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Mathematical Theology: Future Science of Confidence in Belief Self-reflexive Global Reframing to Enable Faith-based Governance

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Annex to the proposal for an *International Institute of Advanced Studies in Mathematical Theology* (2011), which contains an [Introduction](#), commentary on the *Potential strategic importance of mathematical theology* and [Conclusion](#).
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Reframing mathematical theology in terms of confidence

The proposal follows from valuable efforts to clarify the nature of mathematical theology, most notably that of [Philip J. Davis](#) (*A Brief Look at Mathematics and Theology*, *The Humanistic Mathematics Network Journal Online*, 27, 2004), following his earlier influential study in collaboration with [Reuben Hersh](#) (*The Mathematical Experience*, 1981). As noted by Davis, the interface has of course been explored over centuries by a variety of authors from a variety of perspectives and with a variety of convictions. The references provided separately (*Bibliography of Relevance to Mathematical Theology*) give a sense of this variety, although unfortunately there appears to be no mind map showing the relationships between the preoccupations they represent.

Of potential relevance, in subsequent compilations Hersh and colleagues have given a sense of the original and provocative things said about mathematics by mathematicians, philosophers, cognitive scientists, sociologists, and computer scientists (*18 Unconventional Essays on the Nature of Mathematics*, 2006; *Loving and Hating Mathematics: challenging the myths of mathematical life*, 2010). Hersh (2006) argues that:

... contrary to fictionalism, mathematical objects do exist -- really! But, contrary to Platonism, their existence is not transcendental, or independent of humanity. It is created by human activity, and is part of human culture.

Davis and Hersh had asked in 1981 (p. 406):

Do we really have to choose between a formalism that is falsified by our everyday experience, and a Platonism that postulates a mythical fairyland where the uncountable and the inaccessible lie waiting to be observed by the mathematician whom God blessed with a good enough intuition? It is reasonable to propose a different task for mathematical philosophy, not to seek indubitable truth, but to give an account of mathematical knowledge as it really is -- fallible, corrigible, tentative, and evolving, as is every other kind of human knowledge. Instead of continuing to look in vain for foundations, or feeling disoriented and illegitimate for lack of foundations, we have tried to look at what mathematics really is, and account for it as a part of human knowledge in general. We have tried to reflect honestly on what we do when we use, teach, invent, or discover mathematics.

Scope: Also of relevance is any significance associated with the various interpretations of "mathematic theology", "mathematical theology", "theology of mathematics" and "theological mathematics". For example, with respect to the latter, a [Knol](#) by Jeff Leer (*Theological Mathematics: a Hierarchy*, 9 May 2007) asserts that:

Theological mathematics sets aside (insofar as possible) the questions of zero, negative numbers, imaginary numbers, infinite variety, and the like, not as irrelevant to life, but as a distraction from the pure mathematics of the Holy Trinity.

This selective interpretation would appear to exclude features which could be vital to an approach of larger scope.

Sarah Voss (*Mathematical Theology*, *UUWorld*, 2003) explains that:

Mathematical theology is a study of the divine that in some way draws on mathematics. It opens our minds (and maybe our hearts) to new possibilities, and in so doing it brings hope. God seems to speak in mathematics in two basic ways.

One is through the precision of numerical calculation, logical proof, and all the other blessings associated with mathematics in the "hard" sciences. Science can be thought of as a way of interpreting God's revelation found in nature.

The other way is through metaphor. Only in the last decade or so has our society started to acknowledge the existence of mathematical metaphors. I call such metaphors "mathaphors"; when they apply to the spiritual realm, I call them "holy mathaphors." Ideas drawn from mathematics can greatly extend our spiritual worldviews. Such mathematical notions are suggestive, not conclusive. But in those suggestions lie the makings of new ways of interacting with each other, of healing, of understanding God. In a world that is often spiritually fractured and hurting, we can look to mathematical theology for the seeds of new hope.

A description of [theological mathematics](#) by W. J. Eckerslyke (*WikiInfo*, 11 January 2009) indicates:

Theological mathematics comprises that part of mathematics which goes beyond secular mathematics, and asserts the existence of undefinable entities. Much of theology, particularly pure theology, is concerned with discussions of, and the establishment of conclusions about, the ineffable. Nor does such theology recoil from the apparent contradictions that emerge. On the contrary, they only serve to strengthen our conviction that the subject is of infinite depth and significance. We are happy when people say "That's nonsense" because we can respond with "Yes, it's a Mystery". Much mathematics, particularly pure mathematics, is theological in nature, in that it too is concerned with the study of, and predicated on the existence of, entities which are constitutionally ineffable. As every philosopher knows, "exists" is a very slippery word; and as Wittgenstein said, "What we cannot speak of we must pass over in silence." But that does not deter the more intrepid mathematical explorers, who build layers of indescribable structures out of indescribable entities.

Emergent science of confidence and credibility? The argument here is that the dependence on faith and belief, understood generally, suggests that **"theology" might be fruitfully reframed to encompass the range of approaches to fundamental integrative belief, especially where those formulations substitute for the divine -- or are effectively treated as such.** There is a need for the study of belief systems -- or systems of confidence -- through which people are called upon to give coherence to their lives. This might be called the "science of confidence" to be contrasted with the "confidence science" effectively developed and exploited for marketing purposes. More generally, however, money is recognized as a token of confidence vital to a sustainable economy -- a significant focus of belief. There is therefore an important conflation of connotations with the articulation of confidence in "theology" and that in "economics". It might even be said that the crisis of the times lies in the failure to explore the manner in which such forms of belief are entangled.

Mathematics, through its insights into the subtlest patterns of relationships, has traditionally been associated with theology. Mathematical theology continues to explore these matters in terms of their implications, but primarily in celebration of religious understanding. Could it engage with such entanglement, in the light of insights from physics?

From such perspectives "mathematics" and "theology" have a fundamentally complementary concern with both "credibility" and "infinity" (Michael Heller and W. Hugh Woodin (Eds.), *Infinity: new research frontiers*, 2011). The relationship might perhaps be usefully and unconventionally presented as "mathematics & theology". There is also a sense in which both are especially but distinctly attentive to engaging confidently with the inexplicable and the unexpected -- which have currently acquired considerable strategic importance, as separately discussed (*Engaging with the Inexplicable, the Incomprehensible and the Unexpected*, 2010).

The latter point is highlighted by the very recent declaration of [Rick Perry](#) -- the person who may well be elected as the next "most powerful man on the planet":

Right now, America is in crisis. We have been besieged by financial debt, terrorism, and a multitude of natural disasters. As a nation, we must come together and call upon Jesus to guide us through unprecedented struggles, and thank him for the blessings of freedom we so richly enjoy... Some problems are beyond our power to solve.... with praying people asking God's forgiveness, wisdom and provision for our state and nation. There is hope for America. It lies in heaven, and we will find it on our knees.
(*Rick Perry under fire for planning Christian prayer rally and fast*, *The Guardian*, 5 August 2011)

Confidence in the face of the unknown has been brought to the fore by the strategic recognition of the complementarity between "hearts and minds" in developing processes to elicit conviction in order to enable sustainable change -- the will to change. There is a sense in which this preoccupation is embodied in the seemingly improbably complex relationship between theology and mathematics -- perhaps reminiscent to that of [moonshine mathematics](#). With its focus on belief, frequently symbolized by the heart, theology necessarily offers a range of insights to complement the focus of mathematics on confidence established by the mind. It might even be said that the two are

brought to a tragic focus -- a form of singularity -- in the mindset of those effectively engaging with infinity and the unknown as suicide bombers.

Strategic convictions: It should be stressed that the only qualification for the formulation of this initial presentation is past responsibility for the *Encyclopedia of World Problems and Human Potential* which referred to aspects of a number of the issues highlighted here -- in an effort to interrelate [world problems](#), [global strategies](#), [human development](#), [integrative insights](#), and [human values](#). This does not imply any special expertise in theology or mathematics. This deficiency could however be understood as an advantage, given the challenging nature of the interface between them.

It could however be argued that the nature of the "existence" attributed to the entities so profiled is primarily a matter of belief -- variously articulated in terms of belief systems, as separately argued (*Cultivating Global Strategic Fantasies of Choice*, 2010; *Globallooning -- Strategic Inflation of Expectations and Inconsequential Drift*, 2009). Can a "problem" exist in the absence of belief in a corresponding "value"? And, as argued above, a "strategy" is necessarily driven by dependence on a "belief" and a commitment to it readily described as "religious" -- not infrequently marked by "martyrdom for a cause".

The implication of "mathematics" in any such "theology" is evident in the effort to analyze, organize and represent the relationships between such entities as complex networks -- effectively a global belief system (*Simulating a Global Brain -- using networks of international organizations, world problems, strategies, and values*, 2001).

As with Monsieur Jourdain in Molière's *Le Bourgeois Gentilhomme*, is this a case of being surprised and delighted to learn that one has been doing "mathematical theology" all one's life without knowing it:

Par ma foi ! il y a plus de quarante ans que je dis de la prose sans que j'en susse rien, et je vous suis le plus obligé du monde de m'avoir appris cela.

In managing their beliefs, might that be the case for everyone -- whatever their skill in doing so?

Imagining the initiative: reframing conventional labels

As queried above, what indeed might be the imaginative initiative that a fruitful interaction between mathematicians and theologians would engender? Echoes of *Castalia* and *The Glass Bead Game* (1943), as articulated by Nobel laureate [Hermann Hesse](#)? Shades of the *Foundation Series* in the science fiction of [Isaac Asimov](#), or perhaps of other "science fiction"?

