

**PYROTECHNICS AS SUSTAINABLE INTANGIBLE  
HERITAGE**

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# PYROTECHNICS AS SUSTAINABLE INTANGIBLE HERITAGE

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## ABSTRACT

In the Far East, and many centuries later in the West, the art and science of pyrotechnics had developed to form an integral part of a festive event, cultural or otherwise. Indeed, as in the case of the Maltese Archipelago, the art of pyrotechnics qualifies as intangible heritage in terms of the UNESCO's Convention for the Safeguarding of the Intangible Cultural Heritage. It is an expression of living heritage which lends identity to a community and its cultural milieu.

As the manufacturing process has to abide with optimal health and safety standards, the protection of fireworks production sites is of paramount significance. Development planning policies should be designed (i) to minimize the impact of such factories on the environment, whether it is natural, cultural and/or social and (ii) to protect these factories against urbanization, a major parameter in densely populated areas such as the Maltese Islands. Such policies should take into account the legacy of pyrotechnics, a cultural heritage of humanity.

Working out and developing policies with the official authorities will guarantee implementable, scientifically grounded, planning regulations applicable to sites for the production and the setting off of fireworks. This will ensure sustainable existence of pyrotechnics with the socio-economic benefits which are associated with it.

## INTRODUCTION

The first historical references to pyrotechnics date to the early centuries of the first millennium. Indeed, the first known documentation on fireworks display is recorded in the Far East, namely China, the country which is by far the largest manufacturer and exporter of such works on a global scale<sup>1</sup>. The classical author, whose studies on the history of fireworks had commanded the scholarship for more than half a century in countries under the Anglo-Saxon influence, is Alan St Hill Broack<sup>2,3</sup>, the author acknowledged by Simon Werrett, the author of the most recent publication on the theme of pyrotechnics in the European context<sup>4</sup>. Pyrotechnics has both an aesthetic and an entertaining dimension and is widely used in various cultures and traditions to mark important events and festivities, be it at international, regional, national and local levels<sup>5</sup>. The Maltese archipelago is no exception.

The earliest references to pyrotechnics in Malta relate to the stay of the Sovereign Military Hospitalier Order of Saint John of Jerusalem who administered the islands over the period of 1530-1798<sup>6</sup>. Fireworks were used by the Order to mark special events ranging from the election of the Grandmaster of the Order to activities commemorating the victory of Christianity over the Ottomans. At the time, locals made use of fireworks as well, mainly with respect to Church-related festivities. Mascletas were fired in the early part of the eighteenth century during the consecration of the Gharghur Church<sup>7</sup>. Also, it was customary to have such fireworks in the feast of patron saints of the villages, a culture which later extended from the primary to the secondary feast within a given village.

The art and science of pyrotechnics as practised in Malta nowadays developed during the British stay on the islands. Albeit fireworks displays were popular in the late nineteenth century to mark events relating to the British protectorate on the islands, pyrotechnics developed into a popular local craft, with all the health and safety implications, in the early part of the twentieth century. Patron saints of towns and villages have long been associated with the identity of a given locality<sup>8</sup>. Regularly, on an annual basis, a public feast is held in each settlement in the honour of its patron saint, its protector and intermediary with the heavens. Fireworks have been introduced in parochial culture to celebrate the feast of the saint, the *fešta*. Particular attention is given to fireworks displays which form an integral part of the local character. Ground and aerial fireworks displays are held on the week of the feast, the main display is usually held on the eve of the feast. An interesting locality in Malta in this respect is Mqabba. This village is a case study which best illustrates the socio-cultural and anthropological significance of pyrotechnics in a small locality, a significance that has lately been acknowledged even at the international level. Excellence in the art and science of the discipline has considerable socio-economic effect at both the local and national level. The former, as witnessed by a number of tourists who swarm in the village when fireworks displays are organized, whilst the latter is best illustrated by the fact that local fireworks factories participated and won both national and international competitions.

