Abraham as Bridge and Mediator: A Metaphoric Reflection on the Alhambra

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Abstract

This paper and presentation explores and reflects upon the informational and metaphoric parallel of architecture and mathematics; in particular, it is concerned with a discussion of the possibilities of a renewed and re-stated understanding of these particular fields. The Alhambra serves as an historic and cultural backdrop and reminder of the collaborative nature and purpose of the bridges conference.

He who Sevilla has not seen
Has not seen a marvel great;
Who to Granada has not been
Can have nothing to relate.

-Spanish Popular Rhyme

It is indeed timely that this year's joint meeting of **ISAMA** and the **Bridges** conference is in Granada. It is perhaps, even consequently more appropriate, that we celebrate this interdisciplinary gathering and collaboration in the presence and shadow of the Alhambra. This paper and presentation explores and reflects upon the informational and metaphoric parallel of architecture and mathematics; in particular, it is concerned with a discussion of the possibilities of a renewed collaborative understanding of these particular fields.

That the Alhambra is one of the world's foremost and spectacular buildings, of this there is no doubt. It is a certainty agreed upon by scholars, academics, historians, archeologists, architects, tourists and laypeople. The Arab scholar, Ibn-al Khatib, a contemporary of the Moorish rulers of Islamic Spain titled his descriptive and poetic account of the Alhambra *The Shining Rays of the Full Moon.* [1] The 20th century Islamic scholar Titus Burkhardt noted that

> "Among the examples of Islamic architecture under the sway of light, the Alhambra at Granada sets the first rank. The Court of Lions in particular sets the example of stone transformed into a vibration of light; the lambrequins of the arcades, the friezes in *muqarnas*,

the delicacy of the columns which seem to defy gravity, the scintillation of the roofs in green tile-work and even the water jets of the fountain, all contribute to this impression...By analogy, one can say of Muslim architecture that it transforms stone into light which, in its turn, is transformed into crystals..."[2]

More contemporarily, in *The Moor's Last Sigh*, Salman Rushdie wrote:

"And so I sit here in the last light upon this stone, among these olive trees, gazing out across a valley towards a distant hill: and there it stands, the glory of the Moors, their triumphant masterpiece and their last redoubt. The Alhambra, Europe's red fort, sister to Delhi and Agra's – the palace of interlocking "forms and secret wisdom, or pleasure courts and water-gardens, that monument to a lost possibility that nevertheless has gone on standing, long after its conquerors have fallen; like a testament to lost but sweetest love, to the love that endures beyond defeat, beyond annihilation, beyond despair, to the defeated love that is greater than what defeats it, to that most profound of our needs, to our needs for flowing together, for putting an end to frontiers, for the dropping of the boundary of the self."

Architects and mathematicians have enjoyed a close collaborative relationship. Professionally and academically, this exchange and discourse is one that has engendered a rich cross-pollination. Vitruvius, Serlio, Alberti, Leonardo, Borromini are but a few historical examples– our collective artistic and scientific histories are replete with examples of the master craftsman – who is at once a humanist, a scientist and a craftsman, indeed a kind of crossing of the empiricist who dwells in formulae and number, and the artisan, searching for the poetry, as Robert Osserman describes it, of the universe. [3] This pre-modern world celebrated a comprehensive understanding of our universe (yes, sometimes odd, strange or curious too...) as a series of intricate webs, relationships and interconnections – Plato, himself, in an odd sort of way, was a distinguished pre-cursor to the systems theorists we know today.

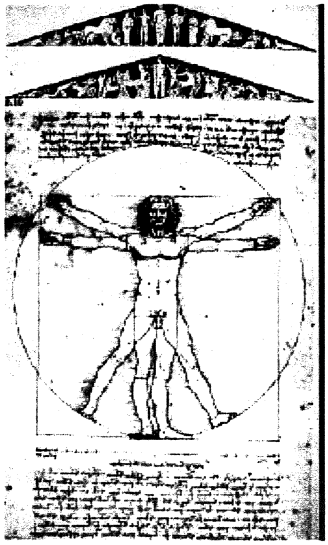

Figure 1: The Vitruvian Man, original drawing by Leonardo da Vinci

Our contemporary mathematics and physics has been predicated on radical shifts in thinking – Copernican, Newtonian, Einstein-ian, Riemann-ian and Feynman-esque paradigm shifts (please excuse me Mr. Kuhn, and others I have neglected to mention...), the connectivity of our academic and intellectual

spheres is a notion we must return to. In a summative manner, perhaps I can echo Paul Erdós, and say, that this paper and presentation, is in part a request to 'keep our brains open.' In this way, this paper is an extended and reflective acknowledgement of this conference and of its setting – which I hope will be clear by the end. The close collaboration of our mathematics and aesthetics (not that mathematics is aesthetically *exclusive*, of course), embodied by this conference, and in particular, by its setting, is remarkably positive for a (slightly, I hope) jaded academic.

