the electromagnetic velocity of pulse propagation in the subsurface is known, the time scale can be converted into a depth scale.

After data acquisition, a number of processing techniques are applied to GPR data sets in order to produce a clearer image for data interpretation and evaluation. When GPR data have been collected in a grid, along parallel profiles, one closely next to the other, it is possible to produce three-dimensional (3D) images and/or depth slices (i.e., horizontal sections of the subsurface along the depth axis). Seeing these images, it is straightforward to determine the location, depth, form and size of subsurface anomalies (Annan, 1992; Goodman et al., 1995).

GPR is ideal for indoor use and surveys in urban environment. It can be also employed to investigate (Savvaidis et al. 1999, Angelis et al.2018)

for possible cracks and fractures that threaten the integrity of the standing monuments. Further, it is used in the same context to assess the moisture impregnation of walls, ceilings and floors. In extension, it can be implemented to record the movement of moisture, if time lapse measurements are taken. Further, the method is applied in the search for possible crypts, tombs and structural elements beneath floors and behind walls (Tsokas et al., 2015). Numerus such surveys have been reported which show the potential of the method.

Figure (6) shows an example of imaging the space beneath the floor of a monument in Thessaloniki, Greece (Tsokas et al., 2013). The image shows the distribution of the amplitude of the reflected EM signal at a slice at about 2.01 m depth under the floor of the Hamza Bay mosque in Thessaloniki. Clear linear features appear in the image which are articulated together to form a shape that resembles the ground view of the foundations of a structure. Tsokas et al. (2013) attributed these prominent shapes to possible concealed foundations of other ancient remains, which pre-existed the erection of the mosque. This is supported by the fact that medieval chronicles do mention the demolition of structures to clear the land for the erection of the mosque.

To overcome some of the limitations associated to the resistivity mapping a 2D surveying approach which produces data which contains information about both the lateral and vertical variations of the earth's electrical properties was suggested for archaeology. This type of data yielded a 2D subsurface resistivity distribution called "pseudosection" which is very difficult to interpret directly (Tsourlos, 1995). At the beginning of 90ties, the time needed for the relative large amount of measurements necessary for the construction of a "pseudosection" was reduced by the introduction of multiplexors. The data acquisition was further facilitated by the development of instruments capable of measuring simultaneously more than one potential difference. For example, the instrument that is used by the Exploration Geophysics Lab. of the Aristotle University of Thessaloniki, capable of maximum 10 simultaneously receiving channels, is equipped with an automated switch and supported by custom built connectors and multicore cables.

The former advancements allowed the acquisition of readings also with no conventional arrays or even measurements by lowering electrodes into boreholes. The great advancement was realised by the development of fully automated algorithms, known as "inversion algorithms", which can produce "accurate"' subsurface resistivity images. The term "inversion" in the resistivity method describes the

(usually fully computerized) procedure of constructing an image of the "real" subsurface's resistivity distribution given the respective observed data set (pseudosection).

Such algorithms are mathematically complicated and allow the reconstruction of any measured data-set independent of the electrode arrangement. Nowadays, the automations introduced to the measuring procedure facilitated greatly the relevant surveys besides making them much faster than in the past. The combination of the automated measuring systems with the new interpretation (inversion) schemes is described as "Electrical Resistivity Tomography (ERT)" and can be performed in the 3D context, or even in the cross-borehole mode (Tsokas et al., 2011).

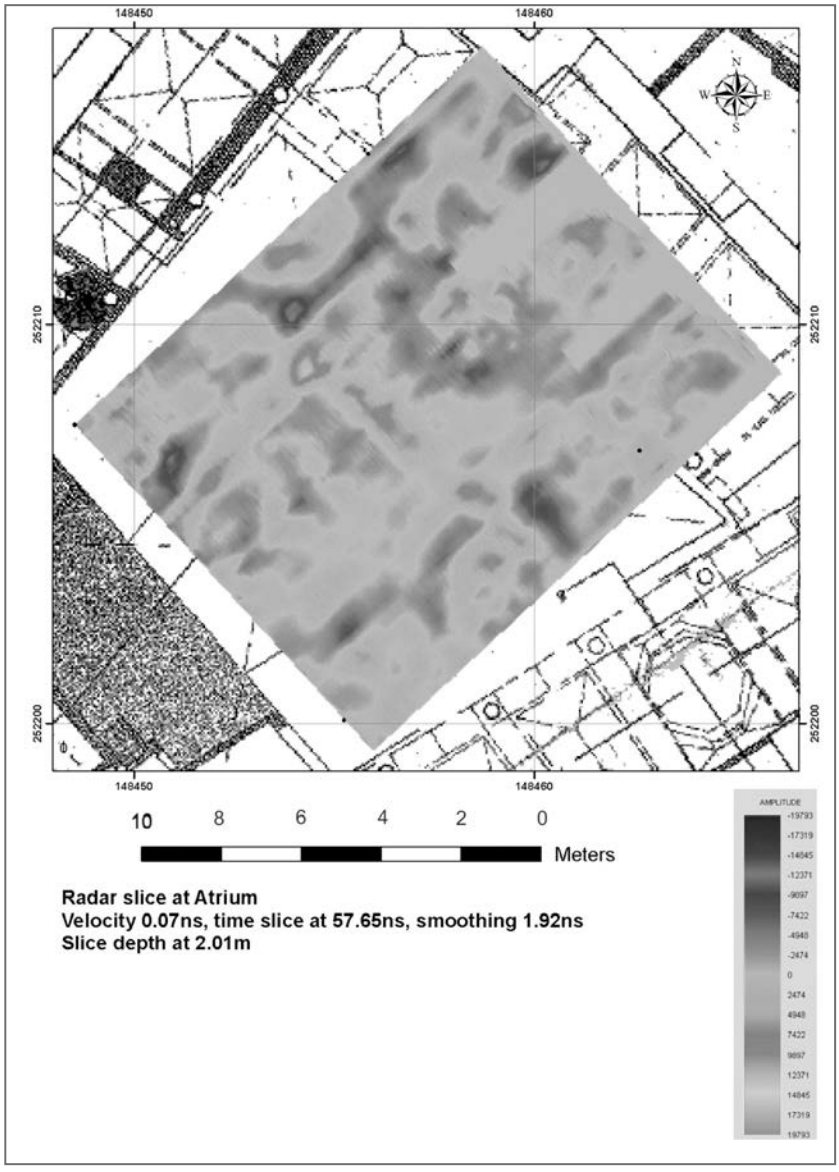

Fig.6: GPR depth slices at the atrium of Hamza Bay mosque in Thessaloniki (Greece). It was obtained from the GPR survey that took place along a dense network of transects (Tsokas et al., 2012).

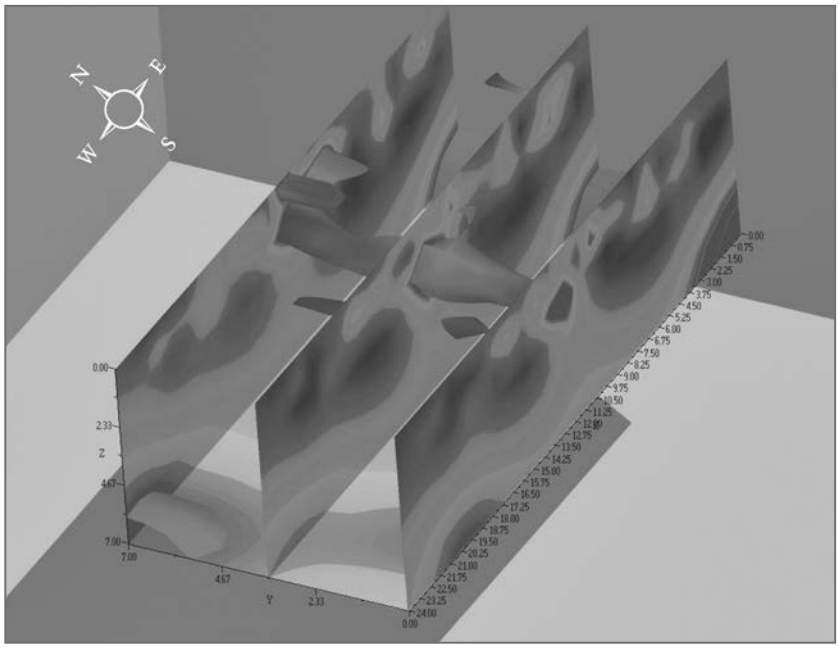

Fig.7: 3D subsurface distribution of resistivities at a bit of land in the area where the ancient city of Elaion stood in Boeotia. The relatively linear high resistivity anomaly reflects the presence of the remnants of the ancient city wall. This interpretation was imposed because the anomaly is in continuation with visible ruins of the ancient wall.

Figure (2), which has been quoted from Bonias et. (2013), show an example of subsurface slice yielded by 3D resistivity imaging. The example shows clearly the potential of the method and its superior result in comparison with mapping. Figure (7) shows a full 3D representation of the subsurface resistivity at an area where the remnants of the wall of the ancient city of Elaion in Boeotia are expected to lie. The high resistivities (warm colours) are created by the presence of the wall vestiges.

Non-conventional use of geophysical methods

Geophysical prospection has been also employed in non-conventional manners to tackle specific archaeological problems. Such problems might be for example the cases of locating tombs under tumuli embankments, assessing the moisture content in walls, depth of fractures in sculptures, exploring the space behind walls, mapping the waterways along which the water drains out or in monuments, investigating in urban environment etc. Relatively recently, the potential of this kind of operations has been the subject of numerous papers. However, many of these operations require a great amount of expertise and innovation.

In general, the geophysical investigations in a standing monument comprise a non-conventional operation which is generally a non-

easy task. Further, the operation has to be non-invasive whatever the methods which are employed. For this purpose, specific techniques have been devised to allow the conduct and guarantee the non-destructive character of such operations.

Figure (8) shows another example of an ERT carried out on top of a duct of the Roman era which was revealed during opening of a pit for founding a modern construction in Thessaloniki (Region of Macedonia, N. Greece). This structure was found very close to the Aristotle University campus and belongs to the ancient urban water feeding system. In fact, Figure (8) shows a photo of the wall of the trench where the tomographic result (distribution of resistivity) has been superimposed. The tomography had been performed about 2 m away from the edge of the trench, which is back from the surface of the exposure shown in Figure (8). Clearly, the high resistivity signature of the ancient structure is pronounced as it is also the low resistivity signature of the areas of increased moisture content. The so called "flat base" non-invasive electrodes were used, which had been proposed by the Exploration Geophysics Lab. of the Aristotle University (Athanasiou et al., 2007).

Fig.8: ERT result superimposed on the wall of an open trench where an ancient duct can be seen. The electrical response of the ancient duct is clear as there are the low resistivity anomalies caused by the areas of higher moisture content (Athanasiou et al., 2007).

Employment of suitable gear, which has been successfully tested during the last 10 years, has enabled the application of Electrical Resistivity Tomography for indoor operations (Athanasiou et al., 2007, Tsokas et al., 2008, Tsourlos and Tsokas 2011, Tsokas et al, 2013). Nowadays, it is common to produce 3-Dimensional subsurface imaging at indoor or urban surveys.

ERT can be performed in the cross well mode offering solutions for imaging the subsurface. If boreholes can be drilled and instrumented at either side of the target, then the target can be imaged. Furthermore, sometimes combined surface and borehole tomographic survey can be performed. Tsokas et al. (2011) used these combined geoelectrical tomographic methods to image the foundations of the wall of the late antiquity and Byzantine times.

ERT techniques proved valuable in seeking manmade structures in the interior of tumuli (Papadopoulos et al., 2010). The tomographic methods either in the 2D or in the 3D context were applied to a number of cases (Tsokas, 2012; Tsourlos et al., 2014).

Image fusion

Nowadays, large scale geophysical prospecting at archaeological sites employing different methods is continuously increasing. This is because new generations of efficient instruments have been introduced which are interfaced with accurate positioning facilities. Thus, the geophysical surveys can be performed swiftly and cover very large areas in a very dense mode. It is common to have many kinds of geophysical data collected in bits of land. For example, besides magnetic and resistivity mapping data, GPR and ERT depth slices might be available. Further, surface magnetic susceptibility may have been mapped, or electromagnetic data may have been collected. Also, aerial and satellite images might be available for the particular site, plus Lidar images and accurate DTM.

Each one of the aforementioned methods is sensitive to different physical properties contrast. Presumably, the combination of the information that each method provides could yield much better constrains in identifying, mapping and finally documenting the archaeological targets.

Relatively recently, image fusion algorithms have been developed which can combine the outcomes of all geophysical methods employed at a site plus the other existing data. These algorithms yield more or less all the useful information that each one of the individual methods can provide and they are termed as "image fusion algorithms"(Lasaponara and Masini, 2007: Karamitrou et al., 2017).

Conclusions

Geophysical prospecting at archaeological sites, the so called "Archeological Prospection", comprises a tool that can help the archaeological research. Additionally, it can be applied towards preserving and maintaining the archaeological heritage in various aspects. In this respect, it contributes to the sustainable development of specific provinces and areas. More specifically, Archeological Prospection is linked to sustainable development at the following points:

- Large areas can be easily explored by geophysical means. Under favorable conditions, this approach is capable of yielding ground views of the buried ancient vestiges. Therefore, the fore-coming excavations will focus on particular targets and thus money and effort will be saved.
- The geophysical images usually cover much larger area that can be excavated in the span of a life time. Thus, the archaeological potential of an area can be assessed and included in any development planning.
- Presentation of an archaeological site can be done in an integrated manner by exhibiting the unearthed parts and displaying the parts that still reside underground in plates, leaflets, movies, etc.
- Various aspects of preserving and maintaining monuments can be treated by the geophysical methods. Failures in the structural elements can be detected and the moisture impregnation can be assessed.

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Heritage within landscapes as catalyst for socio-economic development: locating social impacts for rural communities outside of museum walls.

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Introduction

This paper aims at disentangling the role of rural heritage and specifically[38] rural landscapes and vernacular heritage assets for supporting social wellbeing in rural areas in Europe. In this sense, the paper presents findings on how heritage can assist communities respond to key challenges through engaging in processes of valorization and interpretation but also management of heritage assets not only of national but also of local significance. The paper bases its conclusions on a case study from Orkney islands, Scotland, UK-firstly the profile of few rural communities in Orkney is drawn and links between communities and different heritage assets in the projects studied are presented. Insights from participants' perceptions around community needs and way of life allow for an understanding of aspects of rural community's wellbeing. Following, the findings from the analysis of 42 interviews realized with heritage professionals and local people who took part in the completed Scapa Flow Landscape Scheme (2009-2012), are presented, aiming at understanding perceived social impacts, stemming from local community participation in tangible and intangible heritage related activities around Orkney's rural landscape that extend "museum walls" to explore the meaning the participants attribute ad the difference that these experiences made for their lives. Finally conclusion are drawn around the new potential that landscape heritage presents for heritage management at European level in order to fully harness the social benefits for rural communities.

1. Background

Before discussing the notion of participation and community engagement with heritage landscapes or the social impacts form it, a background on the development of the idea of heritage assemblages and the new conceptualizations like cultural landscapes is briefly presented together with implications for management and types of engagement these bring with them.

The notion of assemblages signifies a re-definition of heritage "construct" that suggests embracing intangible aspects of heritage but also a holistic conceptualization, that is not confined to (museum) objects or collections but whole assemblages, traditions and traditional way of life in landscapes that bear meaning for the communities and represents their identity

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A rather new definition of cultural heritage is presented, as "a social and political construct encompassing all those places, artefacts and cultural expressions inherited from the past which, because they are seen to reflect and validate our identity as nations, communities, families and even individuals, are worthy of some form of respect and protection" (Labadi and Logan 2015: xiii).

.The European landscape convention (2004, Council of Europe Treaty Series no. 176), is embedding this focus on all places including the rural and local: encouraging member States to introduce a national landscape policy that is not restricted to the protection of exceptional landscapes but also takes everyday landscapes into consideration. At the same time, the Convention includes reference to responsibilities for establishing participation procedures for the general public, local and regional authorities, and other parties with an ultimate goal of the implementation of the landscape policies.

At European level, the same key ideas notion are also endorsed and explored through the Faro Convention (2005), which emphasizes the important aspects of heritage as they relate to human rights and democracy and promotes a wider understanding of heritage and its relationship to communities and society (Schofield, 2015). Faro additionally encourages us to recognize that objects and places are not, in themselves, what is important about cultural heritage. Their importance stems from the meanings and uses that people attach to them and the values they represent. In the outcome of Faro, authors like Fairclough, et al, (2014) suggested a need to emphasize on the wider potential of heritage for supporting sustainable development through the use of term 'cultural sustainability' in parallel with ecological, social or economic sustainability models (e.g. Hawkes 2001; Throsby 2008; Duxbury & Gillette 2007, Kagan 2011).Unlike most heritage conventions, 'Faro' is not concerned with how to protect heritage but why: what are the social and cultural benefits, indeed imperatives, in doing so (Fairclough et al. 2014).

However the Faro was not ratified by all counties and seemingly presented difficulties in its implementation and operationalization. What its basic statements suggest, implies that the Intangible aspects and values are key and are assisting us to better define significance and engage with tangible aspects.

As Munjeri, (2004: 18, quoting Appadurai 2004:18) puts it: 'intangible heritage because of its very nature as a map through which humanity interprets, selects, reproduces and disseminates cultural heritage was an important partner of tangible heritage. More important, it is a tool through which the tangible heritage could be defined and expressed

[thus] transforming inert landscapes of objects and monuments turning them into living archives of cultural values.'

Finally Faro, included a dimension around democratic participation and rights to exercise heritage crucial for developing a 'new paradigm' in the sector, really important in terms of who has rights in engaging with heritage definitions in an era of cultural mix (Holtorf and Fairclough 2013: 197-8) and fluid demographics (particularly relevant to island destinations that are shaped through population movements through years). A parallel body of work has been looking at links between heritage and wellbeing, focusing more on a rights-based approach to heritage and contributions to wellbeing via equity and justice Hodder (2010) and Langfield and Logan (2009).

Faro considered that heritage should also be exercised (as in daily life it often is) by individuals and by heritage communities: by people who share values about specific aspects of cultural heritage to be sustained and transmitted to future generations, by people who share landscapes (see, eg, Shelley et al 2011). This means democratic Participation "to involve everyone in society in the ongoing process of defining and managing cultural Heritage", to preserve heritage not for its own sake, but for explicit and broad social benefit.

Our research approach, will show how aspects of rights and ownership are very relevant, however wellbeing benefits for rural communities realtes very much with planning and function regulation as well: impacts derived indirectly from heritage functioning as social infrastructure, affecting community cohesion for disperse communities, empowerment and development capacity to act towards common goals.

From the role of Heritage as driver for social development to mapping specific social impacts

In a wider, global scale recommendations the issue of the role of culture for sustainable development has been addressed by publications by UNESCO (2010) and UN (2012) and multiple academic and policy voices (Clark ,2007) including a authors dealing with critical heritage studies and sustainable development, who have elaborated realised that 'few studies have so far considered culture in an analytical and explicit way within the frame of sustainability' (Soini and Birkeland, 2014).

In European level, the council of Europe in its last summit, expressed

their commitment to "improving the quality of life for citizens". And included an Action Plan on "Promoting sustainable development", were States agreed that, 'on the basis of the existing instruments, the Council of Europe would further develop and support integrated policies in the fields of environment, landscape and spatial planning, in a sustainable development perspective'.

While multiple academics discuss or have supported the role culture or heritage can play for sustainable development, the focus on social dimension and specifically social impacts is rather more recent. The power of heritage and culture to enhance social inclusion or social cohesion was key focus of such studies, looking also into the controversial role of dissonant heritage.

Engagement with cultural activities in general is considered to support wellbeing as well as enhancing connection with place (Moobela et al, 2009; Lewicka, 2011) or leading to an increased "sense of place" (Graham et al, 2009). Several evaluation reports and studies especially in the UK, supported how heritage participation can enhance both social but mainly individual wellbeing, looking into volunteering experiences to define impacts (Maeer and Fawcett, 2011; BOP Consulting, 2011). However much less work has been focusing on less-formalized experiences of participation, even less outside museum-led and designed projects, with the term engagement adding some "vagueness" around the process of participation. This disrupts our understanding of non-institutional heritage practices in relation to current identification of community's and development needs.

What is more, existing research exists on museum's role for learning benefits and physical health (studies related to use of objects like *Ander et al(2010),* and psychological wellbeing or changes in mood). Another body of work looks at impacts of heritage through regeneration schemes or heritage tourism (between others Mak et al 2017), focusing more on economic impact, integrative planning but looking less on intangible heritage aspects), , leaving a gap for the role of heritage -not to mention and natural and cultural landscapes- for impacting social relationship at community level and aspects of quality of life in on non-urban contexts.

Considering specifically rural heritage assets and social wellbeing or quality of life, one needs to ask first : What aspects of rurality and rural life affect wellbeing? And how can wellbeing assessed or measured at social and community level?

Personal, social and contextual factors (eg. Role of place dependency and physic/social accessibility) pose important restrictions to rural

residents, while proximity with natural environment is considered to offer more opportunities for relation with the outdoors. Ramsey and Smit(2002) offer a set of measures and attributes to assess social impacts on community: as well as understand aspects of rural area wellbeing, through a socio-spatial approach (Dolff-Bonekämper, 2009)and inspired our approach to analysis, suggesting a holistic, social and spatial review of impacts. Moreover the term social wellbeing (as defined by Nef, 2009) can be measured through social capital indicators (see Putnam, 2000, Harper, 2002 for indicators[39] and an application of the theory and concept by Murzyn –Kypisz and and Działek, 2013)that set emphasis when viewed at rural community level to various aspects of connections between small-parish related communities (or variations in levels of bonding, bridging, linking capital highly dependent on rurality effects). Also the interplay of social with individual level, mental wellbeing which may be also affected due to physical isolation in such contexts is crucial.