## THE ISSUES

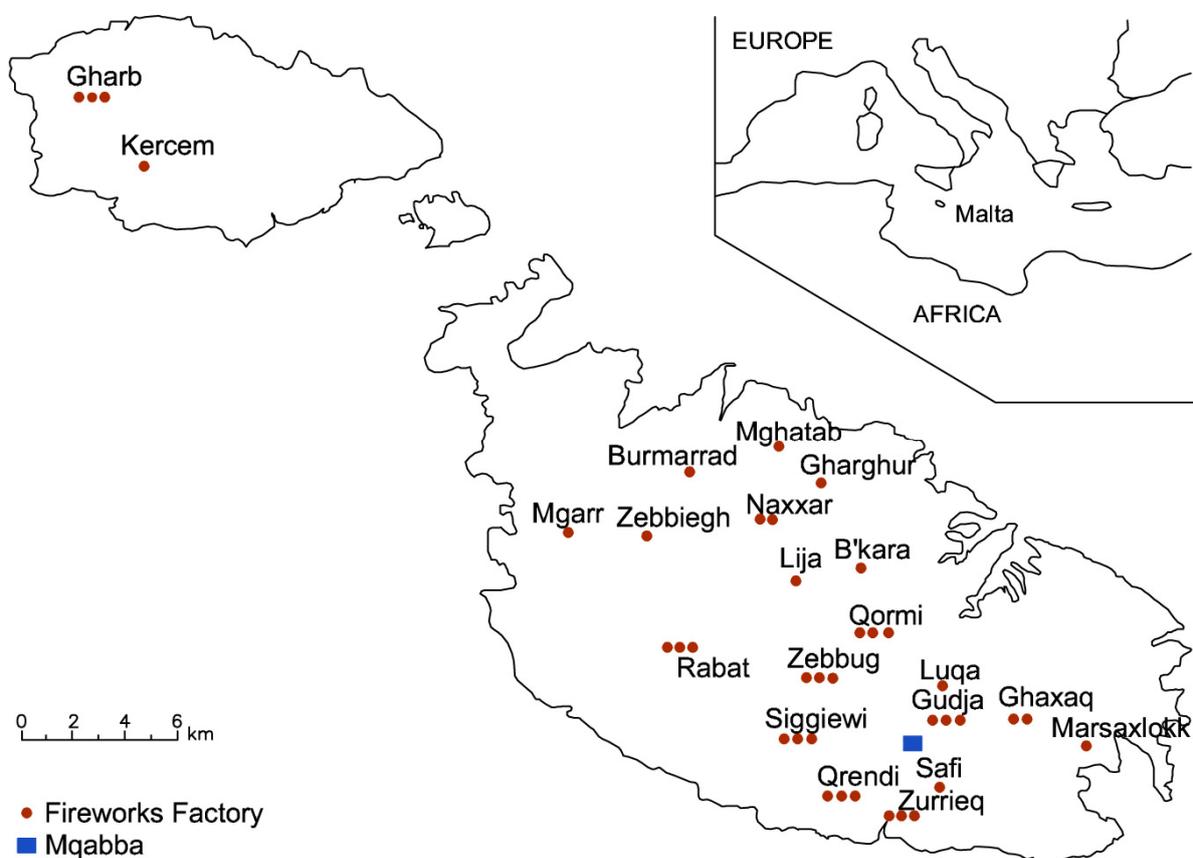
### The Context

In Malta and Gozo, the islands which are inhabited in the Maltese Archipelago, there are 39 fireworks factories, 4 of which are not operational. The number in brackets after a given locality, in Table 1, indicates the number of fireworks factories within same. St Mary and Lily fireworks factories are included under the locality of Siggiewi.

**Table 1 - Distribution of fireworks factories on the Maltese Islands**

Location		No. of Factories	Locality
Malta	North	9	B'kara (1), Burmarrad (1), Gharghur (1), Lija (1), Mgarr (1), Mghatab (1), Naxxar (2), Zebbiegh (1)
	South	26	Ghaxaq (2), Gudja (3), Luqa (1), Marsaxlokk (1), Qormi (3), Qrendi (3), Rabat (3), Safi (1), Siggiewi (3), Zebbug (3), Zurrieq (3)
Gozo	North	3	Gharb (3)
	South	1	Kercem (1)

The density of fireworks factories in Malta and Gozo is 1 for every 9 km<sup>2</sup> and 17 km<sup>2</sup>, respectively. Their concentration is in the south in the case of the former and in the north in the case of the latter (Figure 1)<sup>9</sup>.