Mathematicians, like architects, are (and should be) concerned with first principals. We, as architects, must "go back to first principles in order to solve problems for which history has no precedent." [4] We share a similar tendency and proclivity - a desire for a source, genesis, beginning. These first principles, or singularities perhaps, are encoded in our required frameworks, modules, networks, and structures. This base knowledge is our point of departure and are our assurances of the informational and structural certainties of our methods and tools and processes. We extend our methodologies to encompass new ideas and challenges, to elaborate upon revealed relationships, and newly articulated understandings. Mathematics is about connections and relationships, so too, in the end is architecture. Proportion, Harmony, Unity, and Beauty – just a few of the critical concepts articulated by Vitruvius are intrinsic to both our practices, necessary, even required for what we do.

The Alhambra, as a singularity of Moorish Spain, possessed its own unique gravitational field. Like a star, in its life and now, even after it's death, is has had drawn to it a remarkable history and renewed life – that of the tourist, the artist, the geometer, the nostalgic, the academic, even the love-struck (a friend of mine plans to propose to his love there, in July). Moorish Spain was known for its harmony – and the Alhambra and Cordoba in particular have become emblematic of this sense. Under the rule of its *Ummayyad* and Berber descendents, Spain enjoyed a period of remarkable prosperity and tolerance. There should not be, of course, an excessive romanticization of history and the vast litany of its interpretations[5]; it is true, however, that for a time and for *its* time, this was a synthesized mix of Jews, Christians, Muslims and a host of other peoples and cultures.

In the same manner in which history requires an objective scrutiny, the practice of our art and profession – articulated by this conference – too requires a similar critique. We must– especially in our world of today – so defined by our politics, policies, economics and our weapons of mass destructions so to speak – be ready, as Rushdie eloquently says, to put an end to frontiers and boundaries. We, must, I suppose, explore how to redefine the asymptote (and here, of course, I speak in a metaphorical sense), not as a teasing edge or limiting boundary, but as a bridge, something that enables us to cross a threshold. A group of young Spanish architects in 1954, published *El manifesto de la Alhambra*, which became "a model to young architects who wished to break away from the historicism of the early years of General Franco's rule and encourage the spread of Modernism in Spain."[6] Einstein is an excellent example of a paradigm shift in thinking; the Theory of Relativity changed our view of space and time. Architecture and mathematics exist in a social, humanist sphere, and are inherently transformative.

Just as we know Leonardo through the Last Supper and the Mona Lisa, it is beneficial to note that his first project was an engineering and mathematical problem – how to raise the Tower that caps the Duomo in Florence. Architecture and mathematics are concerned ultimately, with life and the natural environment – of recognizing the foundational nature of our world, of time and of space. Capra notes *in The Web of Life*, that "The power of abstract thinking has led us to treat the natural environment – the web of life – as if it consisted of separate parts, to be exploited by different interest groups" and that "Moreover, we have extended this fragmented view to our human society, dividing it into different nations, races, religious and political groups" and that this has, ultimately "diminished us." [7] He notes that the reconnecting intrinsic for us as a human society is known in Latin as *religio*.

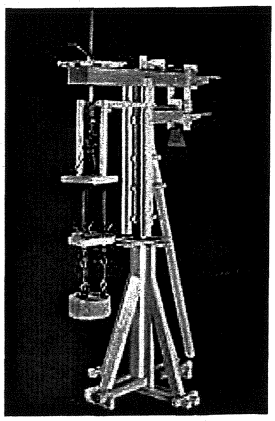

Figure 5: Leonardo's Crane

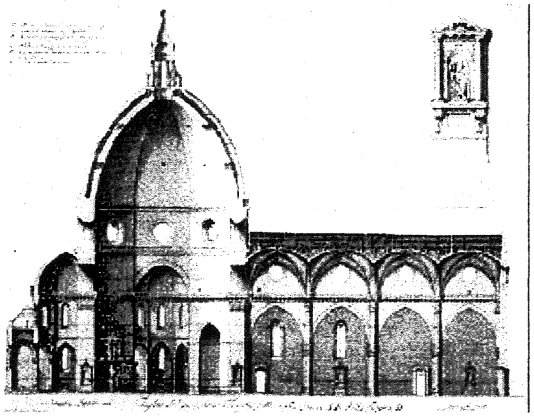

Figure 6: The Duomo, cross section

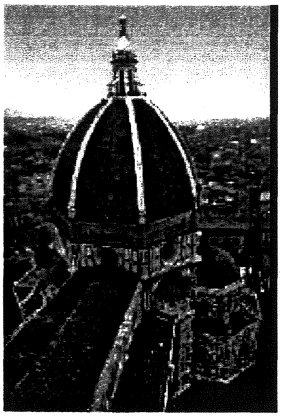

Figure 7. The Duomo, Florence, Italy

The Alhambra sits as a crossing of cultural experience and knowledge – it is a metaphor for a homogenous and non-partisan expression of religious and therefore, 'life' history. It belongs to many traditions but is exemplary in Muslim traditional belief as an example of a harmony of cultural expression and dialogue. The arts and sciences flourished in Moorish Spain – it was a refuge for the dispossessed and disenfranchised and knowledge and the dissemination of the knowledge of these arts and sciences was its Gross Domestic and National Product It was a culture of knowledge and study, of debate and discourse. Tariq Ali describes it as an "Andalusian Passion for experimentation." [8]

