by Barry J. Cooper

Toward establishing a “Global Heritage Stone Resource” designation

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Creation of the new international designation of “Global Heritage Stone Resource” is here advocated as a means of recognising those building stone resources that are widely represented in human culture. With introduction of the new designation, the profile of many natural stone materials will be raised to prominence through the researching of citations that will be necessary to create this new international standard. The proposed designation also offers a mechanism to formalise selected characteristics of natural stone material, not previously recognised, for example rock colour and traditional building stone names, in an internationally accepted context. The “Global Heritage Stone Resource” proposal also aims to complement and reinforce any existing geological standards that have been established especially those facilitated by IUGS, and its affiliated organisations. The interest and support of any geoscientists in advancing the “Global Heritage Stone Resource” proposal is sought.

Introduction

Building Stone (also called Dimension Stone) is rarely central to geological considerations, despite the fact that natural stone has been utilised by humanity for millennia. From a geological perspective it needs to be remembered that those involved with building stone are also intrinsically and economically involved in the ‘bread and butter’ of geoscientists that is hard rocks in their physical field location, their removal, as well as the changes that affect such rocks wherever they may be later used.

The “Global Heritage Stone Resource” (GHSR) proposal that is discussed here seeks to raise the status of building stone, especially in the international sphere, both in the realm of geologists, as well as for other natural stone professionals and the stone industry sector in general. It aims to create an internationally recognised category for those natural stone resources that have achieved widespread utilisation in human culture.

Via the GHSR designation, prominence will be gained for those natural stone resources that have been used in artistic and architectural masterpieces, heritage construction, as well as utilitarian (yet culturally important) applications.

It is also envisaged that GHSR definition will formalise many, primarily geological aspects, of building stone, including, the source

and extent of critical resources, definitions utilising physical and chemical properties, and issues surrounding extraction of material, in addition to heritage relating to subsequent utilisation. There is also the possibility of formalising technical, yet essentially geological, terms and definitions that are currently restricted in their use to the building stone industry.

GHSR designation was first mooted within the International Association of Engineering Geology and the Environment (IAEG), Commission 10 – Building Stones and Ornamental Rocks (C-10) in late 2007 and discussed by the Executive Committee of IAEG during 2008 including its formal meeting in Madrid in September 2008.

The GHSR proposal was initially presented in a public forum at the 33rd International Geological Congress in Oslo in August 2008 (Cooper 2008), and at the subsequent meeting of IAEG C-10, also during the Congress; it was decided to establish a committee to advance the concept.

The GHSR proposal is being considered here in the principal forum of International Union for the Geological Sciences (IUGS) following briefings to and subsequent support from the IUGS. IAEG is affiliated with IUGS.

Scope

The GHSR initiative addresses the cross-over realm between the geological sciences and human cultural heritage. It considers natural stone that has been removed, quarried or mined for use in sculpture, ornamentation, building, landscaping, decoration or similar

Figure 1. Potential “Global Heritage Stone Resource”, Canada - Tyndall Stone, Ordovician dolomitic limestone, Selkirk member of the Red River Formation, Manitoba, Canada, shown here in “Bank of Montreal Building”, Calgary, Alberta, Canada.

Figure 2 - Potential “Global Heritage Stone Resource”, Armenia – Armenian Tuff, Quaternary volcanoclastic stone, probably of the Aniysk type, shown here at the Erebuni Museum, Yerevan, Armenia.

applications. It focuses both on the place of natural stone extraction as well as on the site utilisation of natural stone resources. The stone industry sector is also involved here and conceivably the place of intermediate processing may also be significant, for example a sculpture workshop.

GHSR designation is not intended to supersede or conflict with any other regional, national or international standard or scheme of nomenclature or terminology that applies to natural stone or other building material, or any manufactured product.

It is intended to be separate from World Heritage status granted under the 1972 UNESCO “Convention concerning the Protection of World Cultural and Natural Heritage” and the work of its World Heritage Committee.

A GHSR should also be separate from any other designations or standards especially those currently established under IUGS or its affiliates. In this respect it specifically aims to be separate from, yet, where feasible, complement and reinforce any guidelines and standards that have been established, for example by the International Commission on Stratigraphy or indeed any other like international organisation.

With respect to the latter, the GHSR proposal should complement the efforts of the “European Committee for Standardisation” especially with respect to conservation of cultural property. In addition it should be guided by the European Standard prEN 12440 Natural Stone Denomination Criteria in the preparation of GHSR citations (discussed below) and shall, as much as feasible, complement and reinforce this standard.

In general, GHSR designation will assist, indeed enhance, current local regional and national efforts by countries such as the United Kingdom to raise the profile of natural stone via separate designations or special status.

Objectives

The intent of recognising natural stone resources utilising this

proposal arises from the value, even necessity, of promoting increased community, national and international awareness of natural stone and its widespread utilisation in human culture. The importance of this can be appreciated when dimension stone as a construction material is understood as arguably the earth’s most sustainable mineral resource (Cooper, 2004), having greater durability than alternative materials, or utilising comparatively less energy and producing less toxic by-products in its processing than competing products.