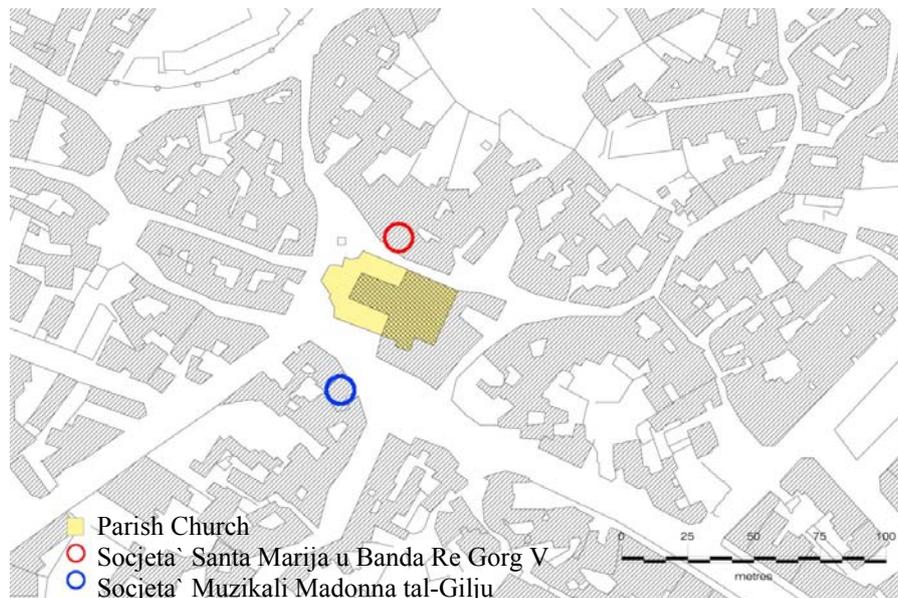
**Figure 1 - Distribution of fireworks factories on the Maltese Islands.**

Both St Mary and Lily fireworks factories are located within the limits of Siggiewi and thus they are plotted under this locality.

Pyrotechnics is an integral part of the village feasts which have become popular with locals and tourists alike. In recent decades, these celebrations have become more popular at a national level especially through the touristic industry which industry is marketing them for their niche potential. Central Government's agenda is to develop niche tourism for Malta and village *festas* are being placed on the national calendar of touristic events. Special organised tours for these villages during *festa* time are being organised by tourist agencies whereby pyrotechnics display prominently on their programme.

### Fireworks Tradition in Mqabba

Mqabba is a typical vernacular village in the south of mainland Malta with a population of less than 4,000 inhabitants. It is the main site where, for centuries, the honey-coloured best softstone has been quarried for use in the building industry. The identity of the village has strong socio-cultural roots. It is a village where the vernacular blends with the contemporary forming an interesting collage of regional, quasi innovative approach to urbanisation. Archaeological discoveries point at Mqabba as a settlement in the Neolithic age and, later, as a settlement which hosted a complex of early Christian catacombs. The urban historical core of the village is organically planned, introvert looking courtyard type, residential units, a typology more akin to the Middle East, with a baroque parish church in the middle. The parish, dedicated to the Assumption, is at the main square, the landmark of the settlement (Figure 2).



**Figure 2** - Site location plan showing the location of band clubs on either side of the Parish Church

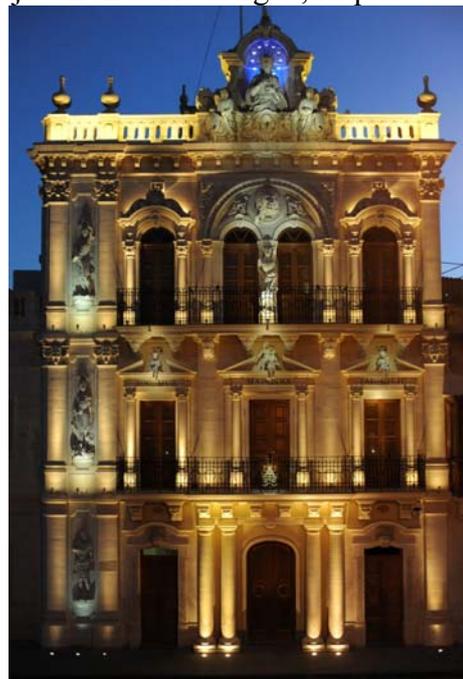
Most of the locals hail from the village, although intermarriages with neighbouring settlements were considered important for health reasons. The dialect of the village is particular. So are family clans. Most of the families, although they have family names as in other parts of the island, are better known, especially by the older generations, through their nicknames. Nearly all families come from a humble background, some dating back to a number of generations. This in no way impacts on their potential and vision. Their spirit is well embodied in the village motto, ‘Only with Ability’.