Again, with respect to any requisite "global reframing" of an **International Institute of Advanced Studies in Mathematical Theology**:

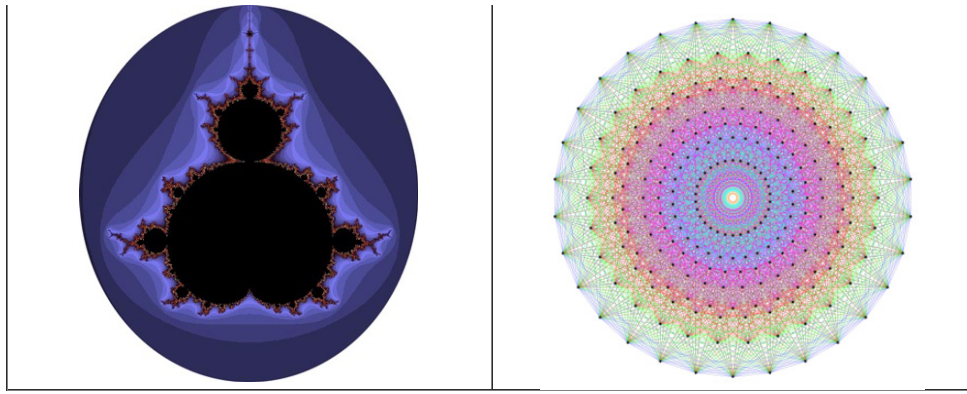
"International": Many initiatives have used this descriptor. Given the challenges of a "global" society, the term has lost its relevance for the integrative complexity with which governance is increasingly confronted. The term is valuable in that it exemplifies a formulation of relationships between spaces with which people identify -- also evident in **intersectoral**, **intercultural**, **interdisciplinary** and **interfaith** dynamics. The question is whether a subtler formulation of these spaces and relationships is possible with the aid of mathematics, especially to enable the emergence of higher and subtler forms of integration and coherence, avoiding entrapment in simplistic unification, irrespective of belief in that possibility. The argument was developed with respect to a specific case (*Emergence of a Union of Imaginable Associations engendered by a Union of Intelligible Associations from a Union of International Associations*, 2007)

"Institute": Again this corresponds to a well-established pattern -- as noted above with respect to "think tank". Unfortunately the term is not associated with the complexity which could held to be requisite in responding to the dynamics of global society. Many have indeed experimented with "network", "community", and other such indicators of form. The question is however what form might be considered appropriate to the intersect of mathematics and "theology" (understood as encompassing belief systems of every kind). Especially intriguing, as suggested by the above case, is the implication of imagination in the credibility of any such form.

What new forms can mathematics engender in support of imaginative thinking? Interesting examples are offered by visual renderings of the [Mandelbrot set](#), "exceptional simple" [Lie groups](#), and potentially the [Monster Group](#) itself (*Sustainability through the Dynamics of Strategic Dilemmas -- in the light of the coherence and visual form of the Mandelbrot set*, 2005; *Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order*, 2005; *Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007).

As shown below, representations of Lie groups in particular are aesthetically reminiscent of the patterns characteristic of religious architecture and design, whilst the "Buddabrot" variant of the Mandelbrot rendering deliberately recalls Buddhist iconography.

Mandelbrot set ("Buddabrot" orientation)	Lie group (e8 graph of the Gosset 421 polytope) (reproduced from Wikipedia)



The further implication is that the form might not be static, as is conventionally assumed, but might be designed to have an inherent dynamic -- perhaps alternating/transforming between a variety of forms. This might recognize the fundamental role of [resonance hybrids](#) -- appropriately given their central function in all organic structure with which life is associated. The Mandelbrot set emerges from such a dynamic by iteration in the [complex plane](#).

"Advanced": Whilst this term is indicative of an appropriate effort to dissociate the initiative from oversimplistic preoccupations, it necessarily has unfortunate connotations of elitism. This is typically reinforced by efforts to associate "institutes of advanced studies" with "centres of excellence". This offers the implication that excellence is not to be found elsewhere. It also leaves the initiative open to accusation that if it is unable to "deliver" -- or to offer "deliverance" -- then the excellence in question is a sham. This argument has been developed in relation to the metaphorical use of "higher" in education (*Higher Education & Meta-education? Transforming cognitive enabling processes increasingly unfit for purpose*, 2011).

At the intersection between mathematics and theology, "advanced" would appear to require reframing in terms of emergence of insight of greater maturity -- whatever such terms might imply and however they are to be understood. Given the sense in which any "advance" is especially associated with linear thinking, how is it to be understood with respect to any "higher" dimensionality? Might it even call for a complementary sense of "retreat", recognizing the importance this may have for both spiritual and academic exploration. Also relevant is the sense in which "retreat" may be associated with the "lowly" cognitive implications of "grounding" and embodiment (George Lakoff and Mark Johnson, *Philosophy in the Flesh: the embodied mind and its challenge to Western thought*, 1999).

Going further, this could involve the enabling of a cyclic dynamic "advance & retreat" -- implying a continuing cycle of [enantiodromia](#) (*Psychosocial Energy from Polarization within a Cyclic Pattern of Enantiodromia*, 2007). As discussed elsewhere (*Toward an Enantiomorphic Policy*), the cultural historian [William Irwin Thompson](#) (*From Nation to Emanation; planetary culture and world governance*, 1982) has sharpened considerably the ecology-sensitive intuition concerning the psycho-social lessons to be learned from cooperation between co-evolving systems.

Thompson stresses the importance of an appropriate understanding of the interaction between opposites by citing [E. F. Schumacher](#) (*A Guide For The Perplexed*, 1977):

The pairs of opposites, of which freedom and order and growth and decay are the most basic, put tension into the world, a tension that sharpens man's sensitivity and increases his self-awareness. No real understanding is possible without awareness of these pairs of opposites which permeate everything man does ... Justice is a denial of mercy, and mercy is a denial of justice. Only a higher force can reconcile these opposites: wisdom. The problem cannot be solved but wisdom can transcend it. Similarly, societies need stability and change, tradition and innovation, public interest and private interest, planning and laissez-faire, order and freedom, growth and decay. Everywhere society's health depends on the simultaneous pursuit of mutually opposed activities or aims. The adoption of a final solution means a kind of death sentence for man's humanity and spells either cruelty or dissolution, generally both. (1978, p. 127)

Such a cyclic dynamic also highlights the time dimension which is implicit, but effectively demeaned, in "advanced" -- despite being central to continuous learning, supposedly characteristic of both mathematics and theology. The argument with respect to "advance & retreat" is rendered succinctly by the oft-cited lines of the poet T. S. Eliot (*Little Gidding*, 1942):

*We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know it for the first time.*

"Studies": This implies, unchallenged, a very particular style of cognitive engagement. It effectively delimits the "comfort zone" of academic endeavour -- often to be defended at any cost. It is more typically the spiritual disciplines of meditation that challenge this comfort zone through a degree of emphasis on self-reflexivity (as discussed below). A helpful articulation of a distinct mode of cognitive proprioception is offered by [Steven M. Rosen](#) (2004, 2006, 2008), a selection of whose relevant arguments have been summarized elsewhere (*Nature of the requisite self-reflexive skill*, 2011).

Some implications of such reframed, self-reflexive "study" are offered by the argument of [Douglas Hofstadter](#) (*I Am a Strange Loop*, 2007). Its implication for a collective initiative have been partially addressed elsewhere (*Sustaining a Community of Strange Loops: comprehension and engagement through aesthetic ring transformation*, 2010).

Missing from "study" in any academic context is the unexamined extent to which the subject and methodology acquire the focus and characteristics of a religion requiring uncritical belief -- complete with high priesthods, rituals and acolytes, and the capacity to offer benediction and condemnation for all time.

"Study" is also typically and appropriately challenged by "action" -- possibly to the exclusion of "study" -- as in many current examples of "fire fighting" responses to crises. Hence the exploration of ["action research"](#). Again these might be framed as complementaries through the conjunctive device "action & research". Many religious retreat centres of course emphasize a cyclic balance between concrete action and reflection -- as a key to "grounding".

Study and action, in the sense of application, can be further challenged in the light of the "intractable conflict" between "objectivity" and "subjectivity" (treated as synonymous with inaction). This has been explored in an earlier argument explaining the use of "8" ([i: Defining the objective ∞ Refining the subjective ?! Explaining reality ∞ Embodying realization](#), 2011).

"Mathematical": The reframing required in the case of "mathematics" follows from the extent to which it is restrictively and exclusively defined as what mathematicians do and are expert at. Whilst it may be allowed that others use those insights, it is often inferred that they do so only insofar as they have been so enabled by suitable mathematical instruction. However, without denying the vast repertoire of insights which professional mathematicians explore and articulate, it is the case that others necessarily use "mathematics" to survive -- long illustrated by the skill required in throwing a spear or a boomerang (Reidar Mosvold, [Mathematics in Everyday Life](#), 2005). Especially striking is the extent to which individuals without mathematical instruction engage in complex kinetic manoeuvres in certain sports.

It is of course also the case that every species uses "mathematics", most notably as observable in the design of shells. The degree of order in nature is the theme of a massive compilation by [Christopher Alexander](#) ([The Nature of Order](#), 2002-2004). The fourth volume approaches religious questions from a scientific rather than mystical direction. In it, Alexander describes deep ties between the nature of matter, human perception of the universe, and the geometries people construct in buildings, cities, and artifacts, suggesting a crucial link between traditional beliefs and recent scientific advances.

The question then is how "mathematics" might be fruitfully reframed so as not to preclude the wider range of insights and expertise with which individuals may have an instinctive cognitive engagement -- even in extremely depressed slum areas (as research has made clear). How might these inform their engagement with belief? This question has been partially addressed separately ([Navigating Alternative Conceptual Realities: clues to the dynamics of enacting new paradigms through movement](#), 2002).