2. Case study: Bottom up approach to looking at social impacts and challenges of rural context

Orkney is an archipelago with 20 inhabited islands, hosting in total 21,349 inhabitants (2011, 2017 National records, Census). Their context is considered remote in the sense that their distance for the mainland and the restricted accessibility of some of those islands can significantly affect the way of life , resources and opportunities for communities to sustain themselves.

For Orkney Islands in 2014, the percentage of people living in 15% **most 'access deprived' areas** was 62%, which was 311% higher than the Scottish level of 15%. The study aims to shed some lights on how locals perceive social issues associated with that type of deprivation. In that sense is providing evidence around developing ideal indicators for assessing social impact in those areas as well. They also face pressuring sociodemographic challenges due to quickly ageing populations and out-migration issues, that resembles challenges faced by other archipelago's populations across Europe, like for example the Mediterranean but also rural and remote areas. Orkney is projected to have an ageing population

[39] Harper(2002) for the ONS study, identifies 5 dimensions (social participation, social networks and social support , reciprocity, civic participation, view of local area) related to theoretical aspects of the concept of social capital as defined by Putnam.

over the next 25 years, with a projected increase of 48% for those aged 65 or over. In contrast, the working age population (aged 16-64 years) is projected to fall by 11% between 2014 and 2039.[40]

Despite these, Orkney islands hold an important amount of tangible heritage ranging from prehistoric an Neolithic archaeology (Orkney features over 200 scheduled archaeological sites) to natural heritage -rich biodiversity (a great density of Special areas for conservation-SAC, and Natura areas) as well as rich intangible heritage, with a particular dialect and traditional music preserved by local communities. Finally existing vernacular housing typologies like the remnants of crofters' estates, are combined with crofting and pastoral landscapes (usually existing within areas of outstanding natural beauty-AONB), while in some areas traditional aspects of way of life are preserved (like traditions of peat cutting, stone-dyking etc). All these render Orkney a specifically tempting touristic destination, adding to increased pressures due to the increasing numbers of tourist flows (mainly due to cruise ships) that shape the contextual characteristics defined earlier.

The paper focuses on identifying ways of communities' interaction with existing range of heritage projects realized within the area of Scapa Flow and related with the islands of Hoy, South Ronaldsay, Flotta and the mainland. The projects included multiple types of heritage assets- both designated and sites with non-statutory recognition.

The totally 44 small projects were realized between 2009-2012, thanks to a fund of £1,355,800 mainly by Heritage Lottery Fund (HLF) but also complemented by contributions through the European Rural Development fund.

The scheme focused on achieving greater and better public engagement, expressed through specific objectives for including communities in projects, while it involved heritage professionals working on the local institutions that regularly deal with day-to day management of specific heritage typologies in the area. What is interesting is that apart from local authority run-museums, a big number of community-run groups like heritage trusts and associations, were engaged with delivering projects added to research or educational institutions (like universities engaged with archaeological projects).

The five objectives that run through all the projects' development in order to maintain the focus on landscape heritage "alive", focused on (1) access, interpretation of landscape values and heritage (2),

[40] Data are available here: https://www.nrscotland.gov.uk/files//statistics/demo-cen-profiles/orkney-islands-eea-profiles.pdfs

(3) biodiversity conservation but also awareness about it, (4) marine environment, (5) a rather general category of History, culture and nature as well as overlapping areas between (6) education and training[41]. Moreover, 4 cross-cutting, core themes were developed:

(a) conserve and restore built and natural heritage (b) Conserve and celebrate cultural history, events and other activities (c) Encourage more people to access, learn about and become involved in heritage (d) support continuation of local crafts and other skills and each one of the projects belonged at least to one of the latter and to one or more of the first objectives.

The interviews focused on 5-7 smaller projects and these cases will be used to illustrate the links of peripheral, disperse communities with islandic (cultural and natural) rural landscapes, where natural heritage holds a particular significance for local population.

3. Methodology

We performed two sets of semi-structured interviews with 47 people, including 25 community members and 10 heritage professionals who managed projects in the scheme, while we also included few local authority representatives (7) who allowed for a greater understanding of the development of those heritage projects, and various perspectives around the relations of sites with the surrounding landscape. Few projects were selected on the second phase as holding greater importance to understand processes of participation but also enabling us to see various forms and typologies of engagement realized.

Local population representatives around the area of Scapa flow were sampled using the snowball method (Biernacki and Waldorf , 1981),starting with local managers who connected us with various participants. Participants were asked about their motivations for participation, the various activities and roles within projects and most importantly about perceived social impacts of participation in relation to existing social issues and needs of local community.

The rich qualitative data collected were analyzed performing thematic analysis using the software NVivo (Brown and Clarke 2006) in two stages, including both open and axial coding. This enabled the inductive formation of a descriptive set of themes and variables to describe

[41] Source of information: Appendix 2a, Project selection Matrix for SFLPS, available to the researcher by the interviewees

perceived social wellbeing impacts and social needs or challenges mentioned by community members, that could be grouped not only under individual but most importantly community-level impacts.

4. Findings

Participation : a broad spectrum of what was described as 'active engagement' starting from minimum contribution like experiencing open days and reaching the level of community-initiated and leading proejcts were mapped. Projects included activities which required locals' skills and knowledge for heritage interpretation (exhibition making process, material crowdsourcing for oral histories around landscape etc.) or documentation of sites /portable tangible heritage and changes in the course of time.

The table describes few key projects revolving around sites in Orkney's landscapes and the typologies of participation they represent, with various levels of power and responsibility by community members:

Project description	Participation typology
1.Archaeological excavations and documentation (Iron age/Neolithic)	Training and volunteering (adults/ university students)
2. WWII site "Battery" Restoration project	
3. Vernacular heritage-"crofter" house restoration and reuse as a museum	Self-initiated , community-led project
4. A parish church reuse into a community center and archive and restoration and archive creation of local history	
5. A new interpretation wing development for a *family-run* archaeological visitor centre	Internal managers liaised with external ones, professionals and volunteers in the centre

Table 1: Projects studied and typologies of participation observed in each regarding role of local communities

Following, it will present research findings on perceived social impacts, stemming from participation of local communities in those activities. Those range from an increase in various aspects of social capital (by boosting cohesion and networks creation) to an enhanced «sense of place» and subsequently, the capacity to get involved in decision making processes around place making. I will only focus on discussing the impacts reported at community level or those that affect social life of individuals (instead of impacts around individual learning and skills development that were also widely present in the interviewee's accounts, as expected) (see Gallou and Fouseki, 2019 for an overview of findings).

Perceptions of heritage's role for local sustainable development

Aim of the questions was not only to locate heritage values, but also to understand how local people perceived the role of heritage to support sustainable development locally and specifically enhance aspects of community's wellbeing. What is interest to notice is that despite the research initially aiming at understanding social aspects of wellbeing, the concept was more broadly understood by participants (both managers and locals) including both social and economic parameters and response to contextualized socio-spatial community needs (ie. lack of provisions for socializing, affected by seasonality, lack of spatial infrastructure on the islands that may affect community cohesion and identity at community level and loneliness in individual level) .

In that sense, heritage participation was considered to (1) directly support social development and wellbeing through: (a) Recreational opportunities and act of socialising (b) Integration opportunities for incomers and isolated individuals that was combined with skills sharing, knowledge exchange processes and further educational development especially affecting livability options for younger adults on the islands (a key step for reversing ageing population trends in smaller islands that gradually lose their population).

Indirectly, heritage role for wellbeing was reflected through the prism of :

(2) Supporting local economic development (like through heritage offering job opportunities to tackle issue of seasonality issue in occupation of locals or as expected support local businesses / economy based on services and tourism

(3) Finally and most prominently, heritage role as sustaining place and communities of place (intersects both with social and economic aspects) was underlined:

> This was either through processes of heritage interpretation, here groups could rediscovered personal and communal history and re-stablish connections with place (that sustains population interest and care for depopulated areas for example, instigating further engagement in processes of place-making) or through heritage adding a distinctive identity to place and promotion of key qualities as part of place branding (especially relevant to destination's effect, and heritage viewed as natural environment and landscape/wilderness)

Looking into the indirect role of heritage for supporting livelihoods through economic development opportunities, common perception for managers and locals, was that locals are 'using heritage' to survive: developing relevant tourism activities and economic advances through businesses dependent on heritage, through the concept of competitive advantage:

> *"..there is real buzz in that island..in that community....they are utilizing their heritage..they have agricultural heritage.. to attract people to come to their island.." [I9/M9 manager]..*

Both Managers admitted that they see a strong role for heritage to assist communities develop new livelihood opportunities, connecting participating in heritage with *using heritage* as a resource via processes of commodification, denoting a certain dependence, in order to fulfill basic functions and secure existence for the rural community that is apparently facing decline due to depopulation/increased out migration of youth. (Clark, 2008). Some community members however, were critical of mass tourism initiatives (like the huge impact of cruiseliners for local wellbeing, where disruption of way of life way evident due to increased tourist flows).

Looking directly to social *wellbeing* of residents, heritage was viewed as supporting liveliness and in long term perspective sustain island livelihoods and way of life. This could be realized by simply allowing for greater connections between locals through heritage activities, where they can discuss current issues with others and socialize. Looking at the issue at another level (relationship between smaller islands' communities) participation with open calls allowed for connecting communities of place that were traditionally not meeting, and allowed for more cohesive relationships to be formed , around common values like place identity. As one participant puts it the contribution;

> *"..They did a superb project, you know this encourage lot of history and photos, from all the people in the community ..and also the wider community down in the island has brought stuff and so they got several cabinets, displaying that.. and people enjoying it ..all year around.."[M11 manager]*

Furthermore, in a quickly ageing setting, it allowed for .intergenerational transmission and bequest of values towards sustaining not only heritage but primarily community itself and community identity:

> *"..they did a lot.. my neighbours in Racwick..some more in Hoy i think (names)... Submitted photos based on her dad... now what is interesting is what is happening..my husband and i were elders.so*

we were supervising and helping the young folks.. whereas now, which is superb, after my husband dies, A(name) started working for Hoy Kirk.. [C7]

"is nothing as good as taking over from us....i was so delighted.. and they have done a briliant job, ..setting up the committee now and those taking part .. I would like them to be on the board. "[C14-C15]

'its made Hoy work together better as a team, I think so..So were very dependent on Stromness people Supporting us, so we had run quite a few things for SFLP.. we run film shows and other things, an art group and a craft group..it was really nice a take off..and now people would come to that..[C6]

This transmission of responsibility to safeguard heritage is accompanied with direct knowledge transfer, especially valuable in terms of local skills and intangible heritage in rural places, acting as vessels for continuing character of place and community identity into the future: Safeguarding intangible and skills transmission :

"..because of the commitment to training as part of the scheme, We insisted they have an apprentice in the job.. a younger person can work alongside (name of only left traditional boat builder in that area)..."[C24-C25]

As mentioned earlier, the skills exchange is also happening between incomers and locals, allowing for smoother social integration of incomers in local networks. However it was not uncommon to view tensions, when educated and skills incomers in leadership positions, where considereds threat to locals, especially older community members, despite that, their much need skills were appreciated as they assisted in many cases in competing the propjet deliveries and develop further plans for future projects.

Heritage as counter- acting for lack of social infrastructure, especially in shrinking localities, was an important function recognized especially by the smaller communities (outside of the more central areas of Kirkwall and Stromness), which saw the amount of community assets shrinking during the last decade. Vernacular heritage assets or listed monuments like parish churches can act as hubs for community gathering and function as social infrastructure. They are offering spaces of regular meetings that assist to combat loneliness, induced due to long distances between rural settlements but also allow for non-connected communities to meet and this way enable distanced (socially) communities to re-gather and link with each other. Few

quotes can show how participants experienced this use of heritage spaces, combined with the activities performed there:

"..and then the beauty of Hoy Kirķ is so superb that it is open 24/7.[C8]

"..and there is nowhere to except for Hoy Kirk..And people would come and make themselves a cup of tea, and in winter there is nowhere on the island to eat except for Hoy kirk..."[C7] [C6]

'nowadays the ferries don't work that way, but we could really go over.. and quite a few people particularly the locals, born and bred here have links with Hoy, and you know for them it was quite good, because it was a social event as well, as going over for sth specific.. yes, to reconnect..you know they coud meet up, and chat etc..'[C5]

A key aspect revealed was the active role communities developed in local consultations and planning decisions around land uses in their area, once they have delivered the transformation of the church in a community /heritage hub. Apart from the transformation itself allowing to a bottom-up 'place making' approach, reflecting the start of a social transformation for the remote locality of North Hoy (for the role of heritage in place-making see Cilliers and Timmermans, 2012; Rios and Vasquez 2012), local people build their knowledge and understanding around processes of physical ownership, asset management and financial/funding bids, thanks to their interaction with local authority councilors. At the same time, the process of re-instating the identity of the church in connection with the past of this community, assimilates a creation of a 'new past', that when is constructed in local communities, assumes a key 'need to understand what values are being articulated, and how and why' (ibid.), allowing in other words to develop a strong image of place that supersedes the historic aspect of it.

"..people move away from that time unless people who are alive who remember it, I think the general public's interest grows because they realize it will be lost.. [M4]

Places after all, assume a key role in the urbanization processes as they satisfy the need for identity and cultural heritage holds key role in establishing that identity in periods of 'regeneration' or 'redevelopment'(Hosagrahar, et al, 2016 ICOMOS agenda). In the case of Hoy, in Orkney glimpses of regeneration can be viewed in a wave of reuse plans in public buildings that lost their use (like schools, that close due to depopulation) but also the increasing pressure form speculating developers to gain access to assets close to pristine wilderness or cultural landscapes aiming at shaping anew touristic resort character for the place.

5. Discussion

The nature of the projects and the themes /objectives developed viewed vis a vis the motivations and perceived impacts, indicated the important interdependence of intangible heritage with aspects of tangible as key for engagement from the perspective of the communities.

This suggests the importance for heritage managers dealing with tangible heritage to understand and approach the diversity of cultural expressions[42] and the perceptions of "practicing communities" in case they still exist or the memories of those, as part of the social history-ies of the place (like in cases of restoration/reuse of vernacular building sand physical attributes that form part of identity of landscapes).

The interconnections between natural and cultural heritage also is another interesting overlap, visible in the case study and in multiple funded stakeholder projects like the ones supported by ERDF and Leader (especially ones encouraging exchanges natural and cultural heritage). These can allow for easier application of the principles of Faro convention in practice and have wider implications for planning similar initiatives, as important overlaps between cultural and biological diversity (Unesco, 2008) are present, since both form vital part of rural lifestyles and traditional knowledge that local communities are willing to conserve and share (see Kassam et al, 2009 for similar findings on indigenous communities), supporting this way local economic development (Bellini et al, 2008). Existing institutional practices should ensure they do not obstruct these exchanges through participation programs.

The analysis showed a list of social impacts affecting wellbeing at community level, that supersede the learning benefits and personal development expected outcomes form participating in heritage activities to affect the broken or distant relationship between neighboring island communities through use of unofficial heritage spaces. These spaces not only allowed for social gathering and covered the lack of social infrastructure present in resource-restricted smaller islands, but in some cases served as symbols of common identity (Nas,2011), uniting people in the base of common memories of the past of such places.

Viewing heritage as a process, as a continuing process, of creating, constructing, using and modifying (Fairclough 2009, 29) ordinary

[42] See also the Convention on the Protection and Promotion of the Diversity of Cultural Expressions (2005) .

assets as part of ordinary life, as seen within Faro, it is easier to recognize how it operates to form such impacts related with group identity/ shared identity and differentiation (Wolferstan & Fairclough 2013) at community level analysis.

What can be considered a potentially "dark area" in rural context(dark side of Social capital by Putnam, 2000 on effect of bonding on bridging in social capital terms) , is the power of heritage to increase distinctiveness , when misused to enhance segregation or local rivalries (at geographical level), and instead of allowing opening up of communities to new wider audiences and networks, to enclose them in a narrow circle of overprotected heritage. The role of local authorities and professionals in formulating narratives of identities in such small localities should not be underestimated and should be utilized to develop networks of collaboration that extend narrow geographical borders to avoid such consequences.

The findings open up a discuss on how we can start disentangling the role of heritage as driver for social and economic development in European context and specifically in rural contexts: heritage's emerging role in place-making is key, amidst of challenges of gloablisation and touristification as it offers a set of values to re-imagine shrinking places and even develop new "sense of place" that maintain parts of distinctive parts of place identity and community identity itself (that seemed embedded in place identity).

In other words, the social impacts were mapped and connected with spatial implications: engaging with heritage actually affects sustaining people in place, and subsequently sustaining places at risk of disappearance due to demographic reduction. Following place-branding and opportunities for socio-economic development for island destinations can be more firmly grasped upon these. It also offers the opportunity to develop new niches for economic eco-cultural activities (eg. through local entrepreneurship) in remote territories that strive for livability support through a competitive advantage logic in heritage tourism (Loulanski and Loulanski, 2011). In order to better establish the impacts of such processes (and not only their outcomes) in a European level, we need to combine similar studies with comparative policy analysis in different national contexts, in order to understand the role of contextual factors to provide systemic level changes in the long run.

Considering implications of those findings for heritage practitioners or experts, especially all over Europe, (see also Silberman,2012; Wolferstan, 2016 in the afterlight of Faro), key changes in their role are necessary in order to embrace this engagement with both

tangible and intangible aspects, while institutional flexibility in project planning and opportunities for democratic participation is necessary to accommodate community interests and ensure relevance with local (Avrami et al, 2000) public (Clark, 2006 ed.)or social values (Jones, 2016) (including commemorative and symbolic sects) that are always in a process of redefinition. The role of professionals becomes even more crucial in processes where power dynamics are negotiated and skills are shared, in order to allow for communities to actively take part in decision making and ultimately even develop a sense of ownership not only of heritage as a resource but of project projects themselves round it, turning participation to a process of empowerment. Participation this way can extend the limits of volunteering and training (educational) to take different forms or typologies, and become process of collaborative creation of knowledge (interpretation) where people take responsibility but also are authorized access to articulate their common heritage.

Conclusion

The paper showcased 'hidden' values and perceptions of heritage for community level wellbeing and roles of heritage within visions for sustainable development. The findings and the qualitative, bottom up approach offer an alternative method to develop locally relevant indicators for evaluating social impacts of heritage projects, on rural settings.

We discussed how are the social impacts from rural heritage participation are actually harnessed through interactions with landscape and social history and therefore cannot only be conceptualized as learning outputs from museological, interpretation projects. Our findings relate to other research findings using the term cultural sustainability (Hawkes 2001, Duxbury and Gillette, 2007): in our case using a more specific socio-spatial framework to discuss the evidence in terms of impacts, allowed to relate use of culture and specifically what can be termed "local heritage" to tackle locally relevant societal challenges (Kagan 2011).

The case studies chosen, within a Landscape partnerships scheme, illustrated the new opportunities emerging from heritage projects designed within a conceptualization of 'landscape as heritage' or 'everyday or unofficial heritage within landscapes', regarding intangible community connections and new ways of engaging with their heritage (typologies of participation) that can be revenant in multiple European landscape settings. We saw that in rual settings, this humble heritage has more direct connections with local

lifestyles and can contribute to important impacts like community identity shaping and community empowerment. Finally the paper, identified some implications for practitioners and planners or local authority representatives engaging with communities in processes of consultation-project planning, heritage valuation, and project delivery in order to enhance socio (economic) impacts of those projects and enable meaningful interactions with local heritage assets. We recognize that the flexibility and capacity of institutions to support this reciprocal interaction with local community groups differs all over Europe, however the key principles identified can be widely applied. We consider this an important step towards operationalizing the principles of Faro convention and contributing at the same time to a smoother integration of heritage projects within development planning activities that support overall progress of rural contexts, by tackling key socio-demographic challenges they face.

Nvivo inductively produced list of social impact variables at community level	Regrouping variables into composite indicators
b. Direct impacts (community level /participants)	
Increase inclusion of newcomers in community roles	Social capital Bridging/Inclusion
Increase bonding and empowerment via team work	Social capital Bonding/ cohesion
Intra-generation links	
Connect with other/different island residents and link with council representatives	Social capital -bridging and linking
Sense of belonging to community	Collective empowerment
Unlock potentials for self-enclosed groups to collaborate with others	Enhanced sense of belonging to group
c. Indirect impacts (for wider community of place via use of outputs)	
Heritage centers utilized as community centers and poles of interest	Enhanced sense of belonging to group
Supporting access to place	Enhanced community and place bonds
Heritage protection projects trigger more spatial development opportunities	
Increase 'sense of ownership' through recognition of uniqueness of place/identity	

Table 2: List of key variables describing impacts for social wellbeing of communities/ groups of participants and wider communities of place

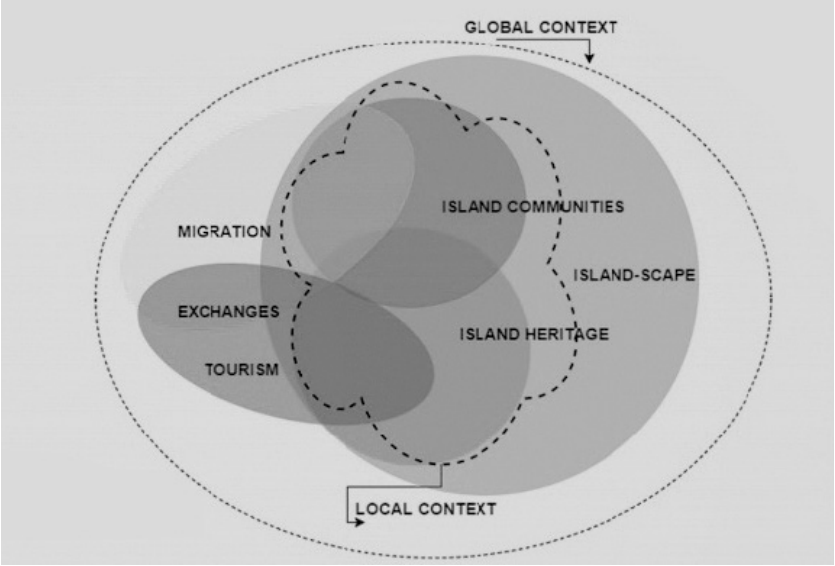

Fig.1 A schematic representation of the pressures and systemic elements that affect island communities resilience and relation with heritage, as viewed through the case study

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Chapter Five:

Local communities, young professionals and the social dimensions of the european heritage

University education concerning european cultural-architectural heritage

Cultural heritage education in the athens school of architecture

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The Year 2018 was celebrated by the European Commission as the "European Year of Cultural Heritage", with the main slogan "Our Heritage: Where The Past Meets The Future". In this context it is more than evident that the education of the younger generation can play a crucial role in safeguarding the values of European cultural heritage.