Recognising a GHSR will also augment professional understanding of natural stone amongst professional workers, not only in geology, but also in engineering, architecture and stone/building conservation. The designation can also provide economic benefit to the natural stone industry sector because it will direct greater attention to natural stone as a commercial building product, sculptural/decorative material and even as a tourism opportunity. Such enhancement of the stone industry can have significant positive attributes in terms of small business, regional development and third world development.

The necessary process of researching proposed GHSR citations will aim to raise the profile of many little known natural stone materials amongst all associated professionals especially those regionally significant heritage stone materials that lack current recognition within a field where international recognition is limited.

Notably GHSR designation may also help safeguard and protect heritage stone resources from subsequent sterilisation by alternative human endeavours. In this regard designation will, in addition, likely encourage proper management of existing extraction operations of the stone in order to ensure future availability and utilisation. And, as previously mentioned it will offer a means or mechanism to formalise and highlight selected geological characteristics of natural stone material, for professional purposes and otherwise, in an internationally accepted context.

In general, GHSR designation should enhance international co-operation in the research and utilisation of natural stone resources world wide.

Development and Implementation

The GHSR proposal is being developed under the auspices of the IAEG C-10 with Dr Barry J. Cooper (School of Natural and Built Environments, University of South Australia) as Convenor of the project.

Initial international interest and support has been canvassed, and as of December 2009, there are 32 interested people from 22 countries interested in the proposed designation. This promotion is continuing and this article is part of the process.

A publically available circular commenced issue in May 2009 as part of a networking process amongst international contacts interested in advancing GHSR or at least interested in monitoring its development. It is planned to issue this Circular at least annually and make available all issued circulars on the internet as soon as possible.

An early goal in GHSR implementation will be the creation of set of statutes or rules that will govern GHSR. A draft set of statutes have

Figure 3 - Potential “Global Heritage Stone Resource” “Australia - Victorian Bluestone, Late Tertiary to Quaternary Basalt, shown here in superstructure of Christ Church, Hamilton, Victoria, Australia.

been prepared and included in the First Circular in order to facilitate discussion. Revised draft statutes will be issued in due course.

With respect to the latter, trial citations are also important in order to test the draft statutes and to examine applicability of the designation. Two trial citations have been received from English Stone Forum for Portland Stone and Welsh Slate.

Ultimately a permanent organisation that administers GHSRs will be necessary, possibly one styled as the “International Commission for the Designation of Heritage Stone (ICDHS). It must have international credibility and its management must also include representatives from all major world stone producing regions, including Europe, North America, South America, North & East Asia, South Asia, Africa, Oceania with no one country or region having dominance.

The appointment of an ICDHS Board that solicits and approves GHSR citations will be necessary. Modifications to previously approved citations or even deletion from the recognised list of GHSRs would also lie within the responsibility of the ICDHS Board. It should be formed under the auspices of both IAEG and IUGS. Voting members within the proposed ICDHS Board must, for practical reasons, be defined and limited, however there should be a provision to co-opt additional non-voting support for specific proposals.

It is suggested that authorities in countries, where a potential GHSR has been extracted and utilised, should also prepare draft citations. These citations would be submitted to the ICDHS Board with subsequent review and modifications agreed by submitting party.

Following approval of citations, final endorsement could be

provided by the IAEG and IUGS. Publication of each GHSR citation in a professional journal such as the “*Bulletin of Engineering Geology and the Environment*” (the IAEG Journal) or “*Episodes*” (the IUGS Journal), would bestow final international GHSR recognition and announce the newly acquired status of the stone.

It seems appropriate that the ICDHS would also be responsible for promoting the GHSR concept worldwide and overseeing the status of existing GHSR sites.

Terminology

The term, “Global Heritage Stone Resource”, has already undergone limited critical assessment however at this stage of assessment it is not final. For example, alternatives to the term “Global Heritage Stone Resource” may be “Stone of International Importance in Human Culture” or “World Heritage Stone”. At the initial stage of GHSR development the designation was labelled a “World Heritage Stone Resource” (Cooper, 2008); however this title was subsequently rejected in preference to GHSR because of the potential confusion with the current high status of World Heritage designation.

The diverse geological character of dimension stone resources and the reality of formalising a natural stone designation also create the opportunity of providing additional complementary terminology at the time of GHSR proposal. For example, where there are several significant stone resources, presumably related geologically, extracted from one district, a “Global Heritage Stone Region” may be separately designated either with or without constituent “Global Heritage Stone Resources”. The large variety of heritage marble types in the Carrara marble region in northwest Tuscany, Italy provide an obvious candidate for a “Global Heritage Stone Region” in which numerous marble types could be recognised as a “Global Heritage Stone Resource”.

The GHSR designation could also facilitate the establishment of complementary terminology, reflecting international importance and significant heritage utilisation of a GHSR. For example it is possible within the GHSR citation to introduce, in a formal sense, corresponding designations that include such terms as “world”, “international”, “global”, “classic” or “icon”. Hence it could be proposed that a GHSR is also a Classic World Marble (or Granite or Travertine or Slate or other stone type). More generally a GHSR could also be designated an “International Decorative Stone Icon” or a “Global Ornamental Stone”.