"Theology": There is an implicit challenge to any "theologian" as to whether he or she is primarily an apologist for the given belief system within which she or he is "embedded" as a believer. The argument made above is that "theology" merits reframing to encompass any ordered pattern of "belief" and the expectation of "faith" with respect to it -- as is increasingly the requirement by governance of even the most secular kind.

The irony is that such ordered patterns of belief, however they are enshrined in secular contexts, effectively elicit behaviours analogous to the traditional response to deity. The head of any institution may readily be accorded the nickname "God" by those who function within it -- a name with which the recipient may well identify quite comfortably.

With respect to this reframing, a valuable insight is succinctly offered through a neologism by Alan Nordstrom ([On Credology](#), 12 February 2008):

The study of credology, its central inquiry, investigates the perennial need of our species to establish systems of belief, as distinguished from systems of scientific knowledge.... Beliefs, then, serve our distinctly human need for meaning, and more particularly for authority (What is true?), ultimacy (What is absolute?), purpose (Why is anything?), direction (Where should we go?), guidance (How should we get there?), protection (What will keep us safe?), and connection (How are we related to everything else?).... Thus credology is the study of our speculative attempts to discover meanings beyond what science can reveal, meanings that are vital to our thriving as human beings.

It is however unclear why Nordstrom endeavours to dissociate belief in "science" from his argument regarding belief, given that -- as with the policy proposals of governance -- the theoretical assertions of science, in which many are expected to believe, may at any time be revised.

The "study of beliefs" is recognized as one of the oldest anthropological preoccupations, as noted by Benson Saler ([Beliefs, Disbeliefs, and Unbeliefs, Anthropological Quarterly](#), 41, 1, 1968, pp. 29-33) and as implied by the study of Joseph Jastrow ([The Psychology of Conviction: a study of beliefs and attitudes](#), 1918). As suggested by a "credology", the issue is how a system of beliefs invites "conviction" and merits consideration through "theology" -- as more generally understood.

With respect to the study of credos as a conventional pattern of beliefs, in the [Handbook of Research in the Social Foundations of Education](#) (2009) Steve Tozer indicates:

It has been thought that study of credos provides teachers theoretical tools to apply in practice. Of all the approaches, this one has received the most critique from philosophers of education. Problems mentioned include the logical impossibility of matching belief to action as well as "inherent" conflation of complex educational matters... There is nothing wrong with systematic interrogation of basic beliefs of life and learning, but reliance on systems seem too reductive. (p. 71)

This argument bears reflection in relation to those made strongly, and controversially, in favour of atheism in recent years ([Richard](#)

Dawkins , *The God Delusion*, 2006; Christopher Hitchens, *God is Not Great: how religion poisons everything*, 2009). It is not a question of arguing against this position as some have done (Greg Taylor, *The Atheist Delusion: Answering Richard Dawkins*, *New Dawn*, 1 May 2007). People everywhere are variously called upon to have faith in **science** (as argued by Dawkins), or in the **financial system** (to avoid "panic"), or in the security of the **internet** (to enable telecommerce), or in **God** (as in the US political system, and by the parties to the crisis in the Middle East). As always people give their primary allegiance to different manifestations of the "divine", according to their understanding of the nexus of coherence it offers to their worldview.

The global system has struggled vainly to achieve allegiance to a **global ethic**, to global plans, or to global standards (in many domains). The mysterious challenge is the nature of potential collective consensus in a global civilization. Simplistically this may be imagined as "universal agreement", perhaps qualified through musical metaphor allowing for distinct voices ("everyone singing from the same hymn sheet"). Separately it has however been argued that the title of the controversial study by Dawkins is inadequately framed and should be extended beyond "God" to encompass "consensus" in general (*The Consensus Delusion: mysterious attractor undermining global civilization as currently imagined*, 2011). That argument emphasized that the weak inter-faith consensus on the nature of "God" is merely an aspect of weak collective consensus in general.

More threatening for the coherence of society than "atheism", as a lack of belief in deity, is then lack of any belief at all -- collective unbelief -- considered highly problematic by religions (**kafr**, **apostasy**, and the like). Many commentators recognize the marked tendency to disillusionment and alienation.

The question for a reframed "theology" is how to articulate the nature of any complex, integrative "attractor" which it is assumed could fruitfully attract whatever might be understood as "consensus" (*Human Values as Strange Attractors*, 1993). The elegant complexity of the **Monster Group**, as discovered by mathematics (mentioned above), is an indication of one extreme challenge to comprehension (*Dynamics of Symmetry Group Theorizing: comprehension of psycho-social implication*, 2008). Ironically it is astrophysics which has detected the existence of a "**Great Attractor**" in intergalactic space -- to which ordinary humans would naturally be insensible. For the Abrahamic religions the challenge, expressed mathematically, might be framed in terms of a humanly incomprehensible "**enormous theorem**" allowing for three distinct "solutions" -- each at the limits of human comprehension for those persuaded by it, but mutually incomprehensible in consequence.

How then are "meta", "union" and "integrative" to be fruitfully understood, as discussed elsewhere (*Dynamic Reframing of "Union": implications for the coherence of knowledge, social organization and personal identity*, 2007; *Criteria for an Adequate Meta-model*, 1971). How can mathematics facilitate thinking on these matters? The argument can be explored in relation to the elusively comprehensible "infinity" cited above. Fruitful insights are to be found in the case made by **Gregory Chaitin** (*Metamaths: the quest for omega*, 2005), just as others are to be found in the arguments of **Pierre Teilhard de Chardin** (*The Future of Man*, 1950) with respect to an **Omega Point**, or in the case for a singularity (discussed below).

Generically understood, the "confidence" to be explored by a reframed "theology" may take many forms (*Varieties of Confidence Essential to Sustainability: surrogates and tokens obscuring the existential "gold standard"*, 2009; *Exploration of Prefixes of Global Discourse: implications for sustainable confidelity*, 2011). Rather than the conventional static implication of "union", consideration could be given to dynamic, interactive and emergent forms (*Enacting Transformative Integral Thinking through Playful Elegance*, 2010).

Such explorations effectively correspond to the arguments of **Sallie McFague** (*Metaphorical Theology: models of God in religious language*, 1982).

Institutional and thematic precedents

It is improbable that any institute of advanced mathematical studies would provide for a thread on theology, other than as a historical curiosity. The format of an "institute of advanced studies" has however been emulated by various religions and might in principle provide for a focus on "mathematical theology". Examples might include:

- [South Asia Institute of Advanced Christian Studies](#) (SAIACS)
- [Institute for Advanced Christian Studies](#) (IFACS)
- [Institute For Advanced Christian Studies](#)
- [Islamic College for Advanced Studies](#)

It is however difficult to compare the research quality of such bodies with that of the **membership** of the selective **International Federation of Institutes for Advanced Study**. The point is well-argued in a proposal by **John T. Noonan Jr.** (*An Institute for Advanced Catholic Studies, America: the national Catholic weekly*, 1 July 2000). Especially relevant is the extent to which conventional faith-based approaches to "theology", however "excellent", might obscure the disciplined focus on "mathematical theology", as it might be variously understood and explored. Noonan, for example, makes not mention of that dimension.

More difficult to detect are occasions within university faculties of religious studies which have provided a focus on mathematical theology. A notable exception is a paper presented by **Richard S. Kirby** to a Senior Seminar in 1988 of the Faculty of Theology and Religious Studies (King's College, University of London) under the title, *Theology of Mathematics: the emerging field of theological investigation* (subsequently published as *A New Mathematics for a New Era*, World Network of Religious Futurists, 2005).

This highlights an interesting **complementarity between "mathematical theology" and "theology of mathematics"**. How indeed might mathematics be understood as a belief system -- perhaps to be approached with attitudes characteristic of any religious engagement with the divine, as was the case in centuries past?

Potential thematic guidance is offered at the intersect between religion and science (rather than mathematics and theology specifically), as with the [International Society for Science and Religion](#), the [European Society for the Study of Science and Theology](#) (EssSAT), or

Zygon: Journal of Religion and Science. The latter focuses on the questions of meaning and values that challenge individual and social existence today. In the case of the journal *Theology and Science* of the international [Center for Theology and Natural Science \(CTNS\)](#), a special issue was recently devoted to theology and mathematics (Volume 9, Number 1, February 2011), including:

- James Bradley (*Theology and Mathematics: key themes and central historical figures*)
- Alvin Plantinga (*Theism and Mathematics*)
- Charlotte Methuen (*The German Reformation and the Mathematization of the Created World*)
- Wolfgang Achtner (*Truth and Proof in Mathematics and (Philosophical) Theology*)
- Christian Tapp (*Infinity in Mathematics and Theology*)
- Stewart Shapiro (*Theology and the actual infinite: Burley and Cantor*)
- Albert C. Lewis (*The Divine Truth of Mathematics and the Origins of Linear Algebra*)
- Xing Taotao (*How Gödel relates Platonism to Mathematics*)
- Ivor Grattan-Guinness (*The Scope and Limitations of Algebras: some historical and philosophical consideration*)

Earlier issues of *Theology and Science* included:

- Carlos R. Bovell (*Two Examples of How the History of Mathematics Can Inform Theology*, 8, 1, February 2010)
- Eric C. Steinhart (*A Mathematical Model of Divine Infinity*, 7, 3, August 2009)
- John Byl (*Matter, Mathematics and God*, 5, 1, March 2007)
- Sarah Voss (*Mathematics and Theology: a stroll through the Garden of Mathaphors*, 4, 1, March 2006)
- Bharath Sriraman (*The Influence of Platonism on Mathematics Research and Theological Beliefs*, 2, 1, April 2004)

Organization of the initiative

Given the systemic insights which are liable to characterize some of those interested, a strong case can be made for a fruitful mix of self-organization and self-reflexivity, as separately discussed (*Consciously Self-reflexive Global Initiatives: Renaissance zones, complex adaptive systems, and third order organizations*, 2007).