This paper presents the education concerning European Cultural Heritage and more specifically Architectural Heritage in the School of Architecture of the National Technical University of Athens.

Fig. 1: Athens School of Architecture Averof building (source http// www.ntua.gr)

The Athens School of Architecture N.T.U.A, was founded in 1917 and is the oldest and most famous Greek School of Architectural Engineering. It is one of the 9 Engineering Schools of the National Technical University of Athens, which educates Greek engineers from 1863.[43]

Although Greece is considered as the cradle of Western civilization, systematic education of Architects concerning the protection of built heritage (ancient and modern) started quite late.

A very important date for this was 1975 ,declared by the Council of Europe as the European Architectural Year, which lead to the adoption of the European Charter of Architectural Heritage, widely known as the Amsterdam Charter. This charter became a focal point for the Athens School of Architecture, which started offering new courses on Protection, Restoration, Conservation and Reuse. In parallel creative research and fruitful international collaboration. started to establish a common ideology, methodology and technological approach in the field of Protection and Conservation of monuments.

[43] NTUA's 9 Schools are: Civil Engineering, Mechanical Engineering, Architectural Engineering, Chemical Engineering, Rural and Surveying Engineering, Mining and Metallurgical Engineering, Naval Architecture and Marine Engineering, School of Applied Mathematical and Physical Sciences.

The charter, among other important and ground breaking -for the time- points, underlined the following principles[44]:

a. Apart from its priceless cultural value, Europe's architectural heritage gives to her peoples the consciousness of their common history and common future. Its preservation is, therefore, a matter of vital importance.
d. Architectural conservation must be considered, not as a marginal issue, but as a major objective of town and country planning.
Architectural Heritage is a capital of irreplaceable spiritual, cultural, social and economic value.
i The architectural heritage will survive only if it is appreciated by the public and in particular by the younger generation. Educational programmes for all ages should, therefore, give increased attention to this subject.
k Since the new buildings of today will be the heritage of tomorrow, every effort must be made to ensure that contemporary architecture is of a high quality.

Today this Charter is still extremely relevant, combined with all the previous and the next ones that continuously update and complete creatively the principles. In parallel to the charters the important role of UNESCO (from1945), ICCROM (1956) and ICOMOS (from 1965) must be underlined.

Cultural heritage courses in the 5 year program of studies

The Athens School of Architecture awards a degree of Architectural Engineering, after 5years of studies equivalent to 300 ECTS

Students are taught:

- Obligatory courses concerning: History and Theory, Architectural survey of Historical buildings, Systematic analysis of vernacular buildings and settlements.
- Ellective courses concerning: History + Theory, Restoration, Building Reuse, Integration of a new building in an existing built environment, Christian temples, Constructional Analysis and restoration of traditional buildings.

Students that show a special interest in Architectural Heritage often finish their studies with a dissertation and a diploma thesis on a relevant project.

[44] The declaration of Amsterdam 1975- https://www.icomos.org

Fig 2: (above) Constructional analysis sketch by student Christos Malesovas 8th sem.
(right) Conservation of an Industrial building Presentation of diploma thesis project.

In this context very creative research is conducted by students and their Architectural Conservation Design projects are in most cases highly innovative, sustainable and of excellent quality.

Post graduate master program: "protection of monuments"

1998 was a very important year for NTUA, because the Interdisciplinary Post Graduate Master Program "Protection of Monuments" was founded in order to provide transdisciplinary education for engineers and other scientists in the field of restoration and conservation of monuments and sites. At that time the Architectural Heritage of the country had already suffered great damage by massive urban reconstruction, seismic hazards, governmental and public indifference.

This Master Program was based on the principles of the international Charters and Conventions and on the strong will, scientific knowledge, and determination of visionary NTUA Professors.

The interdisciplinary character of the Program was assured by the close collaboration. of the four NTUA Schools : Architectural Engineering, Chemical Engineering, Civil Engineering and Rural & Surveying Engineering.

In order to cover the vast field of scientific and technological knowledge , the diversity of values, scopes and methodologies, the Program was divided in two Directions of Studies:
Direction A: "Conservation and restoration of historic buildings and sites" organized by NTUA School of Architectural Engineering

Direction B:"Materials and conservation interventions", organized by NTUA School of Chemical Engineering

The course curriculum comprises:

Mandatory Courses for the two directions: History and theory of restoration, Introduction to the pathology & restoration of monuments & building materials, Legislation and management of monuments



Fig.3: a,b) 2018 Survey of buildings in Mystras byzantine castle town, c) Prof. M.Korres with postgraduate students in the Eleusis Archaelogical site (photo M. Balodimou architect eng. MSc KULeuven)

Direction A "Conservation and Restoration of Historic Buildings and Sites"

Core courses: Methodology of analysis and documentation, Methods of conservation and restoration, Protection, design and management of historical buildings and sites or complexes.
Optional Courses: Special issues concerning conservation and restoration of monuments (visits in situ), Special issues concerning archaelogical research, Monuments and museums, Lighting and mechanical installations of monuments, Geometrical documentation of monuments, Industrial heritage, Contemporary Architectural heritage, Recording and filing methodology, Specialized course for civil engineers.

Final Dissertation Thesis

Direction B "Conservation interventions, materials and techniques"

Core courses: Science and engineering of building materials and materials of architectural surfaces, Science and engineering of materials and conservation – restoration – protection interventions, Environmental management for the preservation of monuments and sustainable construction.

Optional courses: Corrosion and conservation of metal objects of art and constructions, Specific techniques of materials and conservation interventions for the earthquake protection of monuments, Pilot compatible implementation of conservation interventions, Environmental management planning for the preservation of monuments, Environmental management- materials and technologies for the protection of museum exhibits, Materials- techniques and technologies for the conservation and preservation of movable cultural heritage and objects of art, Archaeometry, Diagnosis of pictorial cultural heritage.

Final Dissertation Thesis

The curriculum of multidisciplinary courses is constantly updated following technological, scientific, theoretical advancements and digital innovations. The programme lasts 2 years It awards a Post Graduate Specialization Diploma equal to 120 ECTS.
Courses are offered in Greek, but it in the near future it is planned to be also taught in English, addressing to international students as well.

The programme is supported by the Greek Ministry of Culture.

Every year International experts and Professors are invited to give lectures and joint international workshops are organized.

A special mention must be made for the collaboration with the famous French "Ecole de Chaillot".

Research projects

Another very important aspect is the knowledge gained by innovative research programs concerning the Analysis, Protection and Conservation of Cultural Heritage. Although Greece's dramatic economic crisis has limited the funding of Cultural Heritage, many important research programs have been completed. From a constructional point of view special mention must be made of the pioneer interdisciplinary research programs concerning:

- the restoration of the stone bridge of Plaka in Epirus (2017-2018)
- the metallic French wharf in Lavrion (2018-2019)

Creative Research will always be the undeniable way to conquer and advance knowledge.

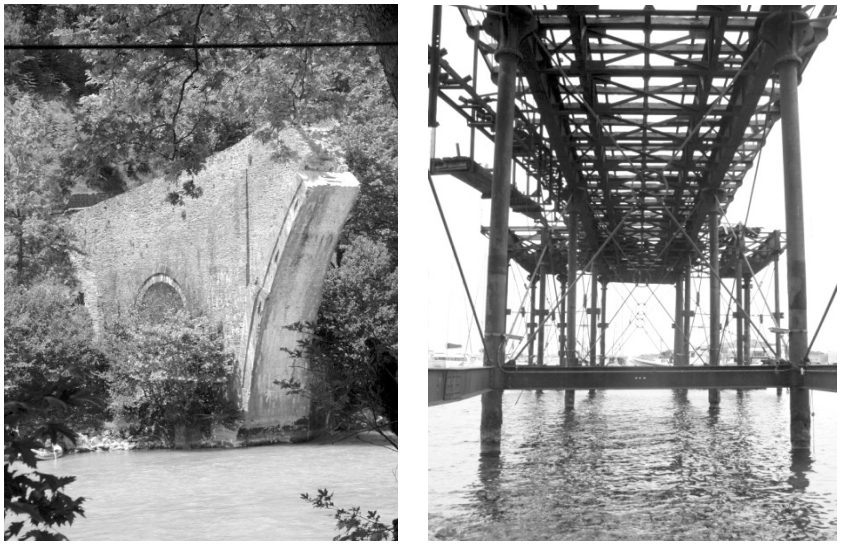

Fig.4: left: the stone bridge of Plaka in Epirus, right: French wharf in Lavrion

Younger generation cultural internationalism via erasmus students exchange programs

Another very important factor for the education of young Architects in the field of European Cultural Heritage was the creation of the Erasmus exchange program (EuRopean community Action Scheme for the Mobility of University Students) It is a European Union student and staff exchange program established in 1987.

Fig.5: left: Erasmus student exchange programmes since 1987 (source: Erasmus logo- Wikipedia), right: Erasmus and Greek students analysing a vernacular village

This program gave the opportunity to students to travel and study in different European Universities, thus understanding through the educational process and in everyday life the value of different

national cultures and architectural expressions that form the unique European Cultural Heritage. In a way the Erasmus exchange program , has helped to create a new generation that can defend and highlight the slogan "**Our** Heritage: Where the past meets the future" which was the banner of 2018 Year of European Cultural.

Cultural internationalism is an idea that emerged mostly after World War II. It took many years to flourish, to be practically implemented, to be able to break the nationalistic mentalities and barriers. Unfortunately, during the last years, extreme Nationalistic ideology is rising in some European countries, endangering - among others - broad minded education of the young generation and the creative approach of OUR shared European Heritage.

Future perspectives of European cultural-architectural heritage education

During the last 40 years a lot of work has been done in the National Technical University of Athens concerning Greek Cultural Heritage. But there is a lot more to be done. National and International research and educational programs must be reinforced and enriched with new creative ideas and the dynamic help of the younger generation. Heritage in risk from natural disasters, war, abandonment or overdevelopment is a dramatically crucial issue that must be faced in a holistic sustainable and innovative way. European Cultural Heritage cannot only be considered as a historical valuable legacy, it has proven to be the base for future creative socio-economic development.

In the Education of young European Architects the slogan "**OUR HERITAGE**: WHERE THE PAST MEETS THE FUTURE" must become a stepping stone for future creative sustainable evolution and innovative visionary design .

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Architectural features of the figurative component of the ancient heritage in the architecture of Ancient Greece and Russia.

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The image in architecture has many meanings, but the exact wording, as in mathematics, of course does not exist. At the same time, we all know what a huge impact it has on humans. Residents of the metropolis architecture surrounds everywhere and very rarely people find themselves in pure nature. And the trend of modern life leads to the growth of cities, the reorganization of rural landscapes, forcing residents of villages and small towns to move to megacities, leaving the image of a favorite place.

The harmonious unity of the mythological images of the Olympic Pantheon of gods and the structural features of the tectonics of buildings thanks to the skill of the ancient architects still serve as an example of composite diverse unity (**Fig.1**). It is appropriate to recall Florensky's words about the harmony of compositional and constructive unity in ancient art: "in addition To the art of Hellenic and iconography, it seems that it is not possible to give more examples of such balance" [1].

At the same time, most of the cultural heritage, people protect from buildings and ancient heritage are preserved with the same resistance. Why? First of all, because it is a unique international language of architecture, the cradle of European traditions in architecture and other areas of urban planning, architecture, engineering. Therefore, the preservation and deep scientific study of the ancient heritage is an integral part of education and public cultural education of the population.[45]

One of the examples of conservation of imaginative compositional unity of ancient heritage serve preserved ancient Greek cities: Athens, Delphi, Olympia, Selinunte, Valle dei Templi, Hersonissos , Kerch and many others. These amazing ancient city-States, formed in the archaic period, managed to preserve the diverse "culture of the city", not dissolved in the widespread globalization of technological progress. Even in the destroyed state temple complexes demonstrate the greatness of the creative plan of the architect in unity with many mythological images and the surrounding nature. They are an example of urban harmony [2].

A lot of people from all over the world come to ancient ancient settlements for the sake of touching the works of ancient Greek architects. At the same time, the tourism industry is an important source of income of States. Every city founded by ancient Greek colonists now has museums, hotels for tourists, developed infrastructure, highways and related facilities (**Fig.1**).

[45] About the value of ancient heritage in the Russian architecture of the Nikolaev time wrote nashchokina M. V. in his monograph, devoted to the use of the heritage of Ancient Greece and Rome in the Russian architecture in 1830-1850-ies.

Fig.1: (a) the Acropolis of Athens. b) Reconstruction of the Acropolis of Athens Leo von Klenze in 1846. Almost every Acropolis with its surrounding museums receives hundreds of tourists every day, the ancient surviving theaters are used as a wonderful concert venue.

Fig.2: a) ancient Greek theatre in Syracuse. b) ancient Greek theatre in Chersonesos.

In Russia, such an example for the study can be carefully preserved ancient Chersonese and its environment (**Fig.2**). Here, in the ancient amphitheatre, performances based on plays by ancient Greek philosophers are held and are very popular.

Carefully preserving the ancient heritage in the modern world, we have a positive impact on the education of generations of specialists in the field of art and architecture and residents of cities and settlements. The rapid development of civilization, the emergence of a typical design of residential areas, typical streets, typical houses erase the unique image of the divine beauty of ancient and old Russian architecture, breaking the historical urban environment soulless monotonous buildings.[3]

Fig.3: a) New residential areas of Moscow, the embankment of the Moscow river, construction of the mid-twentieth century.B) part of the fortress wall of Veliky Novgorod. The Territory Of Ancient Greek Chersonesos.

The monotony of building generates typical construction, typical monotonous thinking, blurring the line between creativity and standardization. In some cases, standard construction is appropriate, but in residential areas appropriate individual approach to the design of buildings. For rice. 3 a) a residential area of Moscow, formed by typical residential buildings and b) the tower of the medieval fortress wall in Novgorod the Great, which is used after the restoration as a Museum and public educational center.[4]

The greatness of the image in urban planning and architecture is difficult to consider from a mathematical and any other point of view, it is difficult to apply to it known to man methods of measurement. How do you measure the sensation of sunlight on your face and sunlight appearing in a dew drop at dawn?

Indeed, there is no such area in the creative activity of man, where the Greeks would not have left the most valuable heritage. In Greece, a kind of mythology was created, closely related to the beautiful and then almost not changed by man nature, which the folk fantasy inhabited by a whole host of humanoid deities [5] Greek mythology served as a source of epic, lyrics and drama, Greece was the birthplace of a number of Sciences, starting with rationalistic philosophy and ending with history and medicine. Unsurpassed heights reached the ancient Greeks in the field of fine arts, also associated with mythology. Images of gods and legendary heroes were embodied in marble and bronze statues, in reliefs and paintings of temples, in ornamentation of art utensils, fabrics, coins and jewelry.[5,6]

Fig.4: a) the Image of the defeated Atlanta will always be reminded of Greek mythology and the temple of Olympian Zeus and Agragate, b) Pallas Athena, the virgin warrior for the protection of Athens,) Venus de Milo, a symbol of beauty and tenderness.

So you can compare Architecture has an impact on the formation of the personality of not one, but many generations and the impact of the architectural image on the person can not be overestimated, so it is important to its spiritual and cultural component and so important to the modern architect to be attentive to the image that he creates.]

Fig.5: Archaeological Park – a) Sicily b) the location of Ancient Khersones, in) Panticapaeum[45] in the Crimea

Architecture is the art of organizing space. Filled with meaning. Internal and external content, which is a harmonious unity with the surrounding nature and the internal content of the image. In this harmonious ensemble houses and transport arteries, squares and pedestrian spaces, arcades of palaces and parks, fencing of squares and fountains, an interior of the temple and a monastery yard, a concert hall and modest furniture of a house are merged together. All elements are equally involved in the creation of a single harmony of intertwining structural elements, purity of quality materials, unity of geometric shape and boundless imaginative understanding of form. It is interesting that the concept of image in architecture fully incorporates its artistic and philosophical basis, collecting, as in a Symphony orchestra, every instrument, sound. [47]

There is a famous comparison of architecture with frozen music, beautiful, but the architecture of the ancient Greeks can hardly be called frozen. Each had only his own unique way, the harmony of proportional proportions, style and plot bas-reliefs. The genius of the great rationalists and dreamers – ancient Greek architects is read in the simplicity of the form and complexity of kurvatur, the geometry of each detail, in the folds of Caryatid clothing, the direction of movement of the ritual procession.

The image of architectural works consists of the smallest details, color ratios, the angle of refraction of light, the quality of the material and many other factors. And the impact of the image on a person is so strong that after two and a half thousand years, a large number of people travel great distances to touch the ruins of an ancient temple. for rice.6 presented student work on the restoration of the Acropolis

[46] Panticapaeum (others-Greek. Παντικάπαιον, lat. Panticapaeon) — an ancient Greek city, founded in the late VII century BC natives of Miletus on the site of modern Kerch; at the time of its heyday it occupied about 100 hectares. the Acropolis was located on a mountain called today Mithridates. The main deity-patron of Panticapaeum from the Foundation of the settlement was Apollo, he was dedicated to the main temple of the Acropolis.

[47] In his treatise on the soul, Aristotle wrote about harmony, explaining the ratio of quantities in geometry and mathematics so that each was adjusted to the other so that only such quantities and quantities can exist in the unity of the whole.

of Athens, made by D. Shchepetkov in 1993 under the guidance of architect B. K. Eremin. [9]

On the territory of Russia, almost all ancient Greek policies were destroyed in different time periods. But the receiver of the ancient culture were the centres of Orthodoxy – the Chersonese, where in the IX century, received the baptism of Grand Prince Vladimir of Kiev. It should be remembered that many ancient cities, destroyed by conquerors or natural disasters, will not be revived, but retain in its original form all the archaeological information about the layout in different periods of its development.

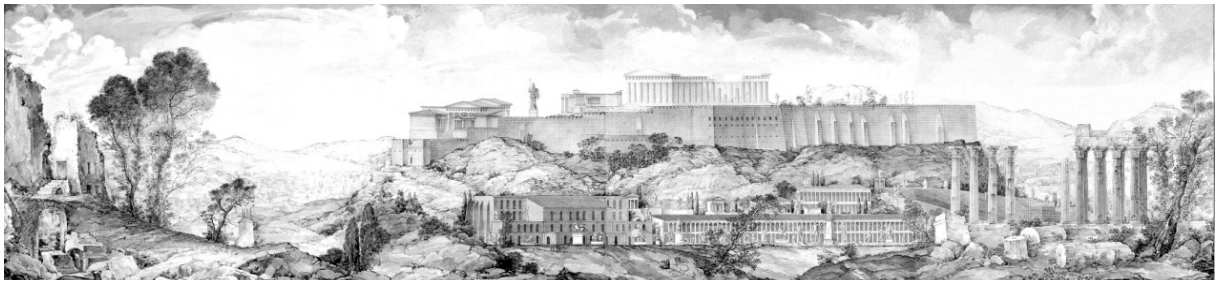

Fig.6:. Work on the restoration of the Acropolis of Athens, made by D. Shchepetkov in 1993 under the guidance of architect B. K. Eremin.

Cultural,educational and spiritual components of the architectural image of ancient cities are important in the formation of the foundations and traditions of modernity. Tauric Chersonesos, Bosporus, Scythian Naples, Tanais, Panticopaeum, Kerkinis, Shermonassa, Phanagoria preserve the ancient culture. On the territory of these cities museums are created, it is also necessary to create archaeological parks in all ancient settlements, the creation of cultural and educational centers with libraries, museums. This will have a significant impact on the development of cultural and educational tourism, education and cultural development in Russia.

In the planning structure of the modern city intertwined in a single urban ensemble of the century, century, changes in culture and religion, but what is called the "Spirit of the city" or "Harmony of architecture" is not destroyed by time, but only supplemented, transformed, giving rise to new images, linking them into a single multicolored carpet. What will be the city of the future, what new incomprehensible images will arise in hundreds of years, we can only assume. I would like to preserve the greatness of the ancient ancient image that protects modern cities, its traditions and foundations, with its complex structure and unusual destiny.

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Working with local communities on the valorization and protection of cultural heritage: the experience of European-funded projects

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Introduction

The first initiative of the European Year of Cultural Heritage 2018 is to create"a shared European heritage, by connecting local cultural heritage with the broader European cultural context".[48] This objective is followed by the ninth initiative, namely "to promote a wider understanding of heritage as a common good by placing people and communities at the centre and involving them in decision-making",[49] following the precepts of the Faro Convention. These two initiatives underline the importance that is placed on cultural heritage at a local level and on the participation of the local communities in its valorisation and enhancement.