GHSR Characteristics

It is suggested that GHSR recognition should be governed by several critical characteristics, most of which would need to be satisfied before recognition.

High in importance is the historic use of the dimension stone for a significant period, 30 years or 50 years have been recommended.

Also vital is the utilisation of the GHSR candidate in human projects now considered to have major heritage significance. In this context we can find examples amongst very numerous, landmark stone constructions around the world.

The geographic range of a potential GHSR utilisation is also an important aspect to be considered. International use of a material implies greater significance in human history, although strong appreciation of a stone resource by a regional community should not be ignored.

Ongoing resource access remains highly important and it is preferred that the ongoing quarrying of a GHSR should benefit from its designation rather than the reverse. The continuing availability of a GHSR will allow both for repair of heritage construction, encourage the building of future stone heritage as well as promote the sustainability of stone use. And the links with the natural stone sector should aim to inspire new entrants to introduce new materials for modern iconic projects with the aim of later gaining GHSR recognition.

Ideally, scientific, cultural, environmental and commercial benefits should accrue from GHSR nomination and approval.

Development and Approval of Citations

The preparation of GHSR citations will be a crucial activity.

Traditional names for example, Balmoral Red (a granite from Finland) or Petit Granit (a limestone from Belgium) that are widely used in the stone industry and not recognised formally by geologists, will find an avenue for formal international recognition in this process for the first time, even though they have been long used. Company names, especially those with restricted use, should not be formalised as the principal GHSR name yet could be referenced for completeness.

Specified buildings, landscapes, sculptures and ornaments of iconic or heritage nature, where the stone is utilised, will have to be listed, something that has been ad hoc or non-existent in the past.

Of equal consequence will be precise information on the place of origin, including specified quarry or quarries where a GHSR can be sourced. With this consideration current constraints on future resource development could be reviewed in order to assist ongoing utilisation.

A range of geological characteristics for each GHSR also needs to be documented, including geologic age, structural/tectonic setting, petrography, stratigraphic name, natural variability, technical characteristics. Given that a stone resource is often defined by its subtle colour characteristics, a feature often ignored in other geological investigations, little recorded geological information will thus be documented.

An issue for early discussion will also be the weighting assigned to specific attributes. It may be necessary to create a category for stone resources that are significant yet do not fulfil all essential conditions pertaining to the GHSR designation. In this respect, the importance of current quarrying and availability is a vexed question. If a stone is not currently obtainable and thus unavailable for future use and restoration yet has important historical/cultural recognition, should it be allowed full GHSR designation? From another perspective, by encouraging the importance of stone quarrying, GHSR designation is also encouraging existing quarries lacking GHSR designation to work towards culturally significant projects and ultimately GHSR nomination.

A GHSR citation should be prepared in the first instance by natural stone authorities (individuals or organisations) from the country in which the natural stone, to be accorded recognition, is removed, quarried, mined or extracted.

This should be duly submitted to the GHSR administration. A critical review including if appropriate from third parties, of the submission would then follow with any suggested modifications by GHSR administration being agreed to by submitting party. Comments received from third parties shall also be considered and may be

solicited by GHSR administration before final approval. Draft GHSR citations could also be made publicly available for comment, for example via the internet.

Final ratification of GHSR approval is appropriate by IAEG and IUGS with subsequent publication of the critical characteristics in a recognised and widely circulated professional journal such as *“Episodes”*.

What is needed to progress the proposal?

At the current stage in developing and implementing the GHSR proposal, there is a need for ongoing support from IAEG, which holds the international mantle for activities in the realm of dimension stone and cultural heritage, as well as IUGS with its responsibility for developing many essential standards in the earth sciences.

There is also a need to increase the number of interested people and organisations in the designation from the greatest number of countries. Support from the natural stone industry sector would also be beneficial.

Ongoing critical assessment of the draft statutes as provided in the “Global Heritage Stone Circulars” is needed.

There is also value in preparing trial citations to realise all the challenges that proposing and approving a GHSR would entail.

Once a formal international commission is established to progress the GHSR establishment, volunteers will continue to be needed to facilitate nominations.

Consequently organisational support (regional, national and international) will be required if the GHSR is to be successfully developed.

Geoscientists interested in being involved with development of this proposal should contact the author of this article.

The illustrations, accompanying this article, show building stones deemed suitable for GHSR designation yet inadequately known outside of their country of origin.

References

- Cooper, B.J., 2004, Sustainable Development: An Opportunity for DimensionStone. *Roc Maquina*, v. 54, pp. 12-17.
- Cooper, B.J., 2008, Recognition of a “World Heritage Stone Resource”: A proposal. Abstracts 33rd International Geological Congress, Oslo, Norway, 6-14 August 2008.
- Global Heritage Stone Circular 1 – May 2009.

Barry Cooper holds an MSc from the University of Melbourne and a PhD from Ohio State University. During the 1980s and 1990s, he commenced investigations first into the history of geology and later into the dimension stone industry. These stone and heritage interests have led to the proposal of the ‘Global Heritage Stone Resource’ designation that is considered in the current article. Barry is also currently Secretary General of INHIGEO.