Schismatic tendencies: Especially interesting are the divisive tendencies shared by the faiths and by mathematicians (as with those in other disciplines). Those identified strongly with distinct branches of mathematics are as liable to have conflictual relations as those identified with particular faiths. There is little capacity or inclination to map the conflicts fruitfully, or even to acknowledge them as separately argued (*Epistemological Challenge of Cognitive Body Odour: exploring the underside of dialogue*, 2006). How this is framed or expressed is another matter. The question is whether those differences can be embodied in a new kind of relational structure -- notably in the light of insights from mathematics. To what extent, however, is either theology or mathematics self-reflexive -- as discussed below?

Appropriate "distance": Any initiative, however it is organized, will raise interesting challenges with regard to who can "afford" to be associated with it, given the potential implications for their reputation and prospects elsewhere:

- for the religious: can participation be framed so as to attract the benediction of relevant religious authorities, or will it automatically be framed as inappropriate and to be condemned as heresy, anathema or blasphemy?
- for the academic: would those in the wider academic community view any such association as inherently problematic -- and a "dangerous career move"?

In both cases there is a question of how any "engagement" with the initiative is managed in order to ensure appropriate "distance" -- for those who would prefer a degree of "arms-length" collaboration.

Boundaries and primacy: A related issue is that of ensuring appropriate distance from other institutes with an interest in some particular form of "mathematical theology" and potentially concerned to assert that claim as unquestionably primary. This is a question of "intelligent design" -- ensuring appropriate "boundaries" and clarifying the distinction between being "in" or "out", as well as its implication (*Dynamically Gated Conceptual Communities: emergent patterns of isolation within knowledge society*, 2004).

Given the wider territorial implications of "boundary" issues and "gate-keeping", can mathematicians and theologians together develop more interesting ways of framing such boundaries -- especially those of relevance to other intractable conflicts? The possibilities of the Klein bottle, explored by various authors, were highlighted to this end in the above-mentioned discussion. How can any interface be framed with "others" advocating an especially narrow approach to "mathematical theology"?

Dysfunctional dynamics: As a feature of the self-reflexive/self-organizing modality, how might those involved creatively reframe the vexatious dynamics of:

- **game-playing:** well-known for its potential dysfunctionality in every institutional environment, as well as interpersonal relations (for example, as explored by the [International Transactional Analysis Association](#)). It might be understood as permeating the various efforts at inter-faith dialogue. The need to explore this from the perspective of the complexity sciences was highlighted separately, framed as the "irresolutive" -- in contrast to the "problematique" and "resolutive" promoted by the Club of Rome (*Imagining the Real Challenge and Realizing the Imaginal Pathway of Sustainable Transformation*, 2007).
- **blame-gaming:** this has been a key feature of inter-faith conflicts, but also highly evident in questions of accountability with regard to the recent financial crisis and its ongoing development. The question is whether blame-gaming can be more fruitfully analyzed, as separately discussed in relation to [Knight's move](#) patterns (*Monkeying with Global Governance Emergent dynamics of three wise monkeys in a knowledge-based society*, 2011)

The current incidence of game-playing and blame-gaming with respect to public confidence in global governance -- well-described as "monkeying" -- makes a powerful case for a mathematical theology capable of naming the games and giving formal precision to the issues and options.

Dialogue possibilities: The challenge of giving form to an initiative between such seemingly distant preoccupations -- theology and mathematics -- can be fruitfully compared to that between the aesthetics of "poetry" and the strategic realities of "policy" (*Poetry-making and Policy-making: Arranging a Marriage between Beauty and the Beast*, 1993). That document included sections on the problematic issues of any meeting to discuss such a possibility, under headings of potential relevance (*mutatis mutandis*) to any preliminary mathematical theology encounter:

- Vision of a poetic policy group initiative:
 - New modes of discourse | Templates, keystones and catalysts | Envisaging meetings of the future | Styles of aesthetic and policy endeavour
- Proposal for an exploratory international conference:
 - Preamble | Considerations of scope | Considerations of focus: vital distinctions | Practical steps | Comment

Given the tendency to overly optimistic initiatives -- as evident in inter-faith dialogue -- cautionary frameworks merit clarification (*Evaluating Synthesis Initiatives and their Sustaining Dialogues: possible questions as a guide to criteria of evaluation of any synthesis initiative*, 2000; *An Inconvenient Truth -- about any inconvenient truth*, 2008).

Historical inspiration: Reflection on possibilities can also be stimulated by references to historical settings -- notably royal courts -- in which fruitful cross-fertilization between theology and mathematics was enabled. The possibility is also central to any reflection on the "university" ideal -- as variously endeavoured (cf. *University of Earth; University of Earth: meta-organization for post-crisis action*, 1980).

Examples of research themes for consideration

The strategic concern here is the research on mathematical theology which might be of some relevance to intractable conflicts. It is perhaps safe to say that none of the research at the intersect between mathematics and theology has, as yet, been of any significance to reframing those situations.

Since neither discipline is renowned for enthusiastic "application" of its insights -- however much they are exploited by others -- it might even be asserted that neither has yet evinced any interest in addressing such matters. They appear to share a concern to protect their respective comfort zones and to develop their research into areas which are only disruptive of the problematic "business as usual" of daily life through principled appeals.

The challenge was well formulated by Mahmoud Abbas at the UN General Assembly (*Abbas Rules out 'Business as Usual' Peace Talks With Israel*, *Bloomberg Business Week*, 24 September 2011):

It is neither possible, nor practical, nor acceptable to return to conducting business as usual, as if everything is fine.

The question is what might mathematical theology offer under such circumstances?

What branches of mathematics? As noted above, given its reputation as the discipline most skilled at the exploration and comprehension of relationships of the subtlest kind, **where is the analysis of the branches and levels of mathematics that have (or have not) endeavoured to explore intractable faith-based conflicts** -- notably those focused on two-dimensional territory? Where is the assessment of the possible insights to be derived from each branch of mathematics?

For example, a case has recently been made for an "unexpected kinship" between quantum physics and theology by [John Polkinghorne](#) (*Quantum Physics and Theology: an unexpected kinship*, 2008). It is then appropriate to ask to what extent the challenges of the Middle East and Jerusalem have been informed by the creative insights regarding the [two-state quantum system](#) -- associated, ironically, with the so-called [Rabi cycle](#)? If the discoveries of [moonshine mathematics](#), identifying the [Monster symmetry group](#), are upheld by mathematicians as the key to everything -- including topology -- then what is their relevance to intractable conflicts? (*Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007).

Sets and the role of number: The theology of all faiths is replete with considerations of sets of precepts, principles, and other manifestations of divine unity. [Number theory](#) is of course a fundamental branch of mathematics. Number is fundamental to one of the most highly cited papers in psychology ([George A. Miller](#), *The Magical Number Seven, Plus or Minus Two: some limits on our capacity for processing information*, *Psychological Review*, 1956, 63 (2), pp. 81-97).

Sets of concepts -- typically of a limited size -- are identified in many disciplines and strategic initiatives. This is exemplified by the set of metaphors used by [Charles B. Handy](#) (*Gods of Management: the changing work of organizations*, 2009). These sets can be explored as an indication of how the human mind finds it convenient to organize reality comprehensibly (*Representation, Comprehension and Communication of Sets: the role of number*, 1978; *Patterns of N-foldness; comparison of integrated multi-set concept schemes as forms of presentation*, 1984). This approach gave rise to an effort to distinguish qualitatively the kinds of principles which tended to be evident in sets of a given size (*Distinguishing Levels of Declarations of Principles*, 1980).

Beyond "laundry lists" of precepts, the question is whether these sets can be configured such as to enhance their significance and enable action.

Number symbolism and time: Marie-Louise von Franz (of the C J Jung Institute, Zurich) has conducted an extensively documented study into the significance of number for mathematicians, in philosophy, and as symbols of psychological significance, in a deliberate effort to bridge the gap between psychology and physics. As she puts it, her remarks "balance to some extent on the razor's edge between philosophical-mathematical and numerical-symbolical statements" (*Number and Time; reflections leading towards a unification of psychology and physics*, 1974,, p. 33 - 34). She deliberately bridges the gap between Western and other concepts of number, which is an aspect of a current debate into the wider interpretations of the concepts of science, space, and time, which have hitherto been supposed to conform conveniently to the Western versions.

She notes that Niels Bohr has stressed that an important step had been taken toward realizing the ideal "of tracing the description of natural phenomena back to combinations of pure numbers, which far transcends the boldest dreams of the Pythagoreans" (p. 16). She argues that if we accept Wolfgang Pauli's contention that "certain mathematical structures rest on an archetypal basis, then their isomorphism with certain outer-world phenomena is not so surprising" (p. 19).

She sums up her argument as follows:

To sum up: numbers appear to represent both an attribute of matter and the unconscious foundation of our mental processes. For this reason, number forms, according to Jung, that particular element that unites the realm of matter and psyche. It is "real" in a double sense, as an archetypal image and as a qualitative manifestation in the realm of outer-world experience. Number thereby throws a bridge across the gap between the physically knowable and the imaginary. In this manner it operates as a still largely unexplored mid-point between myth (the psychic) and reality (the physical), at the same time both quantitative and qualitative, representational and irrepresentational.