This prerogative was stressed by the title of a prestigious conference that was held in Brussels in May 2018: "The Regional and Local Dimension under the Cultural Heritage".[50] And in March 2018, in the course of another Brussels conference on "Innovation and Cultural Heritage",[51]not one but three European High Commissioners declared the Commission's will to support local initiatives as well as research into local cultural heritage as a source of inspiration for future innovation on a European level. It has, thus, become imperative to bend over and look closer to local elements of tangible and intangible cultural heritage, not with a condescending gaze but as if they were *tesselae* from a splendid mosaic depicting Europe.

This is, after all, the prerogative set by many academics and representatives of local or regional initiatives, who are apprehensive of the acculturation efforts imposed for many decades by state authorities as well as of the effects of globalization on local cultural identities (Bendix, Eggert, Peselmann, 2013). Organizations related to Heritage Protection and Enhancement have already responded to this prerogative by issuing basic guidelines and handbooks for the information of communities and local administration alike (OECD/ ICOM, 2018).

[48] https://ec.europa.eu/culture/content/shared-heritage_en [retrieved 1/9/2018]
[49] https://ec.europa.eu/culture/content/all-heritage_en [retrieved 1/9/2018]
[50] The Conference was organized by RICC (Regional Initiative for Culture and Creativity) in collaboration with Europa Nostra, NECSTOUR and ERRIN. For further information see http://www.europanostra.org/events/regional-local-dimension-cultural-heritage/ [retrieved 10/9/2018].
[51]https://ec.europa.eu/digital-single-market/en/news/high-level-innovation-and-cultural-heritage-conference [retrieved 10/9/2018]

Working on local cultural heritage valorization projects

Time Heritage is a very small Greek company offering services in the field of cultural heritage protection and enhancement. Our team combines high academic competencies with a practical, field work approach.[52] Through its long effort to collaborate with municipal authorities, academic institutions and cultural organizations, Time Heritage has carried out repeatedly projects on the valorization of local cultural heritage and the empowerment of local communities to understand, protect and enhance their own heritage.

It has not been an easy task. First of all, because working with local communities often involves a great deal of preparatory and educational work. One needs to overcome bureaucratic obstacles and, most importantly, to gain the trust of the locals. Secondly, because it involves long and tedious work as a mediator between state authorities and the locals, as they both lack mutual trust. Thirdly because, on top of this, our status as a private company often raises suspicions that we constitute a profit-seeking entity without scruples.

A stroll through the major steps of our journey will show you what I mean in a clear way. Our initial contact with local communities occurred during the conference "Cultural policies and local administration", which we organized on behalf of the European Grouping of Territorial Cooperation (E.G.T.C.)"Amphictyony"in May 2010, at the Omireion Cultural Centre, Chios, Greece. During that conference, where the majority of the audience came from the local administration, we noticed a few basic aspects regarding the enhancement and management of cultural heritage at a municipal level. Firstly, that it is almost impossible to achieve consensus among local stakeholders of cultural heritage resources; secondly, that there is (or at least was) a lack of long-term planning regarding the rational management of local heritage. Thirdly, that culture and cultural heritage is low among the priorities of local administration, despite the rhetoric for the contrary. Finally, the most "difficult" realization was that, although mayors and municipal employees seek the opinion of experts, they rarely follow their advice.

Despite these rather discouraging realizations, we had, at the same time, some encouraging contacts with municipal employees, a few mayors and several members of the civil society, people who, at a

[52] www.timeheritage.gr.

voluntary level, undertook initiatives for the preservation and valorization of their heritage, both tangible and intangible. We thought of a prospect collaboration with such members of local communities as a dual challenge: on the one hand in order to aid locals raise their efforts to a more "professional" level and acquire the necessary knowledge; on the other hand raise awareness among local authorities that they need to invest on the education of their employees regarding the preservation of cultural heritage and the organization of cultural projects if they aim at a long-term, sustainable local development pivoting around culture and tourism (Karagiannis,2013; Lampada, Tzedopoulos, Kamara, Ferla, 2018).

Safeguarding movable heritage assets on mountainous regions

Our first incentive was the project "MoCaCu: a Portable Unit for the Characterization, Documentation and Conservation of Movable Cultural Heritage artifacts in Remote Areas of Greece". I was personally inspired to create this unit during an ICORP –Heritage at Risk conference in Istanbul in 2012. Presentations from all over the world highlighted the missions of specially trained groups of conservators and heritage professionals in endangered regions and monuments, when I realized that "emergency" teams do not exist in Greece. Nikolaos Zacharias, Assistant Professor at the University of the Peloponnese and head of the Laboratory for Archaeometry, shared my enthusiasm and we managed to get funding to start from the Swiss Federal Office for Culture, due to an existing bi-lateral agreement for the preservation of movable cultural heritage.[53] The project started in July 2013 with an interdisciplinary team, consisting of experts from the Laboratory of Archaeometry (responsible for XRF and non-destructive characterization methods), Time Heritage (responsible for documentation, art historical and ethnographic research), Diadrasis-IT[54] (responsible for building the site and the electronic database for recording the artifacts treated during the missions) and accredited independent experts in conservation.[55] A fully equipped portable laboratory was formed, which served in two missions of field work in

[53] The agreement stood in force on April 13th, 2011.For the full text, visit: https://www.bak.admin.ch/bak/en/home/cultural-heritage/transfer-of-cultural-property/bilateral-agreements/bilateral-agreement-with-greece.html

[54] www.diadrasis.gr

[55] The conservators' team consisted of Dr. Christos Karydis, Dr. Eleni Kouloumpi, Alex Konstanda, Alexander Floros, Evangelos Siokos and Kelly Papaconstantinou. The team from the Archaeometry Lab, apart from Prof. Zacharias, consisted also of Eleni Palamara, George Malaperdas, Celia Valantou, Maria Dendropoulou and several students-volunteers.

remote, mountainous regions. Our first field work was undertaken in the region of Alagonia, on the western slopes of Mt. Taygetus, and the second one in Kalarrytes, a quasi-abandoned (formerly thriving) village in North Tzoumerka region, Epirus, Greece. In both cases the majority of artifacts we worked with came from local churches. In Alagonia the ecclesiastical items came from 4 churches, namely Aghia Ekaterini in Nedousa, Ypapanti in Artemisia, Agia Varvara Pigon and Taxiarhis in Lada.In Kalarrytes we worked with icons from the church of Aghios Nikolaos, main church of the village.

Fig.1: Carrying equipment and material to the Church of Agios Nikolaos in Kalarrytes with the aid of the locals and on horseback.

The protocol we worked on for each item included the following steps: characterization of material through non-destructive analytical methods; identification of problems; digital photographing before any intervention; preventive or interventive conservation;digital photographing after interventions; documentation of inscriptions, and archival research on the material combined with extensive consultation with the locals. Thus, we managed to record not only information on the items, but also bits of local history, customs, folk tales, stories etc.For example, in Artemisia we found out that several icons had been painted, restored or paid for by a local abbot, Daniel Pahygiannis, who refused to obey in full the command of king Otto in 1833 for surrendering all precious properties of his monastery, Kourtzeni, near the village of Lada.[56] Thus he saved and handed over to the monastery of Mardaki (which continued its function) three wooden iconostasis panels and some other icons which attest to a great artistic skill and possibly to Western influences during the Greek War for Independence (most of the icons were painted roughly in 1825). The icons were discovered completely covered in grim at the gallery of the church; such was the surprise of the local Ephorate of

[56] Β.Δ. 25/9/1833. The decree ordered that all monasteries with less than five monks should be closed down, the monks should be transferred to more populous monasteries and the movable items should be handed over to the closest bishoprics.

Antiquities which supervised the project, that, after the preservation, they took the icons away for safekeeping in the Museum in Kalamata. Furthermore, we traced the relation of the village Nedousa, hometown of military captain Nikitas Stamatelopoulos (Nikitaras), with the cleric and doctor Dionysios Pyrros through the latter's dedication of an antimension to the local church. On the other hand, investigation of the miracle-working icon of St. Aekaterini at Nedousa did not verify the local myth concerning its dating and method of painting.

Fig. 2: Portable analysis for the "antimension" of Dionysius Pyrros.

In Kalarrytes, on the other hand, items such as a German-style Pietà, a silver plate dedicated by a rich inhabitant of Odessa (probably originating from the village) and a wooden clock decorated with Chinese patterns (probably bought in England) attested to the inhabitants' commercial activities all over Europe and Russia in the early 19th century. Kalarrytes were a renowned centre for gold- and silversmiths' artwork in the Ottoman Balkans, with strong ties to the Ionian Islands and Italy, especially Trieste, from where the commercial networks of its inhabitants spread to the North of Europe. The Church of St. Nicholas, with several icons belonging to the Heptanesian School and the aforementioned items of Western origin, constitutes a unique source of historic information on the trajectory of the village, verified, in most cases, by the oral traditions recounted to us by the very few remaining inhabitants.

Fig.3: Treating the Pietà in Kalarrytes.

The project MoCaCu strengthened our faith in working with the local communities, because the response we got from the locals and the value of the objects we managed to preserve and save was amazing (Καμάρα, Ζαχαριάς, Καρύδης, Κουλουμπή, Λαδάς, 2015).

Researching the deficiencies of cultural heritage management on a local level

Almost at the same time, we started a research addressed to municipalities and local cultural organizations (small museums, associations etc.), on their knowledge about cultural heritage management and on their needs in the field. The research project DIAPLASIS (Management plans for Areas of Historic Importance), which we designed and implemented with the support by the General Secretariat of Research and Technology with EU funds between 2013 and 2016, resulted in the conclusion that cultural mapping is almost inexistent in Greece on a local level. Despite the fact that there are advantages and disadvantages in cultural mapping in its "academic" terms (Unesco 2009; Duxbury, Garrett-Petts, MacLennan 2015), inventorying the local cultural heritage resources is an absolutely essential procedure.An almost unanimous conclusion among municipal authorities was their need for further education on how to manage and valorize their own heritage in a financially sustainable way. We therefore produced a handbook for cultural heritage management written in a simplified way, which we are now ready to distribute to municipal authorities and make available on-line. Two case-studies, however, revealed far deeper problems related to the inclusion of stakeholders in heritage management and the respective hostility some of them show to the heritage issues of their area. Our first case study, centered around the Roman cemetery of Rahi Koutsogilla and the ancient port of Kenchreai, one of the two ports of ancient Corinth, revealed that bureaucratic obstacles are often stronger than the will of the managing authorities to protect monuments and sites. Despite the fact that a series of mature studies for the conservation and enhancement of Rahi Koutsogilla have seen the light (Ανανιάδου, Γκέκα, Νικολάου 2008; Ζιρώ,Τιγγινάγκα 2008), dissent among the Forestry Department, the Koniareion Foundation (which owns part of the plot where the excavations took place) and the Ministry of Culture prevented the latter from fully recuperating and expropriating the plot in order to fence and protect it effectively. Furthermore, it proved that

strong financial interests can prevent in a violent way any effort for the valorization of cultural heritage for touristic or other sustainable means for local development. A quarry-owner on Mt. Oneion, above the modern village of Kehries flanking the port, proved stronger than the will of the local cultural association, who demanded that his nature-spoiling activity be stopped for the sake of natural and cultural regeneration of the area.

Fig.4: Historic buildings in the Old Port of Chania are obstructed by metal constructions, parked cars and other hindrances.

Our second case study, on the historic town and port of Chania, Crete, revealed that despite the will and good efforts of the municipal authorities, who have established a special bureau for the Old Town, aiming at applying the rules for the preservation of the authentic character of the area, the clash between tourism and sustainability is too strong to resolve (Καλλιγάς, Ρωμανός 1995. The town is literally divided between its permanent inhabitants (mostly elderly people) and those living off tourism (restaurant and club owners, touristic shop owners, hotel owners etc). The former are gradually led to a state of despair, as their properties are too expensive to maintain, whereas living in the old town becomes at times unbearable due to the noise and maltreatment by the shop owners. The latter, on the other hand, disobey the rules in a blunt way, regardless of the admonitions about sustainability and the penalties directly inflicted upon them by the authorities.

The project DIAPLASIS has revealed that an open dialogue should be established regarding the awareness of citizens on their cultural

heritage as well as the participatory means which could help breach the gap between "public" and "private" sphere in all its manifestations, in order to achieve a balanced and sustainable development.[57]

Awareness raising and vocational training

Meanwhile, Time Heritage started getting involved in Erasmus+ KA 2 (VET) projects, starting with CULTOUR+ (Innovation and Capacity Building in Cultural Tourism. Entrepreneurship for European Cultural Routes),[58] a project led by the University of Extremadura in Spain, focusing on entrepreneurship and sustainable development for European Cultural Routes. In the course of the project we had the chance to visit several small communities in Spain and Portugal and to carry out field work along St. Paul's itinerary from Kavala to Corinth in Greece.As the project focused on religious and thermal cultural routes, we noticed quite different degrees of awareness on cultural heritage in these communities and quite different levels of enhancement and valorization of their past. In Beroia, for example, there is a strong local narrative about St. Paul's preaching, which tends even to erase the city's function as a Hellenistic, Byzantine and Ottoman major centre, whereas in Kenchreai, the Corinthian port from which Paul departed for Asia Minor, there is absolutely nothing to remind of the event and no enhancement whatsoever of the underwater cultural heritage of the ancient port, where magnificent Late Roman glass panels and other finds were discovered archaeologically (Shaw 1967:223-231; Ibrahim, Scranton, Brill 1976; Smith.1977: 201-231). Local branding, a process which leads to the effective shaping of local cultural identity, seems to be absent from many local communities in Greece, or is done in a rather blunt way, clearly aiming at a hasty and short-term increase of touristic flows without any concern for sustainability. However, different regions present different degrees of commitment to cultural heritage as a lever for local development as well as varying degrees of social consensus on the choices of the local authorities (Lampada, Tzedopoulos, Kamara, Ferla, 2018). The field work carried out under CULTOUR+ in Greece verified the finds of DIAPLASIS and showed

[57] In this respect initiatives have taken place by Greek NGOs in the field of culture. We should highlight the efforts of CulturePolis which established an "Observatory for Culture and Creativity" (https://culturepolis.org/ergastiria-laboratories/politistiko-paratiritirio-culturepolis/); the Greek Ministry of Culture also announced, in October 2018, its will to establish an Observatory for the National Cultural Endowment, which will undertake research and analysis regarding the management of cultural assets and the progress of participatory activities of citizens in it (https://www.culture.gr/el/Information/SitePages/view.aspx?nID=2418).

[58] www.cultourplus.info/en/

that systematic work should be carried out on a local level by cultural authorities and organizations such as ICOMOS, the Hellenic National Commission for UNESCO and the ministry of Culture and Sports.

Fig. 5: Valorisation of an Ottoman bath within the complex of the Mud-baths of Krinides, Kavala, Greece.

In response to the aforementioned problems and research finds came the culmination of our projects, the Digital Educational Network for Cultural Projects' Implementation and Direction (DEN CuPID),[59] implemented under Erasmus+ KA2 action and led by E-Trikala, aiming at empowering members of local communities (primarily municipal employees, members of local cultural associations, directors of small museums and entrepreneurs in the fields of culture and tourism) to plan and implement effectively cultural heritage management projects and cultural events in order for them to be meaningful, successful, financially viable and to have a positive impact on local branding and the cultural awareness of the local communities.Our approach was to work with real case studies of municipal initiatives and with real projects brought forward by the trainees.[60] DEN CuPID was a very interesting blending of mentoring, hands-on application of theoretical precepts and very close collaboration among trainers and trainees. At the core of the project stood four transnational workshops. In the first one, held in Zaragoza, Spain, we learned how to manage a UNESCO site, namely the Al-Jaferia palace, which reflects various historical phases and different cultural values; in the second one, in the Thessalian city of Trikala, we learned about organizing ex nihilo and managing a theme park within a historical setting; in the course of the third workshops, in Cori di Latina, Italy, we learned how to involve locals of all age groups in a successful enhancement of the cultural resources of

[59] www.den-cupid.eu

[60] Greek trainees were almost entirely municipal employees and agents, coming from the municipalities of Messene, Corinth, Neo Herakleio, Tanagra, Farkadona, Farsala, Pella, Pylaia-Hortiati, the Region of Central Greece as well as a teacher working with minors at the prison of Diavata.

their region with the aid of technology, namely via applications, social media and an innovative platform; finally in our final workshop in Varna, Bulgaria, we were shown how local administration can create a network of museums and a related itinerary within a historic city centre, leading at the latter's resuscitation and touristic valorization. Our trainees, on the other hand, shared their achievements but also the obstacles they faced. Their international collaboration led to more ideas about projects and two new proposals were submitted for the Erasmus+ KA2 call of March 2018.

Fig.6: DEN CuPID case study: the transformation of a historic mill into a successful theme park (Mill of the Elves)

Based on the experience gathered from training and on the experts' input, our DEN-CuPID educational platform is open to everybody:[61] It contains a useful "Handbook for Cultural Policies and Cultural Heritage Management", five modular educational entities (based on PPT presentations) for self-training and self-evaluation, and an extensive database of on-line publications, web-pages and management plans for further reading.

Conclusion

Through our experience with EU-funded projects focusing on local communities, we are now presenting some conclusions that may trigger a wider discussion and collaboration. As said in the beginning, the EU agenda for the next, post-2020 period is emphasizing the role of local communities as source of knowledge and stored wisdom, which, if researched and valorized properly and brought to a European level, may fuel innovation and further cultural achievements. For example, research in pharmaceutical plants and their usage locally in mountainous regions may offer ideas for new pharmaceutical products or research in building techniques of traditional settlements may reveal interesting aspects of early bioclimatic architecture.

[61] http://edu.den-cupid.eu/

Having this in mind, the next agenda will also fund projects which will aim at relating local cultural heritage to the broader European one. In this respect focusing on the needs but also on the potential of local communities' cultural heritage, both tangible and intangible, is a challenge which will lead the way to successful synergies in two years' time.

What needs to be done:

- Municipalities should perform effective cultural mapping: in many cases local authorities do not have a clear picture of their heritage assets, nor have prioritized their needs regarding their preservation, safeguarding, enhancement and valorisation. However, as municipalities sometimes don't have the human resources to accomplish this cultural mapping, they should be aided by experts and organizations and should be encouraged to do so by regional and state authorities.
- Prioritization of needs for municipal authorities and perhaps creation of a Pan-Hellenic on-line map of heritage per category, in order to facilitate future partner search for EU projects. Clustering and networking may help avoid the constant problem of lack of resources and technical knowledge and may lead to more mature ideas.
- Further education through toolkits etc. on how to write successful research and funding proposals. Municipal employees should be encouraged to participate at specialized seminars and make use of all possible on-line tools for training.
- Effective networking with communities and authorities all over Europe.
- As a suggestion, the Hellenic branch of ICOMOS could play such a role, based on the expertise of its members, and it could also actively lead EU-funded projects in the future.
- Despite the fact that collaborating on a municipal level might be difficult at first, particularly due to the legal bindings of municipalities, the truth is that it can be immensely rewarding, as it can enhance the locals' connection to their own heritage, their potential for voluntary contribution to protection and valorization projects and, if successful, the understanding of the need to create effective stakeholders' groups in order to preserve and highlight their heritage in a sustainable and meaningful way. At the present day financial crisis, where everything is becoming "business" and many parts of our country will soon be sold to "funds", it is imperative to empower local communities to have their word heard on an international level.

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Eleusis: CITY INCOMPLETE ?

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The article aims at capturing the genius loci of contemporary Elefsina, a city characterized by a lingering feeling of incompleteness.[62] In particular, the analogies between the preconceived and the real image of the city are sought.

The research is carried out by means of individual experience: based on the in situ experience of the contemporary urban condition, an investigation of the discussed contradiction between an old solid character and the contemporary, dynamic urbanism is taking place. It is the very urban entity which is defined as the research's field itself. Past and future are anticipated to be both present at the same time, forming the current multi-layered dynamics of modern Elefsina.

Query, material, method

As described above, the paper is seeking to capture the spatial as well as the spiritual entity of contemporary Eleusis. The city and its environment provide the main material. Elefsina has been indicated to be an appropriate field for academic research before and as urban space has often been subject to several research activities at our school of architecture. Footnote Manifold aspects of urban evolution or change are discussed and are here fruitfully examined. For example, a project entitled "9 Metavaseis" –transitions- was recently carried out by the NTUA School of Architecture. Different interpretations of Elefsina produced approaches which were overall presented through an exhibition.[63]

This paper concerns itself with finding a method of deciphering structural data within the dynamic urban organism of Elefsina. The character of the place is to be decoded with the use of contemporary spatial conditions. As for many Eleusis is thought to be made of controversies because it is an industrial port city built on the grounds of the ancient myth, the project aims at examining if and how this urban field holds latent an essence of controversy or amazement.

Departing from today's image of Elefsina, our research observes and records basic elements of urbanity: the image of the urban continuum, its density, its uses and flows compose the layers of its urban entity.

[62] The concept originates from a project edited by architect Sotiria Inetzi during the Research by Design MSc program of the School of Architecture (NTUA).
[63] The exhibition entitled "9 Metavaseis" was carried out as collaboration between the NTUA School of Architecture, the Municipality of Elefsina and the nomination for 2021 ECoC. It presented the results of educational actions that investigated the notion of spatial or temporal shifting through analyzing the urban space of Eleusis.

The notion of familiarity within the city is key as these elements are forms of recognizable situations, where units are being correlated within a joint attribute –or the one is being interrelated with the many. The structure of the place is described in terms of landscape and settlement, but it is analyzed in relation to categories of space and character. If space corresponds to three-dimensional structures, place retains the capacity to condense meanings. It is there where humans can familiarize with place (Norberg-Schulz 2009, 13, 56-57). Multiple interpretations of familiarity or intimacy emerge, whereas controversy may surface in the form of potent interruptions or intersections with what is established and known.