Michael Jacobs further observes that the history of the Alhambra "has its origins in one of the most widely known legends of the Spanish Middle Ages – the story of the locked chamber which none of Spain's Visigothic Kings was allowed to enter. The king whose curiosity led him eventually to do so was Roderick, who found walls painted with armed Arab horsemen, and an urn standing on a silver and gold table that had belonged to King Solomon..." [9]

Solomon, in the Islamic religious tradition, was the builder-prophet, who created palaces and buildings by commanding the wind and animals to lift and carry stone and rock. He was reputed to have a magnificent palace, whose crystalline floor looked so much like shimmering water, that the Queen of Sheba lifted the hem of her skirt when entering his court - attended by courtiers, animals and lions – for fear of getting her clothing wet. Solomon was renowned for his wisdom and was blessed with a beautiful created kingdom – known for its tolerance and justice. I would offer that the Solomnic narrative could be considered, by extension, an architectural precursor of the Alhambra.

Figure 8: Solomon's Court

Abraham, however, predates Solomon (and Daedalus); Solomon as well belonging too to Christian and Jewish history. He and his son, Ishmael, are believed to have built a simple House, on a sacred precinct of land, beloved by God, in an arid valley of the *Hijaz*. As the father of our three monotheistic religious traditions, Abraham is a clear bridge, a first principle, and perhaps the best mediator. The Alhambra, in a unique way, is a descendent of this legacy – of Abraham as a bridge – and it is fitting and very seeming that it serves as a backdrop for our discussions. Oleg Grabar has observed "That the Alhambra belongs to many traditions and that it is also unique has, I hope, been made clear." [10]

Just as Abraham and Solomon are part of a collective religious, cultural and historical consciousness, so too, is our knowledge and craft. The interconnection of mathematics and art is a celebrated tradition – the geometry in the Persian Carpet or Miniature Painting only serves to enhance its beauty. This knowledge cannot be seen in isolation. The mathematical wonder of the Alhambra is only one aspect of its total and comprehensive beauty. Its architecture is not exclusively determinant of its inherent meanings. The centrality of this understanding lies in the meeting and mediation of the geometer and craftsman.

Figure 9: Abraham, from Michelangelo's Sistine Chapel

In this way, perhaps this conference is an echo of the house of Abraham and the Kingdom of Solomon; that the silent monument of the Alhambra beyond is a proscenium or agora for this discourse – as a cultural crossing of people, ideas, and connections – is most fitting for us and for our dialogue.

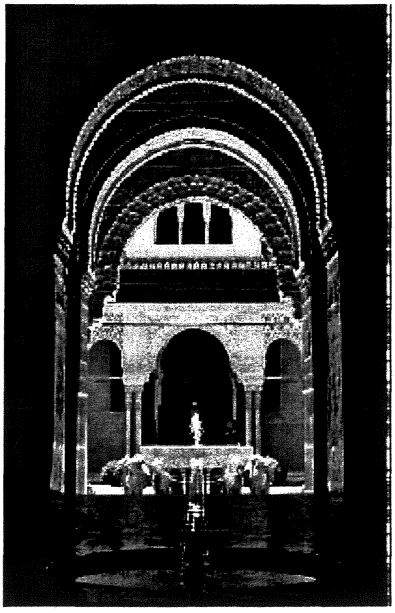

Figure 10: The Alhambra, Court of the Lions

Endnotes

[1] Michael Jacobs. *Alhambra*. (New York: Rizzoli Press, 2000), p 10.
[2] Titus Burkhardt, cited in S. Hossein Nasr's *Islamic Art and Spirituality*. (Albay: SUNY Press, 1987), p 61.
[3] Robert Osserman. *The Poetry of the Universe.* (New York: Doubleday, 1996)
[4] Zahir-ud Deen Khwaja, "The Spirit of Islamic Architecture," in *Towards an Architecture in the Spirit of Islam*, (Agan Khan Awards, Geneva, 1978), p 41.
[5] I would encourage the reader here (or listener perhaps) to read Tariq Ali's *The Clash of Fundamentalisms*. (New York: Verson Press, 2002). While the subject matter is quite different, and at times controversial, he is ruthlessly objective when foraying into the often romanticized notions of history. See Chapter Three in particular – The Empire of the World. He has a very genuine and touching description of Cordoba in this section as well.
[6] Michael Jacobs. *Alhambra*. (New York: Rizzoli Press, 2000), p 181.
[7] Fritjof Capra. *The Web of Life: A New Scientific Understanding of Living Systems*. (New York: Anchor Press, 1996), p 296.
[8] Tariq Ali. *The Clash of Fundamentalisms*. (New York: Verson Press, 2002), p 36.
[9] Michael Jacobs. *Alhambra*. (New York: Rizzoli Press, 2000), p 10.
[10] Oleg Grabar. The Alhambra. (London: Penguin Books, 1978), p 210.