Consequently, it is not only the parallelism of concepts (to which Bohr and Pauli have both drawn attention) which nowadays draws physics and psychology together, but more significantly the psychic dynamics of the concept of number as an archetypal actuality appearing in its "transgressive" aspect in the realm of matter. It preconsciously orders both psychic thought processes and the manifestations of material reality. As the active ordering factor, it represents the essence of what we generally term 'mind'. (p. 52 --53)

She concludes that:

Most probably the archetypes of natural integers form the simplest structural patterns in . . . (the common unknown confronting both physicist and psychologist) ... that manifest themselves on the threshold of perception. (p. 56)

In order to explore further, it is therefore necessary to return

... to the individual numbers themselves, and gather together the sum total of thought, both technical and mythological assertions, which they have called forth from humanity. Numbers, furthermore as archetypal structural constants of the collective unconscious, possess a dynamic, active aspect which is especially important to keep in mind. It is not what we can *do* with numbers but what *they* do to our consciousness that is essential. (p. 33)

Von Franz outlines the recommended programme as follows:

When we take into account the individual characteristics of natural numbers, we can actually demonstrate that they produce the same ordering effects in the physical and psychic realms; they therefore appear to constitute the most basic constants of nature expressing unitary psycho-physical reality. Because of this I would conjecture that the task of future mathematicians will be to collect their characteristics and analyze, when possible, every number in its logical relationship to all others. This research should be undertaken in collaboration with physicists, musicians, and psychologists who are conversant with the empirical facts about the structural characteristics of numbers in different mediums." (p. 303)

The relationship of such concerns to the physics of Wolfgang Pauli has been described by Arthur I. Miller (*Deciphering the Cosmic Number: the strange friendship of Wolfgang Pauli and Carl Jung*, 2009; 137: Jung, Pauli, and the pursuit of a scientific obsession, 2010) -- as discussed separately (*Quest for a "Universal Constant" of Globalization? questionable insights for the future from physics*, 2010).

Reframing differences, distinctions and boundaries: These are of fundamental concern both to theology and mathematics. In the latter case a seminal work has been that of George Spencer-Brown (*Laws of Form*, 1969). The *Wikipedia* entry notes its "resonances" in: the Vedic *Upanishads* (being the foundation of Hinduism and later Buddhism); Taoism (notably as expressed in the *Tao Te Ching*); Zoroastrianism; Judaism; Confucianism; and Christianity.

Of related interest are epistemological differences and styles, as explored by various authors (*Systems of Categories Distinguishing Cultural Biases*, 1993).

Game-playing engendered by differences: In mathematics this is of course the focus of extensive work on *game theory*, notably with its major strategic implications in relation to conflict -- and defining the "rules of engagement".

In the case of theology this tends to be framed otherwise as the engagement with "the other". The other may be understood as pertaining to interpersonal encounter, as articulated by Martin Buber (*I and Thou*, 1923), to the divine "other" as explored by Sallie McFague (*Metaphorical Theology: models of God in religious language*, 1982), or to the diabolical "other" against whose temptations one is

obliged to constantly strive. The notion that "Satan plays games" would be widely accepted. Do these correspond to the *Games People Play* (1964) articulated by Eric Berne?

Harmony: Theology has long been associated with the explication of "divine harmony", partly in terms of the "music of the spheres", dating notably back to the mystical thought of Pythagoras -- effectively at the origin of science. The articulation of religious insight into harmony is of course characteristic of the principles underlying **sacred music**.

The intersection of such principles with mathematics is evident in the work of Ernest G. McClain (*Myth of Invariance: the origins of the Gods, mathematics and music from the Rg Veda to Plato*, 1976; *The Pythagorean Plato: prelude to the song itself*, 1978; *Meditations Through the Quran: tonal images in an oral culture*, 1981). Other relevant explorations of cognitive implications are those of Dmitri Tymoczko (*The Geometry of Musical Chords, Science*, 2006; *A Geometry of Music*, 2011).

Following his initial *Notes on the Synthesis of Form* (1964), Christopher Alexander (mentioned above) has developed his remarkable work on a pattern language and the *The Nature of Order* (2002-2004), as a basis for his quest for geometry-based harmony (*Harmony-Seeking Computations: a science of non-classical dynamics based on the progressive evolution of the larger whole*, *International Journal for Unconventional Computing (IJUC)*, 2009). Its implications are discussed separately (*Harmony-Comprehension and Wholeness-Engendering: eliciting psychosocial transformational principles from design*, 2010).

Should these extend to the "dynamics of order" -- offering a relationship to musical harmony -- and the manner in which such dynamics enable more meaningful forms of identity (*A Singable Earth Charter, EU Constitution or Global Ethic?* 2006; *All Blacks of Davos vs All Greens of Porto Alegre: reframing global strategic discord through polyphony?* 2007).

Singularity: Mathematics has devoted considerable attention to the principle of **singularity** and its various manifestations. Insights into a **technological singularity**, now refer to the hypothetical future emergence of greater-than-human intelligence through technological means -- an intellectual **event horizon**, beyond which the future becomes difficult to understand or predict (Vernor Vinge, *The Coming Technological Singularity: how to survive in the post-human era*, 1993; Ray Kurzweil, *The Singularity is Near: when humans transcend biology*, 2005).

Theology has also devoted considerable attention to a singularity in terms of **eschatological predictions** regarding **end time scenarios**.

There is a confluence of significance attributed to these understandings of singularity, variously focused in beliefs regarding 2012 as a **metaphysical prediction** and as a **doomsday prediction**. These may be further associated with the end times battle at **Armageddon** (*Spontaneous Initiation of Armageddon: a heartfelt response to systemic negligence*, 2004)?

Nature of "order" and integration: Beyond the forms of order, notably identified by Alexander (2002-2004), there is the vital issue of the preferences for different styles of order and the psychosocial consequences, as separately reviewed (*Systems of Categories Distinguishing Cultural Biases*, 1993), and most notably the work of W. T. Jones (*The Romantic Syndrome; toward a new methodology in cultural anthropology and the history of ideas*, 1961). The absence of what forms of order are then understood to constitute a "problem"?

Nature of a "problem": Mathematics and theology share a concern with "problems". How is the understanding of a "problem" in mathematics to be compared with the understanding of a "sin" or "hindrance" by theology? Is there scope for giving mathematical formalization to conventional sins, as explored elsewhere (*Towards a Logico-mathematical Formalization of "Sin": fundamental memetic organization of faith-based governance strategies*, 2004).

In strategic terms, how is either understanding to be related to understanding of a "**wicked problem**"? This has come to mean a problem in social planning that is difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize. Moreover, because of complex interdependencies, the effort to solve one aspect of a wicked problem may reveal or create other problems.

Does this suggest that there is a richer and more fruitful framing of the thousands of interconnected problems perceived by international constituencies and profiled in the above-mentioned *Encyclopedia of World Problems and Human Potential* -- especially in relation to the associated perceptions of human values and concepts of development? Should most such problems be understood as "wicked"?

Nature of "questions" and "answers": Both mathematics and theology share this language -- combining a quest for confidence in "unquestionable" beliefs and subsequent dependence on them. It is however theology which most explicitly transcends it through the form of the Zen koan and apophatic discourse. Such discourse offers new possibilities, as suggested separately (*Am I Question or Answer? Problem or (re)solution?* 2006; *Sustaining the Quest for Sustainable Answers*, 2003; *Questionable Answers*, 1982)

Is it fruitful to ask whether this "answer economy" mindset precludes more appropriate engagement with the condition of the times -- despite expecting a meaningful answer in those terms?

One possible approach is through reframing question-answer in the light of **catastrophe theory**, and the variety of question types: where, when, which, what, how, who, why (*Conformality of 7 WH-questions to 7 Elementary Catastrophes: an exploration of potential psychosocial implications*, 2006) -- and the evasion of answers of strategic significance (*Question Avoidance, Evasion, Aversion and Phobia: why we are unable to escape from traps*, 2006).

With the individual understood by theology as a "particle" of God, and in the light of the current focus of fundamental physics on the quest for the "**God particle**", the question of Leon Lederman (*The God Particle: If the Universe is the Answer, What is the Question?* 1993) might be provocatively adapted.

Integrative thematic organization

The value of self-reflexivity was noted above with respect to any purportedly "objective" cognitive engagement with the "subject" matter of mathematical theology. Self-reflexivity and self-reference are problematic both for mathematics and theology.

Disciplined criticism: In the case of theology, understood as reflection on an ordered belief system, how is potentially critical reflection on that belief system to be enabled? The difficulty is immediately obvious in the knee-jerk tendency to frame any critical reflection as symptomatic of opposition, possibly dangerously heretical. Few belief systems provide adequately for any process of criticism regarding their own content and organization.

This is notably true of science, which claims to thrive on critical thinking but has proven extremely defensive regarding arguments it deems "scientifically" inappropriate. The general case has been developed elsewhere (*Guidelines for Critical Dialogue between Worldviews: as exemplified by the need for non-antisemitic dialogue with Israelis?* 2006).

A degree of self-reflexivity, or the nature of the lack of it, is evident in the "politics of theology" (or "theological politics") as noted below. This is equally true of the "politics of science" (or "scientific politics"). In both cases there is little provision for the "political" processes within either discipline.

Simulation: The possibilities of new approaches to thematic organization have been highlighted by the envisaged complex global simulations (*Sentient World Simulation* (SWS), *FuturICT*). These may endeavour both to reflect the range of beliefs and to highlight the possibility of emergent "beliefs". This may be as relevant to theology as to mathematics -- both constituting systems of belief.

Especially relevant is the probable intention of using such simulations to enable intervention in belief systems. For example the possibility of "releasing" and "managing" thousands of socially intelligent agents ("bots") into the social networking environment is already the subject of experimentation in support of political agendas, presumably with respect to intractable conflicts. Such agents would "comment" variously to enhance or deprecate particular beliefs (Gerardo Ayala, *Intelligent Agents Supporting the Social Construction of Knowledge in a Learning Environment*, 2001; Nagapradeep Chinnam, *Group Recognition in Social Networking Systems*, 2011).

