

# **FIRE ENGINEERING AND RISK ASSESSMENT OF HISTORIC BUILDINGS**

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# **POPULATION ATTITUDE TOWARDS CULTURAL HERITAGE**

- ❖ Historical approach – strictly utilitarian**
- ❖ 200 years ago – feeling towards the past**
- ❖ Preservation and restoration of artifacts**

# CULTURAL HERITAGE IS ALWAYS AT RISK

- ❖ sacral heritage (high number of fires caused by deliberate action to cover prior robbery)
- ❖ recent years – hazard prevention, guarantees of sufficient fire security level
- ❖ fire brigades extended special preventive supervision (problem of wooden structures)
- ❖ inadequate protection caused by negligence



## HAZARD SOURCES

- ❖ physical and chemical properties of materials and substances (often stored there)
- ❖ usage conditions (temperature, high pressure)
- ❖ human error, carelessness, defects of installations and devices
- ❖ vis major

# Dangerous materials and substances



- **Ignitability** – can catch fire (flashpoint) under 140°F (60°C)



- **Corrosivity** – has a pH of 2 or less (that means it is very acidic), or has a pH of greater than or equal to 12.5 (or very basic)



- **Reactivity** – reacts violently or forms dangerous byproducts



- **Toxicity** – is poisonous

# DAMAGE OF BUILDINGS AND THEIR CONTENT

- ❖ fall or partial destruction by burning
- ❖ damage from heat, smoke, soot, combustion by-products
- ❖ water damage from fire-fighting efforts





## **EFFORTS TO STRENGTHEN RESISTANCE OF A BUILDING**

- ❖ reducing potential sources of ignition
- ❖ maintenance and housekeeping
- ❖ regular inspections of the most vulnerable components (electrical installations – vulnerable components mostly not visible)

# **STRATEGY AND TECHNICAL MEASURES RESTORATION TREATMENTS**

- ❖ elimination of ignition sources (human error and negligence, naked flames, candles, cleaning chemicals and paints)**
- ❖ repair activities (soldering, paint removal, carpentry)**
- ❖ hot work, e.g blow-lamps, cutting, welding is allowed if there is no other alternative**
- ❖ heaters should be serviced regularly, chimneys swept and flues and ducts maintained in a sound condition**
- ❖ installation of preventing smoke and flame, barriers should not detract from the character of the building**

# STRATEGY AND TECHNICAL MEASURES RESTORATION TREATMENTS

- ❖ preference to non-intrusive measures
- ❖ intrusive just in case when other are inadequate and threaten human life and architectural heritage
- ❖ fire-response plans: roles of occupants-cultural heritage professionals-fire brigade in response
- ❖ adequate access at all times for the emergency services; roads and access points are chosen and well identified and maintained

**WE ARE ABLE TO DEAL WITH A CATASTROPHE  
AND ITS CONSEQUENCES WITHOUT HAVING TO  
SET HUMAN LIFE AGAINST THE VALUE OF  
CULTURAL HERITAGE. THE LIFE AND HERITAGE  
ARE LINKED, IT IS A PART OF A INDIVISIBLE  
WHOLE, THE EFFORTS TO SECURE ONCE  
SHOULD SERVE TO STRENGTHEN THE OTHER  
AND WE ARE ABLE TO FIND ONE COMMON  
LANGUAGE**

**Venice Charter (article 16) and ICOMOS  
Principles for the Recording of  
Monuments, Groups of Buildings and  
Sites**

**THANK YOU FOR YOUR KIND  
ATTENTION**