Analysis, investigation, interpretation

PART I: Departing from real space

1. Reading the urban image

Someone could ponder on what can be directly remarked when experiencing the urban field of Eleusis? Modern Elefsina is an urban structure which was shaped during the years of extensive industrial activity in the region that took place from the late 19th century until the 1960s. At the same time, the aspiring visitor is probably not ignorant of the historical cultural heritage of Eleusis. As an a priori emerged entity, it is becoming conceivable when a being projects it onto itself (Heidegger 1990, A', 552-553). Somehow, the visitor is searching to establish a kind of precedent –or otherwise, a familiarity in the form of a precedent idea. Images seem to lack meaning by themselves; they receive meaning through a process of pscychologizing. When being in the image, everyone (the visitor)

Fig. 1: Elefsina as a common city. Urban space and image (© Sotiria Inetzi)

is seeking for former images. Experiencing the image (of the city) passes through this enclosed psychologism in order to reach a better conception (Bachelard 1961, 20).

For anyone who has never visited Eleusis, it remains a place-enigma. Its industrial settings were mostly established at the beginning of the 20th century, marking an intense industrial activity that ravaged the loose field. Although many of the facilities are now abandoned and seem to be immemorial, this profound layer sometimes overpowers the hyper-local heritage of historical Eleusis. At least two controversial dimensions are suggested, articulating an altered notion of monumentality. Directly, a concurrent -possibly indifferent- image sprawls on the surface. Yet, a former urbanity exists under the current build imprints. Whatever is embodied stems from a stark past. Through this two-fold situation genius loci emerges (Casey, Public Memory in Place and Time, 17). It is about a local identity bound to the past that it recalls and, at the same time, futurity is introduced.

2. Experiencing urban space: analyzing the immediate layer

Visitors may decide to come to Elefsina because they may be interested in its antiquities, or in its industrial landscape or in the combination of the two. On the one hand, Eleusis is a world cultural heritage site. Furthermore, Eleusis is a modern culture field in a dynamic, evolutionary process. The bid for ELEUSIS 2021[64] has stood for the transition into a modern European quality for the place. International interest sparked through this leitmotiv of "EU-phoria". Within this concept, a parallel emerges. Firstly, Demeter as an ancient refugee and secondly the migrant flows of recent history sought here for the migrants' transition into a state of euphoria. The cultural actions taking place work the notion of "the other". This component of an established identity seems potent enough to establish a new sequel of shifts towards euphoria. Coexistence is underpinned as a procedure towards euphoria, and vice versa: Modern Elefsina is a city that evolved through a continuous process of coexistence. A layer of a dense and multilateral society acts and interacts through the local established economy and urbanism. Migrants and refugees from the Greek inlands as well as outside the Greek borders have been participating as actors of the recent social history.

[64] Elefsina has been nominated to be European Capital of Culture for 2021. The program has been entitled "Transition to Euphoria". It will host cultural actions and events. It intends to establish Elefsina as a modern european city where culture is recognized as its identity.

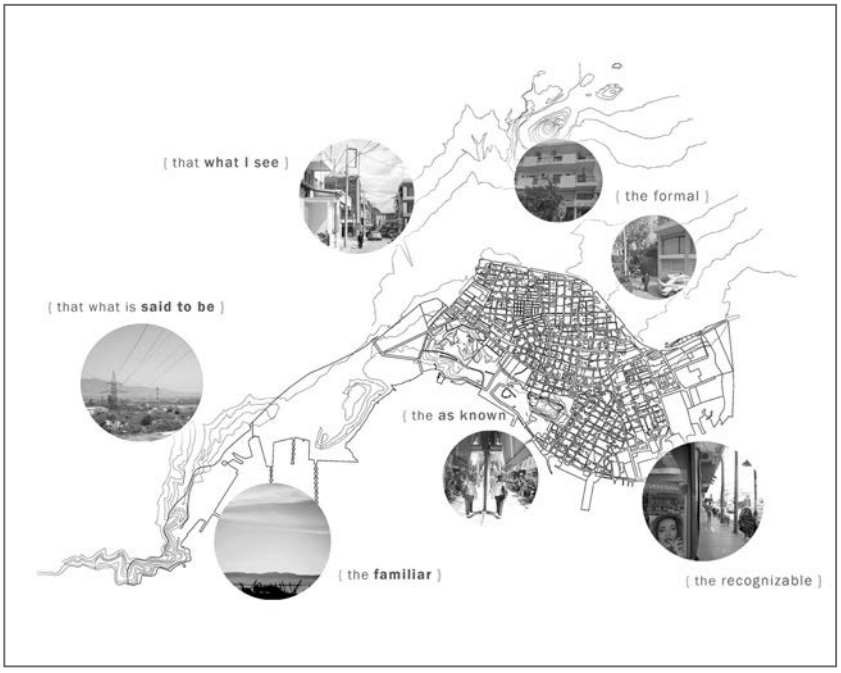

Fig.2: Primary investigation. Urban space, uses and preconceptions as found in the territory (© Sotiria Inetzi)

A particular urbanity emerges as the synthesis of interaction between space and time. "Space-and-time" itself is the simple liaison of place and moments –the pure manifold of this synthesis (Duffrene 1973, 352). Industrial production, retail and logistics concern the hyper-local economy recognition of the place's components, where place is conceived as a condition of existence (Duffrene 1973, 352) that holds latent a local social and economic structure. In essence, the local social situation is the fact of hyper-local industrialization extended within the human dimension. Or otherwise, it is time extended within the

In Elefsina, urban space is very densely built-up, with scarcely any room for visitors. The layer of industrial economy seems to have impacted the urban formation. It may reveal the notion of a social place formed by the interaction of numerous snapshots of what is "current". Such a space possesses its own history made of the participating currents; yet, in the same time, it seems to retain latent characteristics bound to place or climate (Léfèbvre 1991, 120).

Visitors arrive with the intent to sense the myth's haze amidst the contemporary setting. In that way, a preconceived notion of the urban landscape comes into play. That which is dynamically emerging is the idea, the impression of a myth that exists and moulds the urban scenery. A feeling of tension, even asphyxia, is drawing up the fold of a very first idea about this place, which heavily rests on industrial landscapes.

PART II: Unveiling what lays beneath: the incomplete character

1. Discovering the urban voids

The visitor may expect to find a city fully developed and compact, making a crystallized impression through a contemporary, dedicated setting. From this point of view, the essence of "common" is sought to be confirmed. This stems from a repetition of already established structural systems, it may be seen as a shelter of space out of time. What is currently conceived as "common" is linked to the visitor as a spectator who incepts and embeds–in a personal way- the image of a precedent (Arendt 1998, 124). Preconceived knowledge is retained as part of personal memory. It comes up as a synthesis of things pertaining to precedent personal moments (Casey, Public Memory in Place and Time, 20). As these components intertwine as personal memory, the visitor may seek to unearth this structured knowledge within the public space.

Fig.3: Unveiling the incomplete character: Urban voids as intersections of current and former
(© Sotiria Inetzi)

Wandering around the public spaces and neighborhoods of Elefsina one will soon overturn this preconception. Eleusis is neither urbanistically accomplished, nor restructured. Urban voids exist next to built masses, causing ruptures to the continuity of coherent space. Every void found within its texture could be matched with the absence of a synthesis. This lack of perfection or accomplishment reveals the texture's perpetual precedent. It corresponds to neither a pending cumulative coexistence nor to anything already created,

but still inaccessible. It may be a 'not-yet' (Heidegger 1990, B', 441-444). Whereas urban space is found unbuilt, a second dimension of the city is being established. Repeated such voids trace the trajectory of a repetitious process of not having evolved. It could be seen as the relentless non-entity of a being that comes to an end because of death - but always envelopes a not-yet. The second dimension is suspension, a potential of future coexisting of things that now coexist (Heidegger 1990, B', 441-444).

The process of evolution seems to be destabilized, dragging up a second, transient and unseen aspect. It is the situation of manmade –or the reality itself- that is set under the process of destabilization. Manmade is usually established within the frame of things already existing; on the grounds of both, a sensed and realized world. When this establishment occurs, it passes through factors latently inherent in our lives and in our bodies (Merleau-Ponty 1991, 62-64). Being is conceived as the current image of the place, the reality as met by visitors who seems inseparably related to its precedent. At the same time, an entailment of a futurity is implied. Then, an intersection emerges: any potential of a future projection lays unseen and interrelated with the imprints of the precedents (Heidegger 1990, B', 441-444).

2. Urban voids as intersections: current and former

As no territory seems to be clear or adequately equipped, the transition from ancient to current and from there to the future is not facilitated. Yet, such a contrast seems to be rather linked to historical concepts and interpretation than to civic occurrence. Empty spaces are pointing out the room left untouched in view of the coming lapses of time. Where space subsides, time subsides too. City space is confirmed by its temporal aspect which claims to reside in space through time. It interprets the spatial convention of "being here or there" as a condition of "being now or then" –where "then" may be the future or the past (Tuan 2001, 16). Yet, the character of this former sighting is not visible, but it is left unseen -even if we have already been seeking for it through moving within the city. All things commonly offered by the image of an entity are here abolished. Within (these) urban voids, present is paused, implying that it is a priori charged by any unrealized precedent (Heidegger 1990, A', 33). Any trace of time exists there as a fragment, a fragment that testifies all that could have been complete but was left incomplete.

PART III: Interpreting

Fragments of time are the keys which lock completion out of any frame of meaning. At the same time, these very fragments guide visitors to decipher the traces of time.

Such traces are usually found etched on archaeological remains in the heart of the land, the streets or proprietary boundaries-limits, urban transformations and signs of a normative instability. In essence, visitors recognize traces by conceiving their image as a separated and distinguishable entity. It is there where an identity is revealed; identity as the fact of distinguishing an object as differentiated from the others. Then, the traces –as signs of the passage of time- take up a meaning for the visitor, too (Lynch 1990, 10).

Elefsina is a place rooted in unfinished business – both as a myth, as well as an urban entity-, with voids emerging as the spaces of controversy and collision. The process of unfolding the city's true meaning may pass through capturing and understanding these voids. Voids of space seem to be bound to time: they are not independently recognized but only as an annex to the current cityscape. They may even look like containers of a consciousness which moves relentlessly in the space being prospective and foregone in the same time (Husserl 1913, 48).

Gradually, past layers unfold into a continuous, visible field of the place's present. Past seems to be a still, existing attribute, which from time to time impacts again (Heidegger 1990, A', 51-52). The foregone layers accentuate everyday life not as a place of inspiration and beginning towards a destination but as a remainder of a finite route, a container of loss. Perforated urban space generates the language of the unrealized.

However, an unexpected quality, a promise to return lingers in Elefsina. Anything that has been defined as void, as incompleteness, unfinished or undone, opens its space to future potentials. The day-by-day spatial experience acquires a truly temporal meaning. Every snapshot of urban experience functions as a projection of a precedent on the current and at the same time, as an announcement of the forthcoming (Tuan 2001, 126). Within voids, nature – directly linked to the iconography of the ancient myth- finds its way back into the city. Wild growths sprout unregulated and spontaneous where building activity is waived. If phenomenon is the veneer or the emergence of not displayed things, then the emergence of a

thing may indicate the announcing of something invisible through the visible (Heidegger 1990, A', 74-75). Regardless of regulations, prospects or initiatives, earth resurfaces questioning human action undone and incomplete urban space.

Fig.4: The manifold aspect of the character. Rebirth or return as a sequel of a continuous time-lapse (© Sotiria Inetzi)

The endless cycle of rebirth and return takes form as a sequel of a continuous time-lapse. The storyline of the ancient myth is being called upon. When Hades, God of the Underworld, fell in love with Persephone, the daughter of Demeter, Goddess of nature, he decided to kidnap her. The ground underneath was directly split; Hades traveled above ground to pursue her. He caused Persephone to slip beneath the Earth and made her his wife. Demeter went mad and hunted her daughter everywhere, roaming the Earth for nine long days and nine long nights. At the dawn of the 10th day, Helios, the sun god, told Demeter all about how Hades had captured Persephone. Demeter begged Hades to allow Persephone to come back to the living. Persephone was then allowed to live half of the year on earth while the rest in the underworld.

The myth of Hades and Persephone is associated with the coming of Spring and Winter: When Persephone comes to Earth, it's springtime. When she descends to Hades, it is winter.

On the urban plot, the ceaseless process of time sequence is being sculpted through a relentless interchange of urban concepts or experiences. Elefsina is nowadays work in progress as the city that has been nominated as the 2021 European capital of culture. If the urbanity of Elefsina can be interpreted as an interplay of urban voids, experiencing this urbanity may hold latent a feeling of amazement.

When experienced, amazement is undoubtedly related to the human-subject who interprets the value of surrounding space. The spatial experience receives a social dimension. It can be communicated to society after its completion, establishing a significant interaction. The body and the emotion, as prominent factors, carry this experience of the unexpected and communicate it to the other members of the social entity (Bermudez, and Brandon 2013, 682-683).

Fig.5: The unexpected quality: Eleusis towards (© Sotiria Inetzi)

Conclusion

A new beginning is established in Elefsina. The endless cycle of rebirth and return takes form, conceptually linked to the myth of the returning girl, Persephone. It can be said that an intrinsic desire towards the miracle is held hidden but finally emerges as a necessity when "common" gets ruptured. From within any discontinuity, a process of recommencement or rebirth emerges.

If familiarity implies a process of repetition, this process decays when –or where- established conventions are interrupted. Repetition of established algorithms is gradually regarded as foregone. Then, interruptions are projected as containers of loss. However, they raise points of reference which structure another code.

Where the aspects of spatial familiarity or intimacy –like urban grid, urban image, or the notion of common- are interrupted, the visitor –or spectator - may recover the conceptual void through the essence of rebirth. Any preconception concerning the familiar, urban space is being experienced as void or amazement. However, the notion of common is not only a convention of repetition but it also encompasses the aspect of time. It establishes a continuity between former, current

and upcoming. Abrogating the established order suggests that the temporal continuity is disestablished: time is suspended.

The cycle of rebirth or return takes form as a sequel of a continuous time-lapse. Urban voids take the form of suspended time. They act as mirrors, reminding us of the intersection between former and upcoming. A kind of altered urban space emerges; it is the field where time can be read. It functions as the point of reference which correlates the contextual frame to the precedent and upcoming.

Urban incompleteness comes as an experience that derives from the former but projects the upcoming continuum. That is the reason why experiencing the urbanity of Elefsina suggests an experience of amazement. Much more, visitors come across a momentum which results into the experience of diachrony (Fatouros 2003, 60-61).

In terms of concept, visitors can conceive the notion of rebirth through the urban space of modern Elefsina; it is the concept of establishing a new sequel on time continuity. Amazement that derives from urban incompleteness is an experience which coexists with every turn that is going to follow.

Elefsina is nowadays transforming into a modern culture field. A dynamic evolutional process is under progress as the city was nominated for European capital of culture for 2021. The former darkness of a (local) disdain is being surpassed: gradually the city reaches out universally. A new beginning is established. The endless cycle of rebirth and return takes form, conceptually linked to the myth of the returning girl. Or much more, as a sequel of a continuous time-lapse.

Incompleteness as a concept opens its space to future potentials. It is exactly this urbanity that instills the notion of establishing a new sequel from within the temporal intersection. Space, which yearns for the miracle in order to become whole, is being transferred along the temporal continuum with an altered character.

An unexpected quality once latent is now proven to exist. Any intrinsic desire towards the miracle is being expressed and communicated. Through a kind of conceptual coexistence, Eleusis is gradually acquiring its new urban character: that of a migration of ideas (or concepts).

Artists from all over the world interpret the city and transform this experience into original artwork. The genius locus of Eleusis is expressed through contemporary art and is being widely communicated. Moreover, several activities take place in collaboration with the active cultural groups of the city. People –young and old- encounter, take part and interact with artists, thus joining a new

form of social life. Such actions are hosted in urban spots which recall the city's modern history. The "Synoikismos 18" festival can be mentioned as an example. Hosted in the district of the Asia Minor refugees, traditional culture met the modern hyperlocal character across cultural activities. At the same time, many inactive spaces are now reformed in order to receive activities. A modern network of concepts is established and reflected in the urban space.

Such urban voids project the momentary snapshots of a former temporal intersection, so does the current process: it implies the "upcoming past". The dynamic evolution taking place is now molding a character of regeneration. It is that which, at a next "current", will be conceived as "foregone" but will then project the algorithm of its own interruption. Light coming from the depths of centuries is reflected; the city is being transcended through time, reaching out universally.

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In situ education of university students on traditional architecture: Social dimensions and impact on local communities.

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The course at the school of architecture at NTUA.

The course presented here is organized by the Department of Architectural Technology of the School of Architecture of the National Technical University of Athens (NTUA). It focuses on the systematic architecture survey and construction analysis of traditional settlements and buildings. For our Department this course is considered a milestone of high educational merit and cognitive value, since it gives the students both the method and the knowledge for the fundamental understanding and evaluation of vernacular buildings, their characteristics and construction, the behavior, pathology and weathering of materials and finally the construction analysis of traditional structures.

Furthermore, an equally important objective of the course is to raise awareness among students and local communities on issues of protection of the Architectural Heritage, as well as to enhance future Architects with knowledge and tools in order to be able to deal successfully with similar projects in the future.

The course is an "elective" study course in the 8th Semester of the undergraduate studies, when the students have already obtained the necessary maturity needed in order to combine the theoretical general knowledge acquired with more specialized approaches and suggestions of implementation. In this way, the students involved already have quite a number of educational semesters with projects in architectural design, architectural technology, city planning and at least two semesters in the field of analyzing and evaluating vernacular settlements and measuring historic buildings.

Most of the students involved definitely have a specific interest in understanding vernacular buildings, traditional construction and conservation techniques. Actually, in many cases this course tends to be the stepping stone in educating architectural students in the field of conservation of old buildings, this being a possible topic for postgraduate studies at NTUA or elsewhere, or a possible potential in their professional carrier. This is mainly because it is the only course at the undergraduate program of the School that deals, to such an extent, with all these specialized matters.

The course has been taught continuously with great success and feedback from students since the academic year 1975–76. During all these years the course is being enriched and has evolved scientifically and multidisciplinarily. It experiments and explores possibilities provided by new technologies, new materials, design programs and simulators, framed with new colleagues and, therefore, it has been remaining for many years at the forefront of architectural education and technology.

In the beginning, the course started for the first time in Greece with such a scientific approach, on restoration and re-use studies of traditional - vernacular buildings and modern monuments in general, with an emphasis on construction issues. It was almost an experimental lesson, since the scientific environment on related topics in Greece was at a primary stage.

Buildings constructed using the known, traditional building methods and local materials like stone, mud bricks, bricks, wood, etc. were featured as the "traditional" ones. The primal objective was the need to acquire basic knowledge that would allow graduates of the School to deal with the reuse of these buildings that - after a long period of depreciation and dispute - had begun to be assessed again as architectural values.

Already in this area there was a corresponding activity of architects worldwide, culminating in the European Architectural Heritage Year in 1975. Very quickly it became clear also in Greece that the architectural value of buildings as well as the need to reuse and maintain a large building stock that was discredited and left in devastation was very important for historical, cultural, and financial reasons.

Under these circumstances, the undergraduate course started at the Department of Architectural Technology of NTUA, with systematic survey of the building structure and analysis of features of traditional settlements and buildings. From the very beginning, it became clear that the substantial knowledge of the structural systems and their pathology was a prerequisite for designing proposals of re-use, maintenance and rehabilitation, compatible with historic buildings.

Furthermore, the involvement of the academic staff with relevant research programs, seminars, conferences, the interdisciplinary collaborations, the participation in international scientific networks and workshops in Greece and abroad, as well as the architectural practice facilitated the continuous evolutionary process of the course.

Description of the course

The projects to be presented in the article are the outcome of a common effort of a great number of colleagues – both Architects and Civil Engineers – from our Department during all these 43 years. The method that was followed both for the analysis and the adaptive reuse study was that of the construction analysis of the building. The possible differences in the approach are not of great importance and are viewed more as the scientific and research value of this field.

The course tries to cover as many aspects as possible with an aim:

- To make a thorough study of the existing situation of the buildings by means of measured drawings, building fabric survey, construction analysis etc.
- To examine the methods of technology and processes of traditional structures and the use of the corresponding materials.
- To understand the structural and construction system of the building by creating a model showing the construction system as a whole.
- to identify and explain the defects – damage to the structures, their pathology and vulnerability, their weathering both in climatic conditions and in natural strains and the causes of their decay.
- To study the proposals for the remedial action concerning the whole building and the competent conservation constructional details to be implemented.
- to undertake an adaptive reuse study of the buildings involved.

For the purposes of the course, a specific settlement in Greece – with an adequate number of traditional buildings - of more or less united character – is selected every year. In the recent years, this was done in conjunction with the local authorities of the chosen area. The involvement of local authorities had great advantages, since the selected buildings were also judged by architects of the local community that had quite good knowledge of the area, the buildings and their potential. The selection is mainly based on criteria of quality or special historical value of the buildings and in some cases on the local need to have thorough measured drawings and fabric survey of the building for possible future needs by the local community. During all these 43 years of the existence of the course the academic staff and the students visited a great number of places all over Greece; i.e. Kea (2016 &2017), Koroni (2018), Aegina (1999, 2011 & 2012), Trikala Corinth (2010), Kato Chora Milopotamos Kythera (2009), Corfu (2008), Kyparissia Old Town (2014), Sotiras Mani (2004), Lagadia Gortynias, (2003), Thisbe Boeotia (2002), Viniani Evritania (2001), Syros (2000), Dimitsana Arcadia (1998),

Monasteria Tinos (1997), Sklavia and Campos Chios (1996), Mesa Gonia Santorini (1994), Vathia Mani (1993), Andros (1992), Lefkada (1991), Tampakika Amfissa (1990) etc.