Two main feasts, both dedicated to the Blessed Virgin are celebrated in Mqabba: The Assumption and Our Lady of Lilies, the secondary feast. In line with a tradition inspired by the British forces in Malta, Mqabba, similar to other towns and villages, set up band clubs in honour of the main saints of the village in order to accompany the external celebrations and complement the festive environment when the village is celebrating the feast of the saint. The two band clubs at Mqabba, Soċjeta` Santa Marija u Banda Re Gorg V and the Soċjeta` Muzikali Madonna Tal-Gilju, were founded in 1910 and 1911 respectively<sup>10,11</sup>. Each had subsequently set up its own fireworks factory: St Mary’s Fireworks Factory and the Lily Fireworks Factory. Given that both fireworks factories are located within in the limits of Siggiewi, they are included in Figure 1 under this locality.

The locals belong to either one of these band clubs. Their respective premises, with their aesthetic qualities which provide an iconographic identity, are located on either side of the piazza. Figures 3 and 4, show both band clubs in daytime and early evening. Since their foundation, these clubs are traditionally routed in rivalry and competition. In the past, this rivalry had stained village *festas* and reinforced family allegiances to the extent that no family members married members from the other club. This enmity dates back to the first decade of the twentieth century when the original band club split to form the present two clubs. The Socjeta` Santa Marija u Banda Re Gorg V in honour of the patron saint whilst the Socjeta` Muzikali Madonna Tal-Gilju, in honour of the secondary feast. The idea of setting up a band club for Mqabba was the brain child of Michael Zammit.



**Figure 3 - Band club of the Socjeta` Santa Marija u Banda Re Gorg V, Mqabba**



**Figure 4 - Band club of the Socjeta` Muzikali Madonna tal-Gilju**

Although in recent decades, a culture of tolerance has developed between these clubs, rivalry is still strong but on a significant positive note. Healthy competition, which manifests effectively the capabilities of local craftsmen in fireworks production, has landed each club, on separate occasions at a distinguished international platform. The St Mary Fireworks Factory won the Caput Lucis International Fireworks Festival held in Rome in 2007 (Figure 5)<sup>12</sup>. The Lily Fireworks Factory currently possesses the Guinness World Record for burning the largest Catherine wheel, measuring 32 metres in diameter, on June 18, 2011 (Figure 6)<sup>13</sup>.



**Figure 5** - The *Caput Lucis* International Fireworks Festival held in Rome in 2007 won by St Mary Fireworks Factory



**Figure 6** - The Lily fireworks team attained on June 18, 2011, the Guinness World Record for the largest Catherine Wheel ever built and fired. The wheel, weighing circa 4 tonnes, had a diameter of 32 metres (during daytime and when fired at night)

## INDUSTRY CONCERNS

### Health and Safety Considerations

Malta manufactures pyrotechnics but imports the chemicals required for their composition. Since 1882, 169 persons, including nine children died in fireworks explosions on the Maltese Islands. Nearly 40% took place in the last three decades. The year 2010, with 10 deaths, registered the highest ever fatalities<sup>14</sup>. These explosions took place either in workshops of the fireworks factories, during transportation or when they are being let off.

The three decades until the year 2010, pyrotechnical accidents taking place in fireworks factories in Malta affected factory personnel but rarely third parties. The trend shows an increase in the deaths caused by explosions in fireworks factories whilst producing fireworks. Compared to other similar accidents in the United Kingdom, the rate in Malta is significantly larger. This is not attributed to incompetence of local craftsmen or bad practice, but due to other factors which renders local pyrotechnics operations considerably more hazardous. This ranges from microclimate to static electricity to accidental fire in places of fireworks production. This was one of the primary conclusions of the report drawn up by an Independent Board of Inquiry set up by the Minister of Justice and Home Affairs, Malta<sup>15</sup>.

### Legal Obligations

Malta has been a member of the European Union since 2004 and a member of UNESCO since 1965. Effects of the EU Directives are applicable to all European Union Member States. As Spain had to address the effects of the European Parliament approved Directive 2007/23/EC on pyrotechnical industry, so had Malta<sup>16</sup>. Thus, in addition to honouring its obligation to UNESCO, Malta has to comply with all EU Directives which include not only health and safety considerations relating to handling explosives but also environmental aspects and third party rights.