Such possibilities raise the question of the nature of a "theoretical theology", or of a "theoretical mathematics", which would provide for, and predict, such emergence. Is the full range of religions, if not beliefs, acceptable subject matter for theology as conventionally practiced? How is "mathematics" -- doing mathematics -- to be simulated? Perhaps of more relevance is the challenge to individual belief -- faced with such a psychoactive ecosystem of evolving beliefs.

Self-reflexivity and theology: There is an irony to the fact that the spiritual disciplines, with which theology may be associated, advocate processes of meditative self-reflection. The question is the extent to which such meditation enables fruitful "reformulation" -- typically threatened and undermined by "loss of faith". The latter is of course experienced with respect to non-religious belief systems and may well be described in terms of "burnout". The financial crisis has brought many to a condition in which they "no longer have any faith in the future" and may well be driven to suicide.

The primary locus of self-reflexivity would appear to be formulated as the philosophy of theology or analytic theology (Oliver D. Crisp and Michael C. Rea (Eds.), *Analytic Theology: new essays in the philosophy of theology*, 2009) -- notably in contrast to theological philosophy.

A degree of insight into the self-reflexivity of theology is to be found in the work of Donald Wiebe (*The Politics of Religious Studies: the continuing conflict with theology in the academy*, 2000). Commenting on the distinctions variously made between comparative and theoretic theology by the anthropologist Friedrich Max Müller (*Gifford Lectures*, 1888-92), Wiebe notes (pp. 18-19):

...Muller suggests that there exist two kinds of knowledge about religion: on the one hand, an insider's knowledge of a given religious tradition, propelling life from day to day, and on the other, an external knowledge of the physical characteristics and social structures of a particular religion. The second kind would correspond to Comparative Theology, the division of the science concerned with what is empirically available. The first kind, then, would be the equivalent of Theoretic Theology. To elucidate the distinction, Muller writes:

The student of Comparative Theology... can claim no privilege, no exceptional position of any kind, for his own religion, whatever that religion may be. For his purposes all religions are natural or historical. Even the claim of a supernatural character is treated by him as a natural and perfectly intelligible claim, which may be important as a subjective element, but can never be allowed to affect the objective character of any religion.

... Theoretical Theology understood as religious know-how, of course must be excluded from the Science of Religion because it is steeped in subjectivity. Even a Theoretical Theology that frames its ideal on the basis of an inner, quasi-Hegelian consciousness is not arguably of the Science of Religion. It is only when the Theoretical Theology of the philosophers is derived from knowledge gained by Comparative Theology that it can be called a bona fide aspect of the scientific study of religion

It is appropriate to note the focus on extant belief systems and not on the process through which new belief systems emerge, and the nature of those which might be predicted to emerge in the future. Given the theme of this argument regarding intractable conflicts, the "defensive" concern of Wiebe in his subtitle is noteworthy: *the continuing conflict with theology in the academy*. This effectively recognizes the need to enlarge the scope of "theology" to include those beliefs -- and "gods" -- more characteristic of the "academy".

Especially relevant to the question of self-reflexivity is metatheology, particularly if it provides for incorporation of its own processes. John T. Granrose (*Normative Theology and Meta-Theology*, *The Harvard Theological Review*, 63, 3 (Jul., 1970), pp. 449-451) advocates such an approach as a useful conceptual tool for theologians. It has been framed as a basis for scepticism (Raeburne Seeley

Heimbeck, *Theology and Meaning: a critique of metatheological scepticism*, 1969). Paul Kuk Won Chang addresses the possibility from a Christian perspective as a comparative synthetic theology (*Metatheology: an academic core of Christian awakening, renewal, revival, evangelism and mission*, 2005).

Andrew C. Rawnsley explores the possibility of a *Critical Theory of Religion: a meta-theology?* (2007) which he introduces as follows:

What could this possibly mean? Firstly, the designation of the prefix "meta-" indicates the strangeness of the program, since how can something possibly be "meta" to "theology"? In the past, the connection was a "metaphysical" one: certain kinds of philosophical work was done to provide a framework for theological reflection. This has been, predominantly, done as "philosophy of religion". However, such uses of "metaphysics" have been seriously challenged in the last century, not just by theologians themselves, but also by certain significant trends within philosophy itself. Secondly, it is in the character of the research program to indicate ways of interaction between the current state of philosophy of religion, social and critical theory, and social-scientific study of religion, with the discipline traditionally known as "theology". Since the possibility of using traditionally conceived "metaphysics" to anchor such work has received fatal blows from philosophers working from a social-critical theoretical perspective, then it appears that theological reflection requires some sort of framework amenable to critical work without being characterised in the old sense of onto-theology, the inappropriate imposition of metaphysical thinking upon theology.

Andrew B. Newberg considers metatheology as a form of "neurotheology" (*Principles of Neurotheology*, 2010). He argues, citing E. G. d'Aquili and A. B. Newberg (*The Mystical Mind: probing the biology of religious experience*, 1999):

A metatheology can be understood as an attempt to evaluate the overall principles underlying any and all religions or ultimate belief systems and their theologies. A metatheology comprises both the general principles describing, and implicitly the rules for constructing, any concrete theological system. In and of itself, a metatheology would not embrace one particular theology, since it consists of rules and descriptions about how any and all specific theologies are structured. (p. 64)

Conflict between systems: Of relevance to self-reflexivity in relation to belief systems is the exploration of [Nicholas Rescher](#) (*The Strife of Systems: an essay on the grounds and implications of philosophical diversity*, 1985). Philosophers have engaged in noble efforts to clarify the context within which all-encompassing theories emerge and decline, especially in the face of duality, as separately discussed (*Epistemological Panic in the face of Nonduality*, 2010). It is very challenging to engage cognitively with that context and the process, especially given possible commitment to the next emerging theory and the exciting claims made for it. The process has been partially addressed in the debate over the contrasting perspectives of [T. S. Kuhn](#) (*The Structure of Scientific Revolutions*, 1962) and [Karl Popper](#) (*Conjectures and Refutations: the growth of scientific knowledge*, 1963). Rescher (1985) concludes his study of such distinctly unintegrative conflict with the comment:

For centuries, most philosophers who have reflected on the matter have been intimidated by the strife of systems. But the time has come to put this behind us -- not the strife, that is, which is ineliminable, but the felt need to somehow end it rather than simply accept it and take it in stride. To reemphasize the salient point: it would be bizarre to think that philosophy is not of value because philosophical positions are bound to reflect the particular values we hold.

The question is whether "mathematical theology" could give greater significance to "take it in stride" -- as might be implied by the Buddhist insight developed through the [enactivism](#) of [Francisco Varela](#) (*Laying Down a Path in Walking*, 1987).

Self-reference in mathematics: In the case of mathematics, issues of [self-reference](#) have long been a preoccupation. They are evident in situations when a formula necessarily refers to itself, typically recursively, often characterized by paradoxical implications. The matter has been extensively studied by [Douglas Hofstadter](#) (*Gödel, Escher, Bach: an Eternal Golden Braid*, 1980). There is an extensive literature on the [philosophy of mathematics](#) dealing with the assumptions, foundations, and implications of mathematics.

Beyond the instances which attract such attention, more intriguing is the extent to which mathematics as a whole can be said to be self-reflexive. This is evident to a degree -- negatively -- in the conclusions of the [incompleteness theorems](#) of [Kurt Gödel](#). More generally, however, there is the question is whether and how mathematics is able to frame itself as a whole with respect to which "self-reference" is meaningful.

As a form of self-reference, [metamathematics](#) is the study of mathematics itself using mathematical methods. This study produces [metatheories](#), which are mathematical theories about other mathematical theories. Metamathematical [metatheorems](#) about mathematics itself were originally differentiated from ordinary [mathematical theorems](#) in the 19th century, specifically in order to focus on what was then called the [foundational crisis of mathematics](#).

A valuable statement highlighting the role of "belief" in mathematics is provided in a private communication from [Peter Collins](#) in the light of his own more extensive articulations (*A Deeper Significance: resolving the Riemann Hypothesis*, *Integral World*, April 2009; *The Problem with Mathematical Proof: lack of an integral dimension*, *Integral World*, June 2011):

Some time ago I reached the firm conclusion that the Riemann Hypothesis actually represents - in the context of prime numbers - a statement regarding the simultaneous consistency of both the quantitative and qualitative interpretation of mathematical symbols. As in formal terms Mathematics is based on sole recognition of its quantitative aspect, one key implication of this finding is that the Riemann Hypothesis can neither be proved nor disproved within conventional axioms. Put another way, the

important truth to which the Hypothesis pertains is already inherent in mathematical axioms and cannot be derived from their operation. So in the most fundamental terms a pure act of faith is necessarily required regarding the subsequent consistency of all mathematical procedures. When viewed in this light, Mathematics represents therefore a distinctive form of theology.

An interesting approximation to self-reference is to be found in approaches to the classification of mathematics, given that classification is itself a relative trivial process from a mathematical perspective. Can the "House of Mathematics" be said to be in good order in the light of the manner in which its preoccupations are organized? The concern was framed in a preliminary exploration (*Is the House of Mathematics in Order? Are there vital insights from its design*, 2000). The question is whether there are degrees of order through which greater insight can (and should) be obtained into the relationships between the branches of mathematics -- notably as a means of discovering which might be relevant to intractable conflicts.

The exploration was taken further in the light of the 64 main categories of the *Mathematics Subject Classification* (MSC). This takes the form of a standard nested hierarchical classification characteristic of the conventional library science approach to knowledge organization. It is seemingly not informed to any greater degree by the ordering facilities of its subject matter. The experimental approach taken was to consider the possibility of a periodic organization to the "modes of knowing" which the various mathematical specializations effectively represent (*Towards a Periodic Table of Ways of Knowing -- in the light of metaphors of mathematics*, 2009). The approach was stimulated by the subtle orderings offered by the periodic table of chemical elements (Denis H. Rouvray et al., *The Mathematics of the Periodic Table*, 2005).