Students – an approximate number of 60 – are separated into 4 groups and visit the area under the supervision of responsible academic staff, usually 2 per group. The visit usually takes place after a series of introductory lectures lasting 3 to 4 weeks. The lectures give a theoretical background in most fields of conservation work involved, such as methodology of conducting measured drawings, building fabric, construction analysis methods, traditional building technology, pathology, vulnerability and main damage causes, conservation techniques, etc.

The site visit usually lasts 3 days, where all the data and information are collected in the form of drawings sketches, photographs etc. (Fig. 1).All this is processed at the University in Athens with systematic evaluation of all the material collected in situ by both the students and the academic staff following the analytical diagram of work according to the characteristics of each project.

Fig.1:Students working in situ



The analysis of the geometry of the building, the building fabric survey, the material analysis, and the construction model of the building take into consideration all the characteristics of traditional architecture, as stated in the beginning of this paper, to enable the students to understand the blending of all these elements in the creation of traditional architecture. The analysis follows a general methodology in order to cover as many aspects as possible and to fulfill the scope of the course, but at the same time the special characteristics of each building examined are analyzed and explained in the general context of the special identity of the area.

When the semester is concluded, students present their study projects in the form of drawings, reports; as shown in the following figures:

- Drawings of the existing situation of the building; Plans (Fig.2), Sections, Elevations, (Fig.3) 3Ds and details.

- Drawings analyzing the buildings defects, their causes, the necessary remedial action with the possible proposed reinforcement and the conservation techniques involved.
- Drawings of the structural and construction system – model of the building.
- Drawings of the remedial conservation actions concerning the whole building and the competent constructional details to be implemented.
- Drawings of the adaptive new use of the building and/or the new extensions involved;
- Analysis in the form of a written paper of the building fabric, the problems and defects found, the causes of the defects and the decay found, the remedial action that should be taken and the necessary work to be done to adapt this building to a new use.

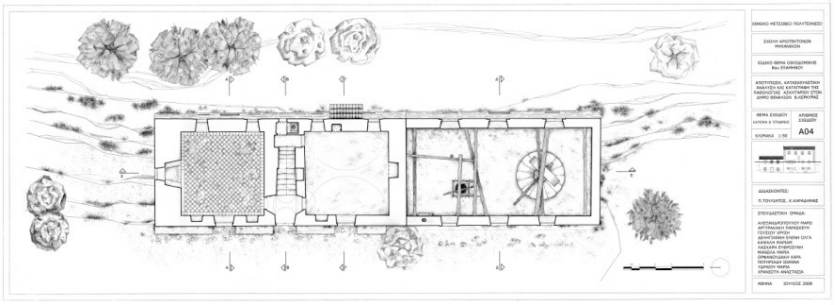

Fig.2: Plan of Askitario Monastery at Corfu (2008).

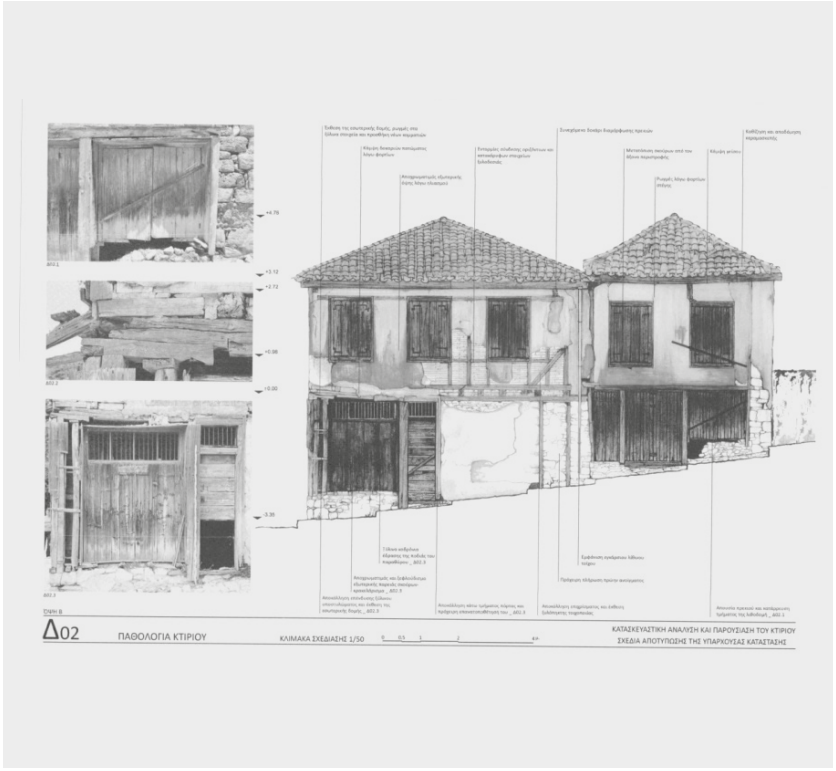

Fig.3: Elevation of the Thanopoulos House at the Old Town of Kyparissia (2014).

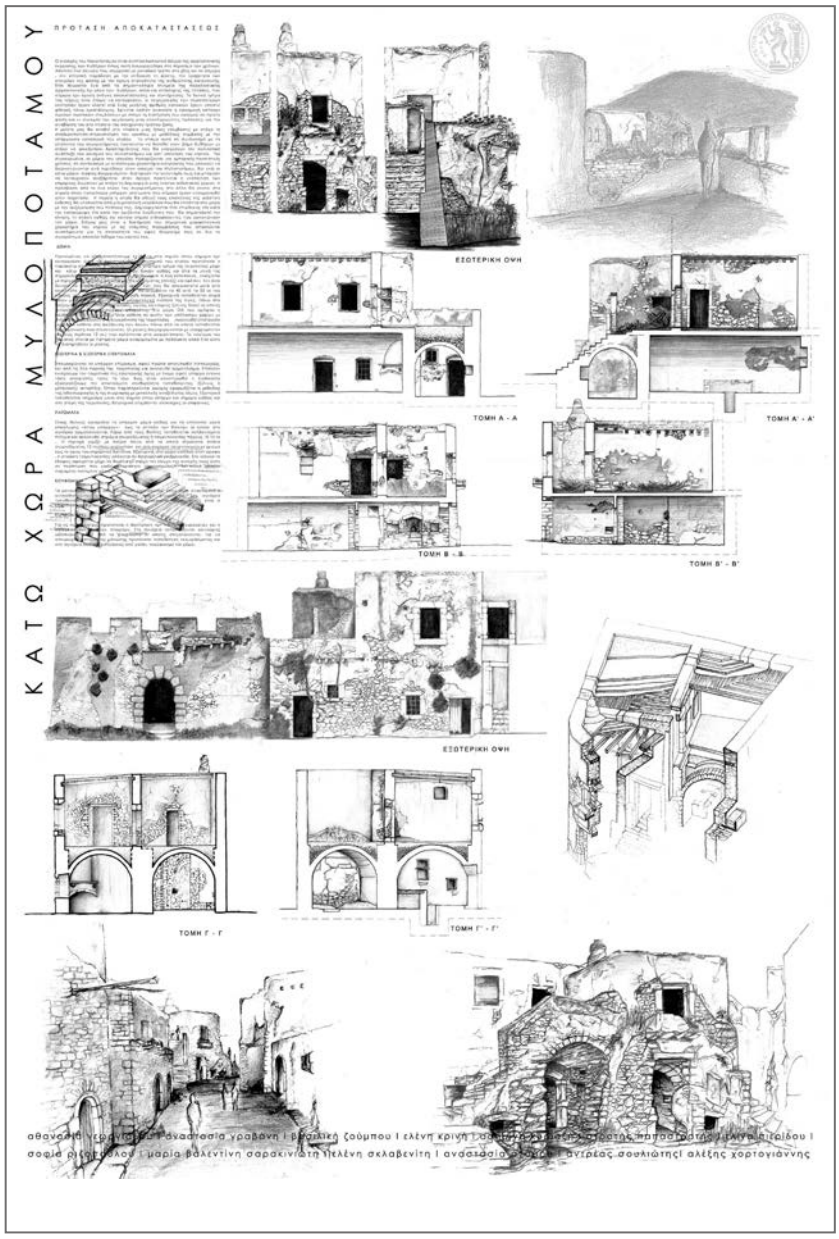

Fig. 4: Panel for the Exhibition at Kythera Island (2009)

After the completion of the academic procedure, a very interesting experiment was made in the last years. An exhibition and/or a conference were organized at the area, where the project was undertaken. All events took place in collaboration with the local authorities, with great support and interest from the inhabitants, the communities and the local societies.

For the exhibitions, each group of students prepared a series of panels with the main points of their projects, especially designed for the exhibition purposes (Fig.4).

Up to now many exhibitions like that, have already been conducted, the first one in Corfu in conjunction with the Prefecture of Corfu, the

fig. 5: The Conference and the Exhibition at Kea Island (2018)

second at the island of Kythira, in conjunction with the Municipality of Kythira, followed by many others, the final one being the exhibition and the conference at the island of Kea in conjunction with the Municipality of Kea and the local Society of Keas Friends. (Fig. 5).

For the needs of the conferences, each group of students prepared also a paper that was presented at the place that we visited and in some cases it was repeated at the NTUA for people living in the greater Athens area.

The scope of these exhibitions and conferences is to sensitize the local societies with the values of traditional and vernacular buildings and the merits of their building systems. We consider that we should work towards this goal, educate local communities with exhibitions, lectures and collaborations in order to enable the protection of the architectural heritage of each place.

Conclusions

The analysis of traditional buildings is a useful tool for the architectural teacher to make his students understand building construction in a different approach from the usual one followed at the University Studio. In this procedure students study the existing situation of buildings by means of measured drawings, building fabric survey, construction analysis and try to understand technology methods and processes of traditional structures, the use of corresponding materials in order to create a structural and construction system of the building as a whole.

This procedure also enables students to identify and explain the defects – damage to the structures, their pathology and vulnerability, their weathering and the causes of their decay in order to study the proposals for the remedial action to be implemented. Thus, students obtain knowledge and methodological tools to deal with traditional

buildings and existing structures, and especially students are provided with an opportunity to appreciate the values, to understand the importance of the architectural heritage of their place, and to act as mediators sensitizing the public for the same scope.

By organizing an exhibition and/or a conference at the area where the project was undertaken, we are educating the public by educating students and we are having very good results with great response at the local communities, focusing to raise awareness among students and local communities on issues of protection of the Architectural Heritage and understanding its values and importance.

Teachers who have participated or continue to participate in the course presented here are the Architects: †Dimitris Mpiris, Panagiotis Touliatos, Vangelis Evangelinos, Nick Kalogeras, Francis Goulielmos, †Constantinos Mylonas, Spyros Raftopoulos, Miltos Tzitzas, George Makris, Elias Zacharopoulos, †Vassilis Tsouras, Eleni Alexandrou, Panagiotis Vassilatos, Irene Efesiou, Costas Caradimas, and the Civil Engineers: †Sanias Kirpotin, Eleftheria Tsakanika and Niki Miltiadou.

The examples presented in this paper are taken from different student projects from the past years of study and actually follow the analytical diagram of their work as stated by the Teaching Fellows of the Department of Architectural Technology at the School of Architecture of the National Technical University of Athens.

All drawings presented in this paper are taken from the archives of the Department of Architectural Technology of the School of Architecture at the NTUA.

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Chapter Six:

Risks and mitigation strategies in all types of cultural heritage

Analysis of risks and the strategy of mitigating threats to cultural heritage in small historical towns in Russia

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Introduction

Russia is a country with rich cultural heritage which bears witness of the history of Russian society forming the visible memory about it. However, nowadays objects of architectural heritage are at breaking point.

One of the burning issues in Russia is the preservation not only of separate objects of cultural heritage, but also the architectural environment of small historical towns and settlements. This problem has not been solved in such megalopolises as Moscow and St. Petersburg; even more complications are connected with preservation of architectural heritage in the provinces. Regional architectural heritage has a great value in the general context of cultural and historical development. At the beginning of the 21st century the interest of social groups and ethnos to their self-identification and cultural heritage, striving for preserving their environment are more and more obvious.

Since 1970-s in international documents about cultural heritage (conventions, charters, recommendations) the necessity of preserving not only separate objects, architectural complexes and landscapes but also historical town environment, has been constantly highlighted. [3, 9] The notion of this environment itself, its subject and space, as well as social and cultural constituents, has been expanding. In the 21st century extensive use of territorial space is becoming characteristic of existence and development of town environment. "Today we live in the densely populated urban world. The more the territory of modern towns expands, the denser their building up becomes, the stronger an impact of architectural space on nature and man is, thus changing the developing through many ages nature of connections in the system "man-environment".[65] This is especially urgent for such a complex region from the point of view of multiethnic, multicultural, and multiconfessional peculiarities as the Volgograd region.

[65] Nefedov V.A. 2002. Landscape design and environmental sustainability, St. Petersburg. P. 9.

Review

Two little historical towns of this region – Kamyshin and Dubovka have been chosen as objects for analysis of threats to the cultural heritage and estimation of their mitigation risks. The architectural heritage in these towns is steadily reducing, the historical image vanishing. The architecture of these towns with a more than three-hundred-year history is interesting not only owning to separate monuments, but also its whole historical building up, which forms a uniquely colored image. The high banks of the river Volga are active components of the architectural and spatial composition of the towns. (Fig.1,2)

Now the historical parts of Kamyshin and Dubovka comprise buildings of the 19th-early 20th centuries. For two last decades they have suffered a number of losses. Some valuable in architectural and artistic terms buildings have been distorted by rebuilding and modern alteration. The historically formed town environment is starting to vanish.

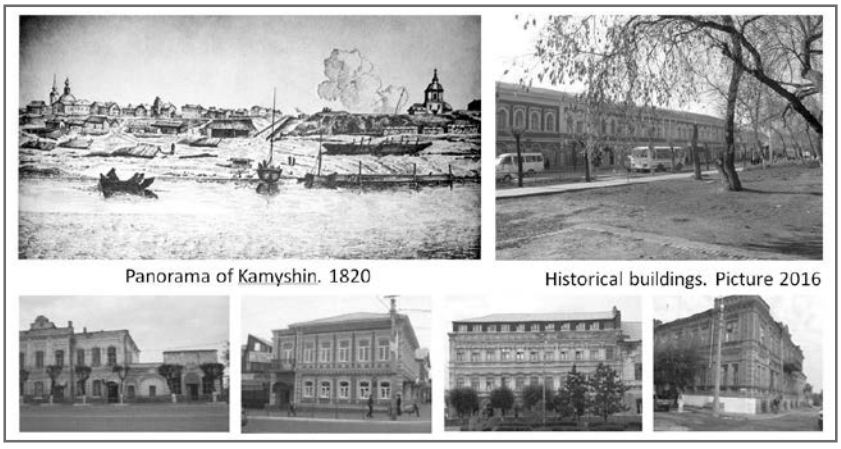

Fig. 1: Kamyshin.

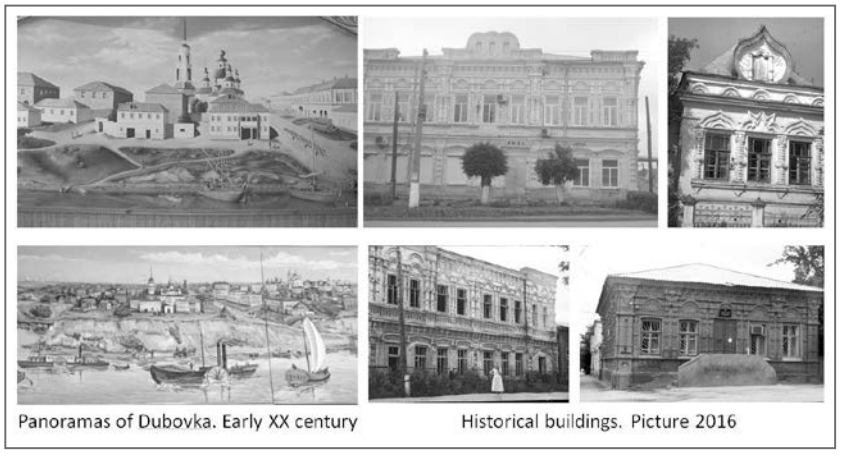

Fig. 2: Dubovka.

Besides natural ageing some architectural monuments in the Volgograd region run risks because of their integration into economy activities and insertion in economic circulation.

The natural conditions in Kamyshin and Dubovka also constitute a vital factor of risks for the town landscape and architectural monuments and influence their state. Thus, in Kamyshin the threat to monuments to be overflowed with subsoil and industrial waters is still significant. Now we are observing the speeding destruction, first of all, of wooden monuments, as the result of the Volgograd reservoir impact. This factor has also caused the real threat to some objects of stone architecture, first of all, to one of the most valuable monuments – the building of "Uezd Assembly".

Some archeological monuments also have a significant scale of distraction. In Dubovka the monument of federal importance "Vodyanskoe gorodische" (a site of ancient settlement) is suffering from landslides caused by subsoil waters of the Volgograd reservoir (Fig.3).

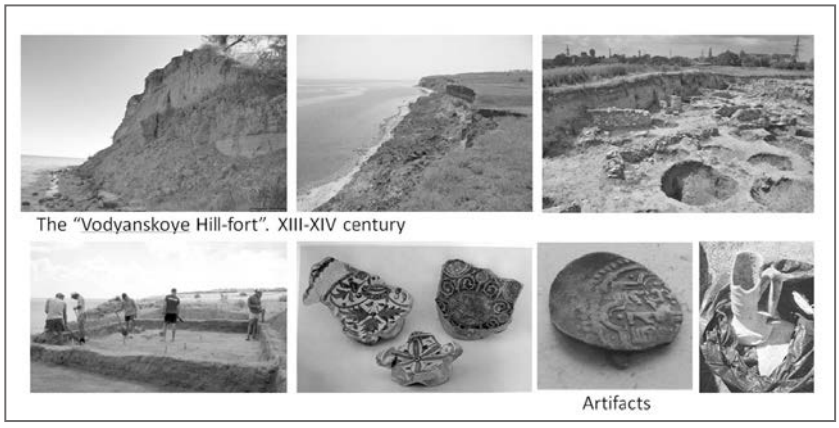

Fig.3: Risk of the natural conditions.

One of the negative factors of risk influencing the modern condition of town and region environment is an ecological one. The increase of motor transport results in air pollution of town environment. This has caused degradation of wooden architecture monuments, destruction of natural building materials, as well as bricklaying, color layers, plaster, and décor.

It should be mentioned that in historical towns one of the threats is construction of modern high-rise buildings in the core of a historical centre next to the architectural monuments, which disorders the scale. A special reference should be made to the fact that high-rise building up closes view points, zones of visual and aesthetic effects, and destroys visual reference points. This results in visual disorder of landscapes.

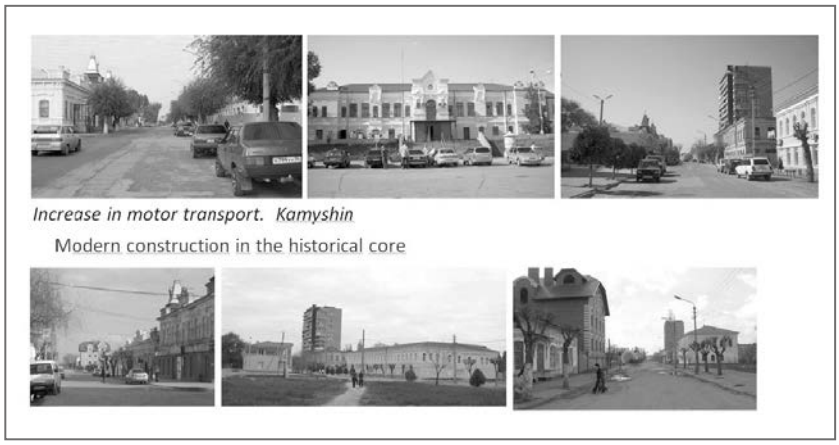

Fig.4: Risks of the environmental and visual disturbance of the landscape.

One more factor of risk has been recorded in the towns of Kamyshin and Dubovka, and that is vandalism. Predatory digs and laying fires occur on the territory of one of the archeological monuments. The territory is polluted with household wastes and is turning into a rubbish dump (**Fig.5, 6**).

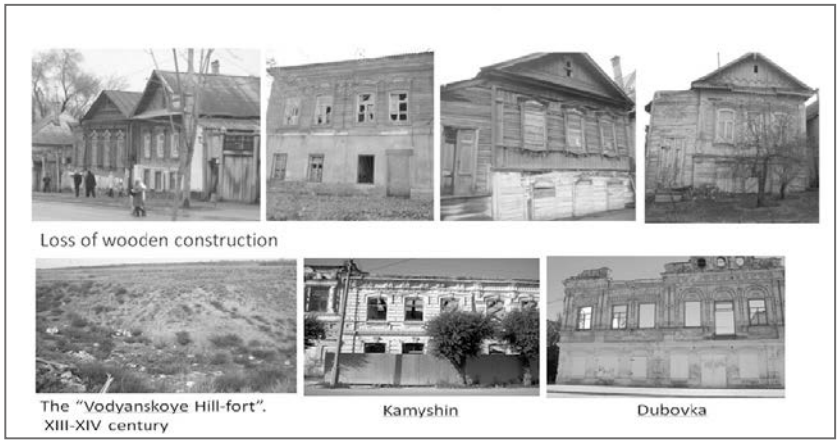

Fig.5: Risk of vandalism.

Fig.6:. Risks of aggressive advertising and its design.

A modern introduction of aggressive outer advertising and its design is a real threat to town environment. A number of other factors of risk also show themselves. Ownerless state of monuments mostly adversely affects their preservation. This factor is a significant cause of deterioration of monuments state in Kamyshin and Dubovka. Businessmen do not hurry to purchase them. If in Moscow and St.