Pyrotechnics is a commercial activity and thus fireworks manufacture and display are subject to controls by competent authorities in order to reduce and mitigate risks associated with potential hazards. Such is the Health and Safety Executive (HSE) in the United Kingdom. Further to third party rights grounded in the EU legislation, obligations arising from the national Civil and Criminal Codes have to be respected in their entirety. The EU Directives relating to environmental and spatial planning call for active public participation in the decision planning process. Considering the unique fireworks situation in Malta, conformity assessment procedures, both type approvals and approved quality systems of fireworks, may, under certain circumstances, not be necessary due to 'whereas' (8) of the Directive 2007/23/EC<sup>18</sup>:

“In view of religious, cultural and traditional festivities in the Member States, fireworks built by the manufacturer for his own use and which have been approved by a Member State for use on its territory should not be considered as having been placed on the market and should not therefore need to comply with this Directive.”

The Cultural Heritage Act 2002<sup>19</sup> introduces the concept of intangible cultural heritage into local legislation. This legislation develops the notion of a cultural continuum. It also acknowledges that culture and cultural heritage convey intangible elements. The Superintendence of Cultural Heritage acknowledges that<sup>20</sup>: “Intangible cultural values provide the spirit and soul of a heritage, which would otherwise become inanimate physical relics of our past”. It further acknowledges that “The range of Malta’s intangible cultural

[heritage] is varied. The more attractive elements are visible in traditions, customs, narratives and the various skills and crafts that have moulded earlier social-economic developments”.

### **Quality and development planning control**

Quality control on fireworks operations, including the composition of imported chemicals used in pyrotechnics, through rigorous regulations which are stringently enforced, leads to safe manufacturing and handling of fireworks. The personnel involved should be trained and duly licensed by the competent, state recognized body. The Government of Malta recognises the extensive tradition of pyrotechnics in Malta and the passion of the personnel involved in the creation of innovative fireworks displays. This has to be addressed primarily through controls in fireworks manufacturing. Personnel involved have to be licensed and premises are inspected on an annual basis to ensure compliance with local legislation regulating such operations. Even though Malta imports the chemicals required for their fireworks compositions, there is still no legislation in place to ensure chemical quality and chemical mixtures in the production of fireworks.

Given that there is a market for pyrotechnics, and the existing facilities for fireworks production covered by planning consent are limited, there will be mounting pressure on fireworks manufacturers to meet supply deadlines. This situation increases the risk on human error with possible tragic consequences. Given that the Malta Environment and Planning Authority, the authority responsible for regulating development planning in the Maltese Islands, has no policy on fireworks, applications for fireworks factories cannot be determined. To-date, the authority evaluated development planning applications for fireworks manufacture on the grounds of general local planning policies. This implies that neither existing facilities can be upgraded nor new planning permits for fireworks production can be issued on policy addressing fireworks manufacturing, a policy designed to take into account the specific considerations which such operations entail. Preparing a scientifically grounded planning policy for fireworks factories is a prerogative for the Maltese Island. If, subject to an environmental assessment, planning permits are issued, the demand of the market will be met under less duress.

Lack of planning policy is significant and decisive because it reflects the position of pyrotechnics on the planning regulator’s agenda. A planning policy document on fireworks will have to critically address a number of fundamental questions: Should there be more fireworks factories to decrease the workload on existing manufacturing and storing facilities in existing ones? The general perception, to quote part of a statement of the Prime Minister of Malta in a Parliamentary Sitting held late last year, is that there is “substantial amount of firework factories in a country as small Malta”<sup>21</sup>. The reality seems different. A case in point is Gozo. At the moment there are only three operating factories, as the fourth one was destroyed in an explosion in 2010. There is a significant demand which is hardly met locally with the result that large quantities of fireworks are being ferried from Malta.

Is there space for more fireworks factories on the islands? Should locations of fireworks factories be more dispersed on the islands and why? Is the existing building typology of fireworks factories sufficient to meet EU directives and regulations? Is there a more suitable typology to meet the legal requirements and standards for good working practice for manufacturing and storage facilities for fireworks<sup>22</sup>? Are there alternative designs, including non-traditional building materials used in the erection of fireworks factories, which renders the manufacturing and storage of pyrotechnics less hazardous and, if human error occurs, the consequences will be less tragic than at present? Thus, such a policy paper will fill a lacuna

and will also address other current practices currently employed in the industry such as mode of transportation of fireworks. Are new development permits with scientifically sound planning conditions for new factories a guarantee which ensures upgrading fireworks operations for the safety of all?