Emergent order: With both theology and mathematics, understood as exercises of the mind in eliciting ever subtler and more appropriate degrees of order, how might such possibilities be envisaged to encourage their exploration?

The point might be emphasized in terms of the "pattern that connects" as argued by Gregory Bateson (*Mind and Nature: a necessary unity*, 1979):

The pattern which connects is a meta-pattern. It is a pattern of patterns. It is that meta-pattern which defines the vast generalization that, indeed, it is patterns which connect.

And it is from this perspective that he warned in a much-cited phrase: *Break the pattern which connects the items of learning and you necessarily destroy all quality.*

The contribution of mathematics to this process has been widely acknowledged in the work of Georg Cantor on infinite sets. Cantor's theorem implies the existence of an "infinity of infinities" and transfinite numbers. Whilst his work has long been recognized as of great philosophical interest, of relevance to this argument is that it was originally regarded as so counter-intuitive -- even shocking -- that it encountered resistance from mathematical contemporaries. How is the potential of such resistance to be self-reflexively embodied within mathematical theology?

Possible leads to elucidating such a meta-pattern, with the support of mathematics, include:

- classical Chinese coding systems, notably as integrated within the Fibonacci spiral:
 - *Hyperspace Clues to the Psychology of the Pattern that Connects -- in the light of the 81 Tao Te Ching insights*, 2003)
 - *Tao of Engagement -- Weaponised Interactions and Beyond: Fibonacci's magic carpet of games to be played for sustainable global governance*, 2010
- periodicity, as noted above:
 - *Periodic Pattern of Human Knowing: implication of the Periodic Table as metaphor of elementary order*, 2009
 - *Tuning a Periodic Table of Religions, Epistemologies and Spirituality -- including the sciences and other belief systems*, 2007
- geometrical and topological configuration:
 - *Spherical Configuration of Categories -- to reflect systemic patterns of environmental checks and balances*, 1994
 - *Comprehension of Requisite Variety for Sustainable Psychosocial Dynamics: transforming a matrix classification onto intertwined tori*, 2006
 - *Topology of Valuing: psychodynamics of collective engagement with polyhedral value configurations*, 2008
- insights from fractals and symmetry groups:
 - *Psycho-social Significance of the Mandelbrot Set: a sustainable boundary between chaos and order*, 2005
 - *Potential Psychosocial Significance of Monstrous Moonshine: an exceptional form of symmetry as a Rosetta stone for cognitive frameworks*, 2007

Thematic weaving: The metaphor of weaving is used in a separate document to discuss a variety of ways of organizing themes characteristic of sets of principles and precepts (*Interweaving Thematic Threads and Learning Pathways Noonautics, Magic carpets and Wizardomes*, 2010).

The weaving metaphor is especially interesting in the light of the insights derived from the design of carpets by Christopher Alexander -- in parallel with his study of *The Nature of Order* (2002-2004) (*Harmony-Seeking Computations: a science of non-classical dynamics based on the progressive evolution of the larger whole*, *International Journal for Unconventional Computing (IJUC)*, 2009). He derives a set of 15 "transformation principles", which may be tentatively adapted to the psychosocial realm of relevance to this argument (*Tentative adaptation of Alexander's 15 transformations to the psychosocial realm*, 2010). These could well be configured geometrically in the spirit of his own argument (*Geometrical configuration of Alexander's 15 transformations*, 2010).

The carpet metaphor is also useful in that it highlights the degree to which styles and appreciation of carpets may differ in terms of

colour, pattern and weave. It points to differences in the way that the connectivity of the "pattern that connects" may be understood and valued.

With respect to strategic insight, the carpet may be compared to the systemic mapping underlying many initiatives. The metaphor may be taken further through the psychoactive role that any such map may play in organizing a domain of preoccupation and in the engagement with it -- emblematic of the elicited commitment to "the plan", as with a mandala or yantra. It may well have functions associated with those of a "prayer mat" to the point of being considered a "magic carpet", as separately discussed (*Magic Carpets as Psychoactive System Diagrams*, 2010).

In this sense a systems diagram may be understood as the organization of credibility -- or the organization of confidence -- with which faith and belief may be associated. The "science of confidence building" then merits consideration in the light of the transformation principles of Alexander in considering design.

Mathematical theology of experience

As noted above, Davis and Hersh (1981) have given a focus to "mathematical experience", as a prelude to an exploration of mathematical theology by Davis (2004), and further articulation of the experience by Hersh (2006, 2010). The remarks of Gregory Chaitin are of value (*Metamaths: the quest for omega*, 2005):

In my opinion, the view that math provides absolute certainty and is static and perfect while physics is tentative and constantly evolving is a false dichotomy. Math is actually not that different from physics. Both are attempts by the human mind to organize, to make sense of, human experience; in the case of physics, experience in the laboratory, in the physical world; and in the case of math, experience in the computer, in the mental mindscape of pure mathematics. (pp. 7-8)

Might analogous distinctions be appropriately made between mathematics and theology? Chaitin continues:

And mathematics is far from static and perfect; it is constantly evolving, constantly changing, constantly morphing itself into new forms. New concepts are constantly transforming math and creating new fields, new viewpoints, new emphasis, and new questions to answer. And mathematicians do in fact utilize unproved new principles suggested by computational experience, just as a physicist would (p. 8).

Is this not the appropriate manner in which to frame the ecology of beliefs on which a reframed theology might focus? However, in terms of the case for self-reference, to what extent does any theory embody the probability of the emergence of a new theory, rather than implying it is a form of "theory of everything" for eternity? Chaitin continues:

And in discovering and creating new mathematics, mathematicians do base themselves on intuition and inspiration, on unconscious motivations and impulses, and on their aesthetic sense, just like any creative artist would. (p. 8)

This could readily describe the experience of anyone exploring the possibility and credibility of systems of belief. Again he continues:

And mathematicians do not lead logical mechanical "rational" lives. Like any creative artist, they are passionate emotional people who deeply care about their art, they are unconventional eccentrics motivated by mysterious forces, not by money nor by concern for the "practical applications" of their work. (p. 8)

Here he precludes the possibility of multiple styles in the approach to such matters, exemplified by the archetypal contrasts explored by Hermann Hesse (*Narcissus and Goldmund*, 1930) -- and more systematically by W. T. Jones (*The Romantic Syndrome; toward a new methodology in cultural anthropology and the history of ideas*, 1961), as summarized separately (*Axes of Bias in Inter-Cultural Dialogue*, 1993).

Integral awareness: Various authors have endeavoured to articulate, directly or by implication, how spiritual insight and intuition are informed and enabled by mathematics. Citing Georg Cantor's work on infinity, the focus of Sarah Voss on "mathaphors" is helpful in this respect (*Mathematics and Theology: a stroll through the Garden of Mathaphors*, *Theology and Science*, 2006). How do complex geometrical symbols, like *yantras*, assist in this process during the course of meditation?

Jennifer Gidley provides a very comprehensive integral hermeneutic analysis of the evolutionary writings of Rudolf Steiner and Ken Wilber in the light of Jean Gebser's structures of consciousness (*The Evolution of Consciousness as a Planetary Imperative: an integration of integral views*, *Integral Review*, 2007). The explicitly "pluralistic narrative tapestry" seemingly dissociates, to a significant degree, the current role of mathematics in favour of another mode of discourse more characteristic of theology and of the integrative writers she so usefully summarizes.

Gidley notes the work of L. Kuhn and R. Woog (*From complexity concepts to creative applications*, *World Futures*, 2007) in undertaking pioneering postformal research, by taking several key concepts from complexity science -- originally formulated as mathematical concepts -- and reshaping them in prose, as a basis for social inquiry, e.g., fractal dimensions become *fractal narratives*; mathematical *phase space* becomes *phrase space* as a literary device related to construct awareness in narrative and discourse.

Gidley cites Kant (1781/1929) to the effect that: *Mathematics gives us a shining example of how far, independently of experience, we can*

progress in *a priori* knowledge. But she then acknowledges that:

Steiner transgressed the limits to knowledge set by Kant, claiming that we can discover, through the disciplined development of our philosophical thinking, something equivalent to the laws of mathematics that point beyond the boundary between sensible and supersensible knowledge.

When a [human] reaches the stage of being able to think of other properties of the world independently of sense-perception in the same way as [s]he is able to think mathematically of geometrical forms and arithmetical relations of numbers, then [s]he is fairly on the path to spiritual knowledge. (Steiner, 1904, para. 4).

With respect to this point, Gidley further notes:

Steiner (1904) elaborated his point, noting that the development of non-Euclidian geometry, particularly the contributions of Leibniz and Newton to Infinitesimal Calculus, shifted mathematical reasoning to an important new boundary line, whereby we "find ourselves continually at the moment of the genesis of something sense-perceptible from something no longer sense-perceptible" (para. 9). He makes a clear distinction, however, between the *quantitative* nature of the mathematical laws of the sense-perceptible, and the *qualitative* nature of the analogous philosophical laws of the supersensible (Steiner, 1904).

Beauty: It could be considered strange that the seemingly incommensurable theology and mathematics should share a long-recognized preoccupation with beauty and aesthetics.

This has been explored from a variety of perspectives (Andreas Christiansen, *The Beauty and Spirituality of Mathematics: a review essay*, *International Journal of Education and the Arts*, 2009; Subrahmanyam Chandrasekhar, *Truth and Beauty. Aesthetics and Motivations in Science*, 1987; Ronald Glasberg, *Mathematics and Spiritual Interpretation: a bridge to genuine interdisciplinarity*, *Zygon*, 2003; Elliot Nelson, *A Theology of Mathematics: Mathematical Beauty, Until a Seed Dies*, May 2008)

Creative insight: Mathematics and theology share as special appreciation of "insight", nourished by imaginative speculation:

- in mathematics this takes the form of much valued recognition ("in a flash") of a "pattern that connects".
- for theology this insight is typically framed as a "[revelation](#)" -- possibly as a grace or gift from a transcendental, supernatural reality.