Petersburg buyers of cultural heritage still can be found, in small towns and regions it is really very difficult to attract enthusiasts to buy such kind of property and become their owners and users.

Conclusion

All the above mentioned factors of risk and threats to architectural heritage make it urgent to constantly control them and periodically carry out their reappraisal.

One of the options to solve the problem of preserving the architectural heritage in historical towns of the Volgograd region is a strategy of mitigating threats and destruction risks. This requires large financial expenditures. Let us highlight some conditions for solving this problem: a favorable outline of tax breaks, encouraging sponsor support, attracting private investments in the sphere of restoration, and others. The use of architectural heritage for business, cultural, and social life, as well as tourism, is a strong argument in solving the problem of its preservation.

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The importance of the fragments of historical architectural testimonies in the Mediterranean area

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1. Summary

This presentation aimed to contribute to bridging the static conception of heritage and the enhancement of its constant and dynamic relationship with the territory and its belonging region, stimulating multicultural promotion projects in the Mediterranean area and in particular in Balkan countries. Around this theme CICOP Italy was strongly committed in the past seven years, in order to contribute to the intercultural and communitarian dialogue in the Balkans (see "cultural axes" of the four Biennial of Urban and Architectural Heritage, BRAU1, BRAU2, BRAU3 and BRAU4 (see: https://www.cicop.it/brau/it/)

From the examples illustrated below, it clearly emerges that these FRAGMENTS of the passed times are not adequately framed and protected by local and also by the international laws and therefore they are destined to a slow extinction, for direct exposure to external degrading agents or improper uses dictated by randomness and arbitrariness.

A first homologation of these fragments is proposed, circumscribed in the Mediterranean area and in particular in the area of the Balkans:

Historical remains, as isolated sculptures and as monuments of themselves.

Basements of demolished bridges and viaducts, remains of mosaics, marble fragments of old roads, are among the most frequent fragments of history we have reached with our investigations in the Balkan area. Most of the detected FRAGMENTS belong to the dominion of the Balkan peoples by the same dominant state, and more specific to the Roman and the Ottoman domination (**Fig.1**)

Fig.1: Viterbo, Italy, by Nina Avramidou, CICOP Italia, University of Florence.

Isolated remains of monumental constructions, partially demolished to allow new urbanization works.

In order to realize new infrastructures in recent times (railways, motorways, etc.) that cross inhabited places, rich in history from the past, important historical pre-existing buildings have been literally "cut in part", such as medieval churches and Roman viaducts. Perhaps to preserve the memory of places, perhaps due to a certain sensitivity acquired in the reading of the territory in the last century, these drastic operations have spared part of the demolished buildings (**Fig.2**).

Fig.2:Orvieto, Italy, La Badia, by Nina Avramidou, CICOP Italia, University of Florence.

Fragments of historic buildings incorporated into recently constructed buildings

New buildings have always been built on the ruins of ancient buildings, often using them as foundations or incorporating ancient wall portions into the new exterior and interior walls. The choice not to demolish but to reuse what is existing creates presuppositions that often affect not only the constructive modalities adopted, but also the design and aesthetic choices. The recycling of ruins is one of the possible alternatives to return obsolete materials, objects, and building features back into the production circuit (**Fig.3**).

Fig.3: Rethymno, Greece, by Eng. Mario Maio, CICOP Italia.

2. Introduction

With the passage of time and without stopping physical decay in progress of the masonry constructions, inevitably goes from the "state of degradation" to the "state of ruin", in which the part of masonry remains that still standing, often becoming a purely sculptural reference point for the memory of significant territorial and environmental changes have occurred.

The following exposition refers to the research and homologation of historical fragments of masonry artifacts, scattered in the Balkan area, in two specific historical periods: the **Roman era and the Ottoman era;** they are the periods of domination that have most affected the culture of the dominated countries, and of which we find numerous tests scattered along communication corridors and crucial points. These fragments derived mostly from majestic Roman artifacts as the viaducts, or on contrary, from minor artifacts but of great importance and charm of the place, scattered throughout the entire Balkan area, from Bosnia Herzegovina to the southern end of the Italian peninsula.

The research carried out until now highlighted that the identify and mapping the remains of such built heritage it should be understood as a potential tool to overcome the immense socio-political complexity and introduce a sense of complicity between the countries; even if the question of the continuity of collective and individual identities seems

to be particularly problematic in the case of the Balkans, due to the depth of its historical discord.

After a careful census of the main roads in the Balkans, attention was focused on the examination of all the historical remains along the well known Egnazia road: settlements, remains of villas, warehouses, tombs, millstones, epigraphs, and stretches of road and bridges, whose, very often, we find mentioned only in a few reports and rarely documented with breadth in the scientific literature. In parallel, all the topographic situations of greatest interest that can be derived from historical literary sources have been listed. The collection of all these data has allowed us to draw up a map where the cities most affected by this survey have been marked, which present numerous archaeological presences mainly due to trade and the most significant war actions.

Via Egnazia was one of the most important communication routes in the Roman world, however it is difficult to trace a clear monograph that scientifically reports the data of written sources, the acquisitions of archaeological research and findings. Scholars over time have carried out research on the subject (such as Strabone) by stratifying a bibliography that appears to be remarkably confused. This work of the general topographical historical overview of the via Egnazia wants to recover, revise and update the state of knowledge on this.

By comparing the historical vicissitudes it leads to the identification of similarities and differences between the old road and the new highway route recently realized by the EU, relating them with regard to the route and all that information that can be useful for a comprehensive report.

More towards the north of the Balkans, the Romans entered the territory of **Bosnia and Herzegovina** in the 3rd century BCE, but only after the suppression of the famous Revolt in 6 BC. it was interesting for the Roman Empire for exploitation of the natural resources. Therefore, they developed a network of communications, fortifications, bridges and settlements.

In the Bosnian-Herzegovinian territory, many Roman roads and some isolated remains of bridges, Aquae baths, etc., were found on the Trebizat rivers, on the creek Propkopski and Miljac and others. One of the possible explanations for which bridges remains are not found today is attributable to the fact that these were made of wood, being a ticco territory of forests.

When the Romans began to build roads and formed new settlements along them, rest and refreshment stations, as well as some

administrative centers, were also built. The presence of sulfur springs was of considerable importance due to the gradual evolution of the original Roman village (vicus) into an urban entity with specific thermal structures in the first century CE, as was discovered in 1936 in Ilidza.

The idea of the project is developed in similar initiatives undertaken earlier by the Association CICOP-Italy (founded in 1994) and the CICOP. Bosnia & Herzegovina (established in 2008). In particular, the CICOP Italia has carried out numerous initiatives into another trajectory of migration and multiculturalism, regarding the colonial heritage in the Balkans, tangible and intangible, and in particular in the Dodecanese (Greece) and Sarajevo (Bosnia and Herzegovina), where celebrated four international conferences on the risks of the architectural heritage and possible preventive measures (Hazards and Modern Heritage, H&*m*H, in the years 2002, 2004, 2009, 2011); futhermore, there were carried out numerous surveys ad researches on the architectural heritage of Dodecanese area and in particular in the island of Rhodes.

3. Historical fragments as shared cultural models

The via Egnazia, whose construction dates back to the beginning of the second half of the second century BC, is the intervention with which the Romans define and organize the direction of terrestrial communication from Asia Minor to Europe (**Fig. 4)**.

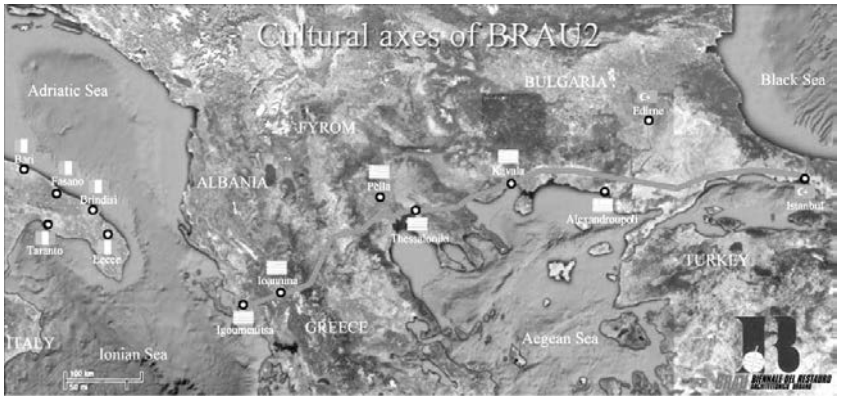

Fig.4:.Nina, Avramidou, CICOP Italia, University of Florence.

An important strategy, strategic both in ancient times and today, an era in which the flows of energy resources and those of an intangible asset such as information stand out clearly on the road, becoming decisive and indispensable for the development of entire continental

areas.Precisely on today's redefinition of this direction - and against the road junction, North West-South West via Belgrade, and the Danubian waterway - not only the game of the last conflict in the Balkans was played, but above all that of the general perspectives of development of EU.

What was once called via Egnatia today has the name Egnatia Odos, a connection project intended to involve Bulgaria, Macedonia and Albania in succession from the Black Sea, roughly tracing in its final part the path that in ancient times carried by the node of Larissa to the Ionian (the Nea Egnatia with a port terminal in Igoumenitsa).

Both the ancient cjhe and the new Via Egnatia, representing E-O communication between the lower Adriatic and the northern Aegean. The ancient Via Egnatia, had a prevalent role of commercial transit between the Byzantine empire and the West, an ordinary postal and transit role for illustrious characters and travelers; it was also used for war purposes and also by the Crusaders. The road historically preferred a use in part light and respectful of the environment, as for the Romans "cutting down hills and downgraded slopes adapting, the new route to the morphological system, to allow the passage of wagons smoothly" was as a rule. It was also organized by service structures (hospitable, hospices, inns, post offices) of which nowdays fragments are found scattered throughout the ancient route.

The same main functions now listed for the ancient via Egnatia, we find them also in the new via Egnatia, Corridors 8 of the EU, but with a more commercial role and with a great landscape charm.

The new route with a massive use of tunnels, flies the territory, but despite this, it takes into account the current uses of the territory and tries not to exclude the smaller centers. It has set up areas for landscape promotion throughout the journey that do not only serve as a transit station for travelers, such as in Roman times, but also as a "resource" for the inhabitants living in the area. However, in my opinion, the landscape interventions carried out - both restoration and ex novo - are strongly limited in their conception, as they do not always preserve, nor transform the territory in a conscious and rational way (forestation and vegetative dunes).

Thanks to the Via Egnatia, the legions and merchants crossed the territories of the Balkans in safety and speed, knowing they would find refreshment and rest in well-defined locations along the way: in essence, it was not only a great means of road communication , but also a great means of social communication because it helped to increase knowledge among different people even if they were all substantially "Romanised".

To better understand the importance of the historical fragments discovered along this road axis, in the drawing n. .. the strategic cities for economic importance, mining, commercial importance, agricultural production and the main points where the most significant battles in the territory were carried out were indicated. These data contribute to the base aim of te project: The discovery of common cultural models in the territory of the Balkans, from the ancient period until today, as well as cultural development based on the common European identity of the Balkan countries, and the overcoming of recent and past ideological controversies.

The Via Egnatia, has been conceived, both as a cultural heritage from antiquity and as a revival of the road axis to improve the connection between the southern Adriatic and northern Aegean region.

Its main purpose has remained unchanged over the centuries as a rapid **transport route of goods and people**. Through traffic routes, the Roman civilization, has adapted and reworked the features of cultural and economic influences, different and distant from each other. This awarded the Roman culture an eternal dimension of universality to some extent that has allowed it to reach our days so richly.

Service facilities for the refreshment of the passengers during their journeys and the fluidity of commerce (hospitals, inns, depots, post offices, etc.) arose along the ancient route. In the modern reconstruction of the Via Egnatia (670 km) we see the recurring of similar structures that have the same purposes (resting areas, supermarkets, restaurants, etc.).
In addition, the strategies to identify for opening the new sections of the road, and the construction methods of today's highway (with the use of tunnels and viaducts) do not differ much from the ancient Roman road.
Even if the users change (soldiers and traders in the past, businessmen and tourists today), the thought that inspired the creation of the New Via Egnatia, does not differ substantially from the one which gave birth to the layout of ancient Rome, and it can originate from the idea of transport of goods and people.

Given the continuity of the original mission that inspired the construction of the ancient Via Egnatia, the highway between Brindisi and Istanbul, recently realized by the EU, contributes a lot to the modern civilization, regarding the use of new building technologies and the attempt to enhance the territory crossed by the road. The enhancement attempts are unfortunately limited to an experiment currently to reduce the environmental impact of the new highway

through interventions of forestation and/or vegetation; they are, therefore, quite random incentives in the process of transformation of the territory, and being deprived of a general master plan, do not allow its development, neither conscious nor rational.

The timely continuity of the collective and individual identities seems particularly problematic in the case of the Balkans because of the depth of its historical discord, but since the current dominant academic theories regard nations as no more than "imaginary communities", this continuity seems as more of a general, epistemological than a provincial problem. From this point of view, **identifying** and **mapping, shared cultural heritage along Via Egnatia**, connective route through the Balkan countries, should be understood as a common denominator element to overcome immense socio-political complexity and to eliminate resultant complicities.

4. "CROSS CORRIDORS" and "CROSS POINTS" PROJECT

This project identifies, in Via Egnatia, a potential tool of circulation, not only of People and Goods, but also of transmission of new Cultural Models, that leads to new European identities and policies, for sustainable economic development in the short and long term. These models are based on **"shared cultural values"** among all the peoples in the Balkans, deeply rooted in their culture, because they have derived from long periods of common domination (Greek, Roman and Ottoman periods). They are encountered not only in art, architecture, literature, but also in the everyday life and in the relationship with the nature and the environment. Therefore, all historical fragments contribute they became, **"added tangible values"** that strongly characterize the cultural model of the Balkans.

The existence of these shared cultural models among the Balkan people is not captured by those who today travel from one country to another along the new Via Egnatia, not even during short refuelling stops in towns that border the highway. The travellers, who also decide to make short explorations towards the villages, bordering the Via Egnatia, receive fragmentary tourist information. For a deeper understanding and to appreciate the true cultural identity of the Balkan countries, all the historical fragments must be identified, re-evaluated and appropriately highlighted.

The proposed project offers the traveler crossing the highway quickly *escape routes* to the outside landscape, not only for the supply of fuel, but also for culture. The stimuli to do these will be the cultural promotion of some secondary axes, that is, corridors transversal to New Via Egnatia, so-called **Cross Corridors, "**Cc", which born from Via Egnatia, at the sensitive points of the motorway route, so-called **Cross Points**, "Cp" **(Fig.5).**

Fig.5: Nina, Avramidou, CICOP Italia, University of Florence.

In all of the Cross Corridors and Cross Points that we identified, there are places having multi sectorial cultural evidences connected to the memory of the old Via Egnatia, in a retrospective of at least two and a half millennia. Through a series of coordinated activities the attention of the traveler is stimulated and directed towards the discovery of tangible and intangible cultural heritage of the places that flank the Cross Corridors.

Each Cross Corridor is differentiated from the others, because for each of these have been identified specific testimonies and different from one another, characterizing the path itself and cities facing thereto.

More specifically:

Cross Corridor A. Discovering the places connected to the memory of Old Via Egnatia, archaeological remains and sites and analysis of documentary material collected from the municipalities and the Universities of Bari-Lecce-Taranto and Brindisi. A few kilometers from Fasano (Brindisi), There are remains of the ancient city of Egnatia, which represents the **1st** Cross Point for our project.
The knowledge of the archaeological evidence along that axis is crucial

for understanding the origins of culture deposited through centuries along the Via Egnatia that crosses Albania, Greece and Turkey.

Cross Point: **Old Egnatia City, Fasano (Italy)**

Cross Corridor B. Discovering the environmentally sustainable architecture of earth or stones. Minor architectures, sparse in the canyons of Epirus and into the mountains of Pindos: small churches and monasteries, rural bridges, rural testimonies, footsteps and resting areas. Testimony of sustainable and environmentally friendly works done in the past, with characteristics very similar to those present in the region of Puglia, on the other side of the Adriatic Sea. From the region of the Epirus in Greece towards Albania, Montenegro, Croatia, Bosnia&Herzegovina.

Cross Point**: Ioannina (Greece)**

Cross Corridor C. Discovering the shared heritage of mosaics and the aurei treasures of Macedonian archaeological sites (Greek, Roman and Byzantine periods), all artisan techniques and processing of traditional materials. This secondary axis starts from Central Macedonia (Greece) and continues towards FYROM and Serbia (along the old Via Militaries). This axis crosses Pella and Verghina (Greece), and start from Thessalonica (Greece). Ohrid and Bitola are one of the cities, being part of this cultural road and hold many secrets from the past. Most of the remains that can be seen in Heraclea Lyncestis are from the Roman times and the early Christian period. The basic idea is to create the conditions for the presentation of artifacts and mosaics, as pieces of the greatest treasure of the place, so that these are protected and can be visited by travelers who choose to travel this Cc axis.

Cross Point**: Thessalonica (Greece)**

Cross Corridor D. Discovering shared **intangibles values**, as traditions and customs of everyday life that affect all the Balkan Counties: language, crafts, entertainment, cooking, music, folklore, etc. From Istanbul to Alexandroupolis and Edirne, and then in the direction of Bulgaria. The choice of Istanbul and Edirne to highlight these specific aspects, is due to the fact that, as many of the customs and words that occur today in all the Balkan countries, derive from the long **period of occupation of the Balkans by Ottomans**. Istanbul and Edirne will give the opportunity take most of the aspects into account.

Cross Point: I**stanbul (Turkey)**

Countries directly involved in the project: The crucial locations of the project involves the following Balkan countries: Greece, Albania,

Montenegro, Croatia, Bosnia&Herzegovina, FYROM, Serbia, Bulgaria, Turkey, as well as Italy, although Italy is not Balkan country. These are the countries through which the project develops or has an effect on a wider or growing surrounding area.

The city of Fasano, deeply marked by two uniqueness of it's history: exceptionally rich and diverse typology of Roman and Byzantine testimonies of the built heritage, that can be traced today on the surrounding territory of Egnatia City (Fasano), and especially in the area enclosed by the quadrilateral Brindisi-Lecce-Taranto- Bari.

The comparison of the results achieved (similarities and differences) with socio-economic and political realities so different from those in the Balkans, but with similar conflicts even today is the "desk of test" of their validity, to be adopted - as a multi-sector and interdisciplinary approach - also in the rest of Europe.

Extension of the project in other European countries: The project is extended to a larger European cultural area, through the creation of a **Permanent Observatory** in Portugal, entitled "Migration and Multiculturalism in Europe". This will be achieved by the activation of a web portal, which will create a thematic archive that collects and compare similar case studies in Europe. Aims of such an Observatory are: a) the definition and reinforcement of the concept of the Shared Cultural Models (SCM), by comparison with socio-economic and territorial realities, very different from each other and b) the transmission and dissemination of (SCM) of the Balkans to the rest of Europe.

An auspicable future extension of the Cross Corridors along Via Egnatia is expected to be towards Egypt, because of the close interraction of cultures between the Balkan countries and North Africa, and because of the strong migratory flows today.
The originality of the project lies in the identification of the "Shared Cultural Models", rooted in the base of the Balkan countries, considering the multi-faceted aspects. These crucial aspects include not only the contruction remains of the passed times but also those of the intercommunity relations, types of communal solidarity, the relationships of people with the places, environments and cultures.

Methodology of the project Cc&Cp
- Identification of the cultural elements that characterize the route of the new Via Egnatia, from a multidisciplinary point of view.
- Comparative studies having a common link: the Roman Empire and the Ottoman Empire.
- Evaluation of the ruins of ancient constructions and archaeological sites, historical characterization, level of protection and conservation

- Evaluation of the sustainability factors, mapping of risks (i.e. seismic, floods and risks of urbanization)
- Classification of the "Added Cultural Values", generated by the transmission of Persons, Goods and Shared Cultural Models along Via Egnatia. For example, the evolution of the symbolisms (meanings), the set of good practices (uses) and the knowledge (techniques) applied to its exploitation, the history of the settlements (architecture) and their morphological evolution as a function of the availability of local resources.

Main phases of the project Cc&Cp
- Analysis **of the territory** along Via Egnatia and along the 4 Cross Corridors, in 4 different periods: Roman, Byzantine, Ottoman era and the modern era. The analysis concerns:
– Knowledge on the antique and new Via Egnatia and the historical and topographic background of the Egnatia route, will be stored, retrieved, reviewed and updated. Although there are numerous researches and studies carried out on this issue, the extensive bibliography appears to be greatly confused. By the help of more careful analyses, the research will make the use of archival sources, bibliography and, in some cases, surveys on site.

5. Some results and suggestions for further investigation of the project CC&CP

The results of this phase will be collected in thematic maps which will include the cities (and the strategic harbours) that have been identified for economic relevance, commercial significance, agricultural production, mining, and the places where the most significant battles of the last 2000 years took place. In particular, specific studies were examined regarding:

- The specificities in the field of architecture and construction knowledge: e.g. the transmission of ancient models and architectural languages, building typologies and traditional materials and techniques.
- The specificities in the field of customs and traditions of everyday life that were found throughout the Balkans, individualizing their historical origins and source.

The above studies were carried out by dividing the territory that crosses the Via Egnatia into several sections: **1)** an initial section running from the old Egnatia City (Fasano), with origin in Rome (Italy), that invests the Puglia region, in particular having cultural testimonies strongly correlated with those in the Balkans; **2)** a section that includes West Macedonia (Ioannina, Greece) and continues through Albania, Montenegro, Croatia, Bosnia&Herzegoviva, **3)** a section which includes the Central Macedonia (Greece) and continues through Fyrom, to Serbia, **4)** and the last section which includes East Macedonia (Greece) and Turkey and continues through Bulgaria.