## DISCUSSION

### **Intangible Heritage of Humanity**

Awareness of intangible cultural heritage, its significance to cultural diversity and human creativity and its protection for present and future generations, the heirs of the past legacy, has been around for some decades<sup>23</sup>. Indeed, the concept of intangible cultural heritage and its protection emerged in the 1990s. In 2001 UNESCO set up the Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity, a list of intangible heritage of humanity<sup>24</sup>. This list had 19 items in 2001. It expanded to 47 by 2003 and by 2005 to 90, from 70 countries.

UNESCO's Convention for the Safeguarding of the Intangible Cultural Heritage, drafted in 2003, defines such heritage thus<sup>25</sup>:

“Intangible Cultural Heritage means the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity. For the purposes of this Convention, consideration will be given solely to such intangible cultural heritage as is compatible with existing international human rights instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and of sustainable development”.

This Convention, adopted by UNESCO in 2003 and came into effect on April 20<sup>th</sup>, 2006, recommends nation states to prepare inventories for intangible cultural heritage existing within their territory. In 2008, UNESCO set up the Intangible Cultural Heritage List, which superseded the Proclamation of Masterpieces of the Oral and Intangible Heritage of Humanity. On November 2011, UNESCO had 195 member states, most of the existing countries in the world.

Fireworks form a distinctive component of the intangible cultural heritage of several countries. Where there is a culture for pyrotechnics, the national government through the relevant public agencies and/or authorities, should nominate it for inclusion in the Convention's list as a cultural practice and expression of international significance. Indeed, in the opinion of the authors of this paper, pyrotechnical practice in Malta, which merits world heritage status, need to be urgently safeguarded against the prejudice of individuals of the public, some holding high office in the country. Inscriptions on the List of Intangible Cultural Heritage in Need of Urgent Safeguarding help organize international cooperation and assistance of the relative stakeholders to embark on suitable safeguarding measures. Yet this is not possible as Malta is not a state party to the Convention for the Safeguarding of the

Intangible Cultural Heritage. One can still argue that the Cultural Heritage Act 2002, a legislation enacted months prior UNESCO's adoption of the Convention for the Safeguarding of the Intangible Cultural Heritage, acknowledges the significance of cultural heritage elements, other than tangible manifestations of heritage, which impart intangible cultural values.

### **Recommendations**

Merging the ongoing fireworks related traditions, which have significant heritage value, with the health and safety standards and the public's pride and prejudices, is significantly demanding. Prejudices may be overcome by public relations campaigns but the fears are justified. Recent statistics of deaths, wounded and damages claimed by fireworks explosions in Malta substantiate this reality. For the pyrotechnic legacy and its socio-economic benefits, seven recommendations are being proposed to ensure safe operations and continuation of fireworks operations. The first relates to legally, enforced, health and safety management controls whilst the other six recommendations are aimed at addressing land-use considerations in the production and setting off of fireworks, the main source of concern. In this context, the term fireworks manufacture applies both for the production and setting off of fireworks. Also, the term urbanisation does not refer only to developments associated with city development. It is being used here to encompass all developments which involve human activity. Thus, for the scope of this paper, this term equally applies to residential developments, public buildings and industrial estates.

#### ***Update the legal framework regulating the practice of pyrotechnics***

Local legislation regulating fireworks manufacture is dated and needs redrafting to meet contemporary demands for health and safety of both pyrotechnicians and third parties. Legal and quality controls are important dimensions. These have to be coupled with personnel who are both competent in the science of pyrotechnics and in managing fireworks factories. The following are thus deemed necessary:

1. Continuous updating of laws and regulations on pyrotechnics in Malta,
2. Management skills courses for licensees who are the people who run fireworks factories,
3. Ongoing training for licence holders, and
4. Testing of pyrotechnic mixtures.

These propositions will be effective if and only if they are enforced. This implies that there are in force legal instruments which are implementable and thus include provisions for the necessary mechanism to enforce them.

#### ***Ensuring that sites of production are suitable for safe manufacturing process***

The pyrotechnical industry has to maintain environmental health and safety standards for both operators and third parties. Fireworks factories should meet the required standards for safe manufacturing process and storage. If factories do not meet the said standards, it should be upgraded without delay.