The emergence of insight is intimately related to the mysterious processes of [creativity](#), especially in mathematics. These processes are most evident and comprehensible through humour. These processes have been the focus of a valuable review (Matthew M. Hurley, et. al., *Inside Jokes: using humor to reverse engineer the mind*, 2011). This is concerned with "the epistemic predicament of agents in the world and a class of models of cognition that can successfully deal with that predicament". From such a perspective, a case has been separately made for the role of humour in relation to the argument above (*Humour and Play-Fullness Essential integrative processes in governance, religion and transdisciplinarity*, 2005).

Comprehension of ignorance, nonsense and craziness

Separately and together, mathematics and theology merit considerable attention in relation to:

- **infinity** -- as the mysterious focus of a shared preoccupation of which many would readily claim ignorance, and others would variously assert to be "nonsense"
 - as the primary characteristic of the divine with which theology is concerned
 - as the underlying challenge to mathematics
- **ignorance** -- of the subtle complexity with which they are variously preoccupied, a condition readily condemned as highly problematic by both theology and mathematics
 - ignorance of mathematics on the part of others (including people of faith)
 - ignorance of faith on the part of others is a matter of deep concern to the religious, specifically extending to those holding alternative beliefs (including those with a mathematical focus) -- and is clearly a primary trigger for many intractable conflicts
- **nonsense** -- as a typical qualifier for those preoccupations raising issues for both as to how they might appropriately be rendered "sensible"
 - as a characterization of mathematical subtleties beyond normal human ken, or as a descriptor of those using mathematics incompetently and inappropriately
 - as a characterization of theological preoccupations by those focused on the mundane, or considered misguided in their understanding .

Given the intractable conflicts triggered by these factors, there is clearly a case for mathematical theology to address:

- the implications for comprehension, learning and education of the nature of integrative and "meta" understanding
- the nature of ignorance, nonsense and unbelief -- if only in terms of lack of credibility
- the challenge of "everything" and "nothingness":
 - as an aspiration of mathematics, given the focus on a [Theory of Everything](#) and the challenge of a *Theory of Nothing*

(2006)

- as a preoccupation of theology, notably articulated in terms of "emptiness" as an outcome of meditation ([Keiji Nishitani, *Religion and Nothingness*, 1983](#); James W. Heisig, *Philosophers of Nothingness*, 2001),

Efforts to render comprehensible the cognitive experience of these issues have been made in each case:

- for mathematicians, the progression, and the interfaces, have been delightfully and insightfully explored in *Flatland* (1884), *Sphereland* (1965) or *Flatterland* (2001) and their associated animations.
- for those of faith, the subtleties have characteristically been highlighted through [parables](#), teaching stories (notably those of [Nasreddin](#)), and the [Zen koan](#). Value has been attached by theology to "unsaying" and [apophatic discourse](#) (*Being What You Want: problematic kataphatic identity vs. potential of apophatic identity?* 2008). Notable significance has been attached to the nature of "unknowing"

Unforeseen cognitive challenges: The disturbing implications of [Gödel's incompleteness theorems](#) regarding undecidability have now been reinforced by the work of [Harvey Friedman](#) (*Boolean Relation Theory and Incompleteness*. 2010) through identification of entirely new forms of incompleteness. In his summary of such challenges, Richard Elwes (*It doesn't add up*, *New Scientist*, 14 August 2010) asks whether "a gaping hole has opened up in the foundations of mathematics". However, with respect to the above argument, perhaps even more challenging, is what this may imply for a "gaping hole" in the foundations of philosophical reflection on the development of consciousness and the governability of the planet. Curiously, as noted by Elwes:

With Friedman's work, it seems Gödel's delayed triumph has arrived: the final proof that if there is a universal grammar of numbers in which all facets of their behaviour can be expressed, it lies beyond our ken... The only way that Friedman's undecidable statements can be tamed, and the integrity of arithmetic restored, is to expand [Peano's rule book](#) to include "[large cardinals](#)" -- monstrous infinite quantities whose existence can only ever be assumed rather than logically deduced... We can deny the existence of infinity, a quantity that pervades modern mathematics, or we must resign ourselves to the idea that there are certain things about numbers we are destined never to know

Such large cardinals, notably understood to be "inaccessible", have yet to be fully admitted into the axioms of mainstream mathematics. Might they have been as readily named "angels" as "cardinals", as speculatively explored (*Re-Emergence of the Language of the Birds through Twitter?* 2010)?

Strategic implications: Current strategic significance has been given to the "unknown" through the notorious "poem" by [Donald Rumsfeld](#) as US Secretary of Defense in the midst of the intervention in Iraq. This has been separately discussed (*Unknown Undoing: challenge of incomprehensibility of systemic neglect*, 2008).

A matter of concern is the extent to which those in authority claim to "know" what is appropriate under conditions where there is both disagreement between authorities and between experts, and their track records suggest that it might be more fruitful to acknowledge ignorance. But this tendency is also shared between theology and mathematics in their quest for certainty and conviction and their discomfort with uncertainty. The need to believe then has an unfortunate quality of desperation.

This is to be contrasted with the much-cited reference to [negative capability](#) articulated by the poet [John Keats](#) as: *when man is capable of being in uncertainties, Mysteries, doubts without any irritable reaching after fact and reason*. It is now described as the resistance to a set of institutional arrangements or a system of knowledge about the world and human experience. It explains the capacity of human beings to reject the totalizing constraints of a closed context, and to both experience phenomena free from any epistemological bounds as well as to assert their own will and individuality upon their activity.

Craziness and creativity: Both theology and mathematics are considerably challenged by how to encompass what, as disciplines, they consider "crazy" -- but which may be evidence of creative insight for which they have no prepared explanation.

In the case of theology, craziness may well be used to characterize the behaviour of a person graced by some form of enlightenment -- perhaps a "holy fool". Various Eastern religions recognize "[crazy wisdom](#)", namely unconventional, outrageous, or unexpected behaviour having spiritual implications.

In the case of mathematics, the nature of the "requisite" cognitive surprise associated with creativity is well indicated by the much-quoted statement by physicist [Niels Bohr](#) in response to [Wolfgang Pauli](#):

We are all agreed that your theory is crazy. The question which divides us is whether it is crazy enough to have a chance of being correct. My own feeling is that it is not crazy enough.

To that [Freeman Dyson](#) added:

When a great innovation appears, it will almost certainly be in a muddled, incomplete and confusing form. To the discoverer, himself, it will be only half understood; to everyone else, it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope! (Innovation in Physics, *Scientific American*, 199, 3, September 1958)

In response to intractable conflicts, it might be asked how mathematical theology could fruitfully frame the emergence of insights that were "crazy enough". What "systematic" provision might it make to encompass "muddled, incomplete and confusing" forms?

Implication of research on opinion and belief

The argument has proposed the reframing of "theology" to include a wider spectrum of beliefs, enhanced by the insights offered by mathematics (a belief system in its own right). It is appropriate to contrast such a focus on "belief" with that which is central to the disciplines of [opinion](#) and attitude research, [market research](#) and [psephology](#). These have become absolutely fundamental to the processes of governance and marketing -- even in faith-based cultures..

Given the above references to global simulations, it is interesting to note that these have encouraged the formalization of belief (Philippe Smets, *The Application of the Matrix Calculus to Belief Functions*, 2004; Glenn Shafer, *Belief Functions: introduction*). Such "belief functions" derive in part from the [Dempster-Shafer theory](#) (DST) of evidence, whereby evidence from different sources can be combined to arrive at a degree of belief (represented by a "belief function"). This is reminiscent of the [Gaussian copula](#) basic to the calculation of risk in marketing financial derivatives -- which proved to be at the origin of the recent financial crisis (*Gaussian Copula: investment risk*, 2009).

There is then value in exploring a representation of the relationship between:

- theology, with its focus on deep engagement with a psychoactive belief of long-term existential significance to identity
- opinion and belief research, with its superficial focus on rapidly shifting patterns of public opinion (appropriately compared with meteorology)
- mathematics, with the fundamental formalization it offers to both and the fundamental preoccupation with "infinity" (to be compared with "divinity)

Both theology and mathematics have a concern with the "transcendental", despite a degree of implication in the "mundane" -- which is the preoccupation of opinion research. All have a concern with eliciting a degree of order, although it is opinion research (with the aid of mathematics) which engages more directly with "fuzziness". Mathematics and theology share a concern with the fundamental nature of order itself. Given the argument above for "neurotheology" as a form of metatheology, it is interesting to note that a new frontier in market research is [neuromarketing](#).

There is a degree of irony to the fact that, despite arguments by mystics that "God is a verb", it is opinion and belief research which is actually preoccupied with an understanding of "divine" as a verb -- in its continuing effort to divine public opinion. Although "futures research" is now the preferred academic discipline for exploring insights into the future, it is appropriate to recall the active role still played by "divination" (*Engaging with the Future with Insights of the Past*, 2010).

With respect to intractable conflict, opinion research could be said to be currently more influential than either theology or mathematics -- by reflecting attitudes towards it capable of influencing governance. Whilst mathematics and theology are variously complicit in encouraging or enabling such conflict, they have yet to imagine remedial responses to it -- as envisaged here through mathematical theology.

NB: See [Conclusion](#) in main document; Bibliographical references are provided in a separate document: [Bibliography of Relevance to Mathematical Theology](#)



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