Furthermore, the historical events and the landscape transformations suffered on the two roads, the old and the new Via Egnatia, were compared to identify the similarities and differences between them, putting them in relation with all the information that can be useful for a broad report on the circulation of possible shared cultural models.
After all, have been defined the "Shared Cultural Models" (SCM) in the Balkans linked to the Via Egnatia, concerning the most representative and characteristic expressions of the tangible and intangible Cultural Heritage, deriving from three distinct historical periods, Roman, Byzantine, Ottoman and Modern Era.

The final goal of such research was to **p**romoting the shared cultural heritage of the Balkans towards the European cultural area and to highlighting the **Common European Identity** in the Balkans encouraging the creation of European citizenship in all Balkan countries.

Another aspect of the research concerns those minor axes of the Via Egnatia, that have converged into this road over the centuries, which have represented the preferential channels for the transmission of the cultural models.

Similarly, the project dedicate a large concentration on the investigation of those sites which still represent the crossroads of various cultures along the Via Egnatia, in the past, and today.

The study highlighted analogies and differences, concerning one or more architectural typologies present along the entire route of the Via Egnatia (e.g. the post stations, the refuelling stations), as well as different recurring type of architecture, having similar characteristics: morphological, decorative, technological and constructive.) of that tangible cultural heritage, and studying the same features, located in different countries crossed by the Via Egnatia will provide significant input in the project. At the same time, this already vulnerable patrimony as it is in a state of neglect in the identified regions, is exposed to the risk of extinction, due to natural or human threats, especially

for those remains of artifacts that are located outdoors such as archaeological remains, due to of floods, earthquakes, urban pressure or poor protection.

It has also been highlighted the lack of on-line itineraries and guides to archaeological, architectural and landscape presences, specific to **cultural tourism**, to focus attention on those areas and / or architectural elements that still have a certain material consistency, including information regarding the seismic events that damaged them in various historical periods. Each of the sites identified thanks to their geographical coordinates, will be inserted along the planned and published route online (for example Google's routes).

Another interesting result is the proposal for the creation of the **"Via Egnatia, a journey between cultures guide"**. It could be interesting to draw up a real cultural tourist guide, which stimulates more and more people to travel along the Via Egnatia and meets the needs of tourists (such as old soldiers and traders) who will travel on foot or, if possible, with bicycles (for example , on a part of the old Via Francigena) or, more comfortably, by car.Since the guide will cover more countries, it would be useful to involve the big editorial staff and the large tourism publishing houses (eg Touring Club, Lonely Planet, etc.). The narration of the guide will follow that of the online itinerary (see above).

Finally, the publication of an **instruction manual** is also proposed, concerning **"Good management practices of archaeological sites and ancient constructions"**, with both streets as models - Via Egnatia and Axis Aquae Flaviae- Lamecum, including the pre-evaluation of threats (natural or human). This will allow more effective use of the places and their management.

6. Architectural heritage in an abandoned and ruined state inside small historical centers

All the art of restoration and preservation of monuments has dealt exclusively with qualified architecture, almost ignoring the importance of the minor ones that for centuries have surrounded them

Fig. 6: Sarajevo, by Amir Causevic, BH CICOP, University of Sarajevo.

(**Fig.6**). And while the best and most durable materials have been reserved for buildings of great importance, allowing them to be preserved over time and without the need for heavy restoration interventions, more modest means and materials of immediate availability were used, in most cases, in minor architecture destined for residence.

As a result, much of this architectural heritage has been lost in time or partially destroyed. In some cases it remains as an isolated monument within the context surrounding it, made of buildings of the same type but completely renewed, ironment. Its construction uses the stone of the site, often retrieved from the oldest existing buildings, or materials such as terracotta bricks or tiles made of built-up furnaces or aged plaster. These materials give buildings extraordinary chromatic softness of architectural values, which

The advanced degradation of such architectures allows an immediate assessment of the physical consistency of structural and technological components, and the collection of valuable data on past forms and processes as well as indications of the possible developments that degradation may have over time.

Fig.7: Sarajevo, by Amir Causevic, BH CICOP, University of Sarajevo.

As the notion of cultural good has evolved from that of "art object" or "antiquity and fine arts", so that of architectural good has evolved over time from that of "monument" to the concept of "good that is culturally diffused", which recognizes the value of so-called minor architecture and the links between the individual architectural goods and the contexts surrounding them, as the perceptive aesthetic values linked with the memory of the past and history (**Fig.7**). In other words, attention is drawn to

the importance of humble but still historic buildings and the implicit admission of value to contexts and historical relationships between them.

This evolution tends to result in the preservation of those buildings that are part of this new category of goods in the smaller historic centers, where it is recognized that these buildings should remain within an urban setting, constituting the original and authentic part of these settings. In any case, if the major contribution to the definition of particular territorial color declination stems from material evidence still in situ, the reference, if any, to the pictorial range that derives from views of urban spaces or panoramic views of whole centers can not be neglected.

The ancient buildings in ruins are immortal and not obsolete; they exist outside of the rules and outside of the flow of events, so the primary function of their original use is replaced by a psychologically important function, of primary importance, capable only of transmitting emotions. Hiding the degradation (fractures and loss of matter) would mean eliminating such emotions.

With all the theoretical and practical difficulties surrounding the restoration disciplines, there is a need to rethink the concepts involved in the conservative interventions of the monuments and the management of the various forms of degradation in relation to the causes that produce them and to the consequences that such causes may have on conservation

It is well known that the degradation affecting masonry buildings directly exposed to atmospheric agents (wind erosion or decalcification) results in loss of matter with reduced bearing capacity. The absence or lack of maintenance accelerates such phenomena which consist mainly in the dissociation of the binder matrix and the disintegration of the masonry made in stone or brick blocks. Even in this case, and before the loss of matter has become decisive for the strength and stability of the masonry, some extraordinary sculptural effects can be taken that arouse the interest of those who observe them and which can also be highlighted and preserved, while proceeding to stop the progress of the damage with targeted consolidation works and with the means that the practice of today's restoration makes available,

For those like me, who have been engaged for a long time around the theme of the evaluation of the decay of buildings, searching and fighting against the causes of decay, we cannot remain indifferent to the lack of interest in keeping these buildings alive, extending their useful life, and working to reuse the remaining intact pieces, which still carry memories and feelings.

7. Concluding remarks

The fascination that exerts on the observer, an old masonry construction, monumental or of minor architecture, reduced to the state of ruin, is the charm of its re-acquired nature of only form and matter. Stripping the building of all its completion works (covers, various coatings, plants, etc.), losing the function for which it was designed and realized, returns it to its simply formal expression, that is to say it has become pure architecture, an object now considered for what it is, and not for what it serves or served. It is thus discovered that the vestiges of such disused and degraded buildings are immortal, outside of the rules, outside of the flow of events. And this is their charm.

When the use of a masonry construction is exhausted and this is almost in ruins, we can now perceive the wonder of its birth, since it highlights the constructive rules with which it has reached its static and/or dynamic equilibrium, the materials and the single structural elements with which it was made and their function.

The need to re-evaluate the importance of material degradation for conservative and restorative purposes arises also from the new concept of "architectural good", which has been shaped by a new vision of history, not in an idealistic sense referring only to the crucial events, but more intricately understood, open to the study of society as a whole and also attentive to aspects of material culture.

Degradation and innovation can also coexist, but they can also destroy the harmony that makes them attractive even today, adopting questionable design choices for restoration and innovation suburban.

The presence of so many ruins in European cities, especially Italian ones, poses different questions to which it is difficult to give unequivocal answers, such as: the determination of their quality and meaning, the reasons why they must be preserved and who should be entrusted with the task of such choices,what role, function and destiny should have within the cities that grow exponentially and often with the cultural diversity of their inhabitants.

In the cities of the present but also in those of the future, the archaeological ruins should include not only the mighty remains of monuments but also the fragments, often incomprehensible, of tombs, aqueducts or streets.

The cultural landscape of the twentieth century and the crisis of the consumer society based on the continuous process of destroying its products, as a major premise for the realization of the new one, has brought to the fore the concept of "recycling", which, in the sector of architectural ruins, has often assumed incongruous expressions.

The adoption of the term "recycling" of the remains of pre-existing countermeasures, diverts attention from terms such as the recovery, requalification or reuse of the predominance of the existing values that is considered as an inert material fragment or is about to finish life cycle; that is, towards new values and design principles capable of manipulating the existing ones to establish new life cycles.

To incorporate, transform, relocate pieces or entire parts of existing buildings into new buildings is a customary building practice in the small historical centers, from the ancient world since the time of Palladian architecture; the recycling of ruins is one of the possible alternatives to return obsolete materials, objects, and building features back into the production circuit.

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Risks in Cultural Heritage at the Time of Economic Crisis

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Introduction

Greece - like other Mediterranean European cities - is undergoing a period of economic crisis. The state funds available for culture are unfortunately, the first to be reduced. And the government agencies which decide on the allocation of financial resources do not realize -even though they ought to have- that the conservation and highlighting of the cultural heritage of each place can contribute directly to its economic development.

A typical example is that in the "Development program of the state" drawn up for 2018, the dimension of culture is completely absent; and there is no reference to cultural heritage. Furthermore, in the Greek development law 4399/2016[66], which foresees incentives for the country's regional and economic development, activities related to conservation, promotion and exploitation of the cultural heritage are not foreseen

As the official state –with the exception of the relevant Ministry of Culture - has not realized the importance of the investment in cultural heritage, it is very ungenerous to allocate funds from European programs for conservation and rehabilitation of architectural heritage. And, of course, no funding is foreseen to predict natural hazards (earthquakes, floods, fires, etc.) to strengthen historical construction and to address the vulnerability of historical towns and settlements.

Exception is the text on the «National strategy for adaptation to climate change»[67] (15/10/2015) which recommend to manage the risks of climate change to cultural heritage and to incorporate cultural heritage protection and adaptive policies into wider national policies. However, we need to see the implementation of these directives.

Monuments and archaeological sites

In order to restore important public monuments, European funds managed by the State are available. The amount of funding in relation to the increased needs for conservation and restoration of the monumental wealth of the country is very small. And it should be noted that the financial support of the years 2014 – 2020 by the European community does not include in its objectives the heritage sector.

[66] https://www2.deloitte.com/content/dam/Deloitte/gr/Documents/tax/gr_tax_alert_RD_GI_New_Dev_Law_27_June_2016_EN_noexp.PDF

[67] The text was issued by the Ministry of the Environment and Energy, with a large number of contributors and advisers A. Kontogianni, M. Skouro.

Also, due to the economic recession in Greece, there is a restriction on recruiting staff responsible to deal with heritage protection. Therefore we find a lack of restoration studies and the execution of fewer restoration works. As a result, important historical buildings are destroyed, and archaeological sites are downgraded. Furthermore, the lack of staff has the effect of closing museums and archaeological sites, resulting in the loss of significant financial resources.

The case of Astypalea

To illustrate the above, I will use as an example a Dodecanese island, Astypalea, which has an important monumental and archaeological wealth that, due to a lack of financial resources, is not conserved and is gradually destroyed. I will refer to only two very important archaeological monuments of the island: the medieval castle of Astypalea and a newly discovered baby cemetery.

The Castle of Astypalea[68]occupies the top of a rocky hill of about 130 m. Its current form dates back to 1413, when the Venetian family of Querini settled on the island and moved residents from nearby islands. During the 18th century around the castle developed the village of Chora.

Fig.1: The castle of Astypalea on the top and the baby cemetery on the bottom

The Castle is a typical fortified settlement, the perimeter of which has formed by theconstruction of housing units built next to each other. They are mostly three-storied, long, with narrow facades, with two or three single-family homes each, varying with window openings - probably originally opened due to the naturally inaccessible position of the castle. In some cases wooden balconies have been added mainly

[68] http://library.tee.gr/digital/m1751_1800/m1780/m1780_maistrou.pdf

in the 18th century. The interior of the Castle was occupied by houses as well, leaving little free space for circulation.

The medieval settlement inside the Castle of Astypalea, which was continuously inhabited until the beginning of 20th century is now totally abandoned. The semi-ruined buildings forming its perimeter, which a few years ago maintained the memories of their habitants and authentic documents of the past life in the area, are constantly damaged, losing their historical evidence. For the conservation of the castle, that is one of the least authentic island castles, a generous funding is needed.

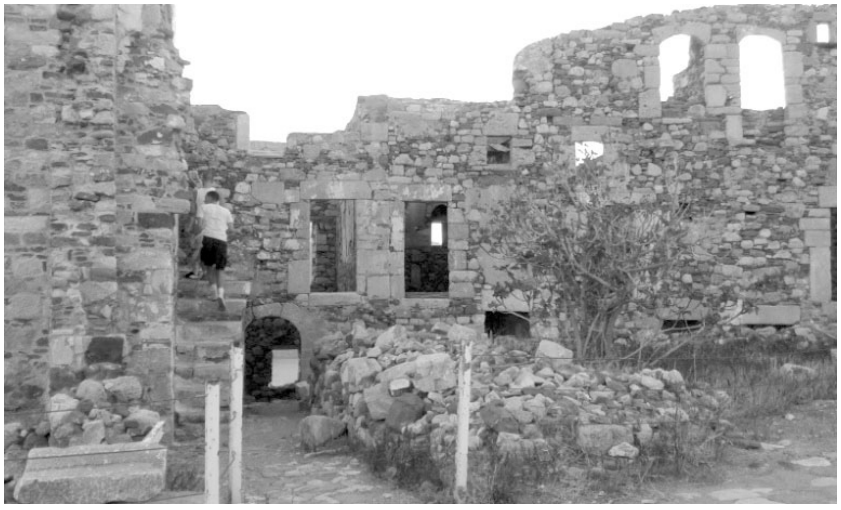

Fig.2: The interior of the castle of Astypalea.

Fig.3: The entrance of the castle of Astypalea.

An important archaeological site of the island was discovered in 1996. It is a unique in the world baby cemetery. It is found in the area of Cylindra and it is estimated that its findings - which are clay vases containing baby bones - date back to 850 BC. Up to now, 2,758 vases have been recorded. Archaeologists claim that the baby cemetery extends across the slope and at least 3,500 vases with skeletons of ancient babies will be revealed. The big number of buried babies and the vast amount of time that the finds take over highlight the importance of Astypalea in ancient times as a strategic point in the Aegean Sea. It is believed that babies were buried there from all over the Mediterranean, which would be confirmed or not by the anthropological research.

Fig.4: Vases with skeleton of ancient babies (© Ephorate of Antiquities of Dodecanese, https://astypalaia-island.gr/endiaferonta-nea/nektrotafio-paidion-stin-astypalaia).

Several vessels have been removed and transferred to the -empty today- old school of the settlement to be studied by European and American anthropologists. However, many other vases with bones of babies inside them are covered with nylon exposed to the weather. The baby cemetery, a unique find in the world, located on the outer boundary of the settlement is being destroyed due to a lack of money for expropriation and highlighting of the site. If the necessary funding had been provided, a very interesting open-air museum could be created in the place.

Finally the architectural and archaeological heritage of the island is destroyed and economic resources which could result from the large number of visitors of the island are lost.

Municipal historical buildings

Buildings belonging to municipalities have equally important problems arising from the lack of funding. Recently, a financial program has been developed for the re-use of municipal buildings[69], which does not refer to historical buildings, but in some cases it has been used for the safeguarding of some of them.

Private historical buildings

I will focus more on the private sector, as individuals are unable to cope with the increased costs of restoring their houses and as a result, the number of abandoned historical buildings in cities and settlements is increasing daily, valuable cultural heritage is being destroyed and Public Space is downgraded. European funds, which, of course, cover a small number of public and municipal properties,do not cover private buildings. The reduction of rehabilitation works in both the public and private sectors also leads to the gradual disappearance of special craftsmen, and this is also a serius and irreversible loss.

In a recent debate that was held in the Parliament, it was discussed that the government will adopt an older proposal of exemption or reducing the property tax in the case of conservation and restorationof listed buildings and that it intends to implement this measure by law, after the end of the strict financial control to which the state has been subjected.[70]

The President of the Greek Association of Owners of Listed Buildings and Monuments at a conference organized on the occasion of the World Monument Day on April 18, 2018, stressed the fact that both the new Archeological Law (3028/2002) and the new building regulation (4067/2012) follow the Articles 1-4 of the Granada Convention, concerning the obligations of owners towards the State and the restrictions concerning the listed buildings, ignore completely the Articles 5-10 of the Convention, which relate to the obligations of the State towards the owners, as subsidies, rehabilitation programs, tax exemptions, incentives etc.

I will refer to two of the many examples of residential complexes that have severe problems of demolition of their historical buildings:

[69] The Ministry of Economy and Development, runs a program of a funding of € 50 million and a subsidy of 35 to 100%, which allows for a total of 200 municipalities in the country to renovate old abandoned buildings, one for each municipality, with a budget up to € 2.5 million in order to act as centers of cultural, tourist and business activity,

[70] http://ecopress.gr/?p=8178

in a mountainous village of Mani, and in a particular residential - agricultural complex, of the island of Chios.

The case of Vatheia in Mani

Vatheia at Southern Mani is one of the numerus historical villages of Greece that constitute its cultural wealth and can become a considerable financial resource, under a creative management. Built at the top of a hill, it disposes buildings dated from 18th century.The village had approximately 400 residents, who were occupied with agriculture, stockbreeding, hunting, as well as with piracy! Buildings at Vatheia are towers, house-towers and adjacent houses, depicting the social conditions having created them.

Fig.5: Vatheia. An abandoned settlement

Vatheia has been abandoned by its residents, despite the efforts for development by a program undertaken in 1975 by the National Tourism Organization[71]. Today, the historic settlement is abandoned, with most of its constructions in ruin and the old paths are blocked by vegetation or debris. The development plans which have been drafted for the area of Mani have proposed the reinforcement of the traditional agricultural economy and the promotion of mild forms of tourism, combined with the protection and promotion of its unique natural and man-made landscape[72]. Moreover, it has been proposed to create a «museums network» which will be housed in preserved historic buildings and will highlight the special characteristics of Mani,

[71] 'Preservation and Development of Traditional Settlements. The program of the National Tourism Organization (1975 - 1992)', Edition of the National Tourism Organization (in Greek).

[72] Paper by Giannis Saïtas, architect and urban planner, on the subject of 'Protection and utilization of historic heritage. The experience from the activity of the public and private sector on the Mani peninsula' presented at Kavala, at 24 & 25 -11-2006 within the context of the Forum of Entrepreneurial Support

Fig.6: Ruined buildings in Vatheia.

combined with the organization of a network of cultural routes in its villages. But no proposal can be materialized without solving the difficulties rising from the high cost of restoration of these exceptional private buildings, whose owners do not want to sell or give up their property, as the sense of ownership is very developed in Greece and furthermore is protected by the Constitution.

The case of Kampos in the island of Chios[73]

Chios was one of the most important trading centers in the Eastern Mediterranean, with immediate access to the Black Sea and the hinterlands of Asia Minor and beyond. At various times it has been fought over and ruled by the Byzantines, Venice, Genoa and the Ottomans. It reached its peak under the Genoese, and later the Ottomans, between the 14th and 19th Centuries. This period produced a merchant class of wealthy individuals and families who could afford to establish self-sustaining retreats, away from the city walls.

The Kampos of Chios is essentially a flat plain bounded by the city of Chios. What makes it unique is a combination of physical structures, land use, and water management. The estates of Kampos have been

[73] The case of Campos in Chios was examined under a program run by Europa Nostra, "The 7 Most Endangered Heritage Sites 2016" and the problems of abandoning its important historic buildings with a relevant report were identified. http://7mostendangered.eu/sites_country/greece/

established originally under the Byzantines. Each estate: of five to ten hectares, was bounded by a defensive wall with a single defensive tower. In 17th and 18th Centuries, the Kampos estates often reflected the owners' wealth and standing. They produced fruits: mainly oranges and lemons, with the output mainly going to export. These exports went all across the Mediterranean, but there were particular links via the Bosporus into Russia and the Middle East.

Kampos mansions were normally built into the fortified wall. Landowners would express their wealth and standing by the creation of elaborate gates and arches at the entrance to the estate. These might be in imported, carved marble, and could cost the same as the rest of the mansion.

Figs. 7-8 Abandoned mansions in Kampos

The Kampos today, is under threat from a lack of investment in maintenance and repair of both individual structures and the walls which are both symbolic, and, at the same time, integral to its function. The physical, agricultural and cultural systems which give the Kampos its unique character are at risk of disappearing. Alongside, it should be taken into account that today the Kampos require financial resources to fund both the restoration of its historical buildings and its agricultural identity.

Concluding remarks

It is evident that the financial resources available for maintenance and rehabilitation of cultural heritage in Greece are totally inadequate. The State has not realized that cultural heritage, as archaeological sites, historical settlements and historical buildings, could act as a key development tool for the country.

Alongside, the examples of Mani and Chios which have been mentioned, lead to the conclusion that it is particularly important for the safeguarding of heritage that the Greek state should deal not only with the public sector, but also with the issue of the abandoned private buildings whose owners have no financial means of preserving them.

The financial resources provided from the European Union, should be addressed not only for public buildings but also for the rehabilitation of private listed buildings, following concrete specifications. The funding could be addressed to abandoned residential complexes - such as those mentioned above - could reinforce the restoration of historical buildings in areas with no touristic development and could also promote the restoration of historical buildings that will house residences or traditional activities and uses. Besides, the State should also attract private investment in the sector of cultural heritage, introducing at the same time the necessary guidelines and legislative restrictions.

If we think that the problem I have analyzed - and which is important for Greece - is shared by other southern European countries, we could suggest to the European Union a generous increase in resources specifically addressed to cultural heritage and the adoption of financial programs that can be directed under certain conditions in private historic buildings.

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