#### ***Preventing sterilization of sites for suitable manufacture and setting off fireworks***

Urbanisation is a leading factor which leads to the sterilisation of operations of existing operational factories. Sites for relocating existing factories or for the establishing of new ones, should be safeguarded from such development. Sites of fireworks production are

neither permissible in areas of cultural and natural heritage significance nor in areas in close proximity to settlements. This also applies for sites for the setting off of fireworks.

***Setting up a buffer zone around existing fireworks manufacturing sites***

As a corollary to this, there are sites of existing fireworks factories which are located away from settlements. Urbanisation towards these factories should be prevented as it poses a hazard to the same owners and occupiers of the tenements within such a settlement, and impacts on the operations of the factories. Thus, a buffer zone around such sites should be established by the national environmental and development planning authorities whereby no urbanized development will be allowed. This implies a presumption against all developments in or near such buffer zone provided that these developments are not of a non-urbanised nature and are not, or could not interfere with the operations of fireworks factories.

***Establishing alternative location for fireworks manufacturing sites affected by urbanisation***

In cases where urbanisation was allowed in the direction of established fireworks factories, the national authority regulating development planning should seek to establish alternative sites for relocation and ensures that such sites will be safeguarded against urbanized development.

***Undertaking environmental audits and assessments for fireworks manufacturing sites***

For existing sites which comply with the criteria regulating proximity to settlements and standards of operations in factories, an environmental audit should be undertaken. In the case of setting up new fireworks factories or for the enlargement of a fireworks factory to expand its manufacture, an environmental assessment should be undertaken. These environmental audits and environmental assessments should univocally state the risks, hazards and particular threats posed by the operations of the factory and identify the relative implementable mitigating measures. Fireworks manufacturing sites, existing or proposed, should not be allowed to operate if sufficient environmental safeguards are not guaranteed.

***National strategic evaluation of pyrotechnics as sustainable intangible heritage***

National authorities should undertake a strategic evaluation of sites of fireworks factories and pyrotechnics as sustainable heritage for humanity. This evaluation should

1. Assess the distribution of sites for fireworks manufacture and their operations including their potential for safe rate of production capacity and the degree of safety of existing storage facilities,
2. Compile information on, and periodically review, trends in tourism and recommend and support the said industry to develop a sustainable strategy for the market,
3. Undertake a feasibility study to identify export markets for the local pyrotechnical industry, and
4. Assess other potentials which further reinforce and enhance the art and science of pyrotechnics.

## **CONCLUSIONS**

Numerous countries have tangible heritage: Physical objects of culture in space and may also contain space. Stonehenge and Hagar Qim Temple Complex are respective illustrations. The latter, together with a number of other buildings dating to the neolithic age, is a site in Malta included in the World Heritage List. As these places are of World Heritage significance as per UNESCO Convention Concerning the Protection of the World Cultural and Natural

Heritage<sup>26</sup>, likewise is the art and science of fireworks display. Pyrotechnics have been around for a number of centuries. They compliment the Islands intriguing eclectic culture. Unfortunately this is not possible as Malta is not a state member of the UNESCO's Convention for the Safeguarding of the Intangible Cultural Heritage<sup>27</sup>. Pyrotechnics, as indeed the many other unique expressions and traditions, is synonymous with Malta, one of the smallest, highly populated, nation state in contemporary global geography. Indeed, given the recent international acknowledgement to pyrotechnical practice, a practice with a history dating centuries, the central government should consider as part of the strategic evaluation recommended above, the setting up of an institute and/or centre for pyrotechnical research at the Malta College of Arts, Science and Technology.

In the case of Malta, fireworks are part of culture; their manufacture and display are part of our history and tradition. One needs to curb abuse to cut down on accidents. These are either due to personnel or unsuitable facilities. The former is being seriously addressed and, through licensing, can be controlled. The latter is more difficult and seems to be a political issue. Banning fireworks runs counter to the spirit of local legislation and the UNESCO convention. It is as if one opts to ban vehicles to cut down on vehicular traffic accidents rather than rendering roads safer. The objective is safety at work not to stop work.

Years of research undertaken by UNESCO on the functions and values of cultural expressions and practices have led “new approaches to the understanding, protection and respect of the cultural heritage of humanity”<sup>28</sup>. This intangible heritage prompts a sense of identity and continuity. Pyrotechnics are popular worldwide and they play a key role in many celebrations, cultural or otherwise. Nations with a tradition and a culture for the art and science of fireworks displays should seek to safeguard them as part of the intangible heritage of humanity. Pyrotechnic organisations, national and international, may prove to be prime movers for such an initiative.

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