



# laetus in praesens

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## Higher Dimensional Reframing of Unity and Memorable Identity

Unification and integration framed coherently otherwise

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### Introduction

Current challenge of "unity", "unification" and "integration"

Credible future connectivity for viable governance?

Higher dimensionality of reality asserted by science

Framing of unity, unification, and memorable identity with polytopes?

Embodiment of 108-foldness as ultimate spiritual challenge?

Unusually succinct interweaving of systemically significant symbolic patterns?

Unexplored correspondence between yantras and graphs of uniform polytopes

Dimensionality of aesthetics, numerical biases and suspicion?

Paradoxical existence of global cognitive constructs

Criteria for recognition and organization of memorable coherence

Memorable encycling of unity, symmetry, periodicity and integration?

Periodicity as a key to memorable coherence?

Relevance to transcendence of territorial conflict?

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The argument here is introduced in a first part and further developed in other parts.

Part 1: *Psychosocial Geometry and Dynamics of Collective Memory*; Part 2: *Comprehensible Configuration of 8-fold Psychosocial Patterns in 3D*; Part 3: *Comprehensible Organization of Strategic Complexity in 3D and 4D*. See Part 1 for References.

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## Introduction

The first part of this document highlights the role of pillars in relationship to strategic principles configuration and their interconnection as "ways of looking" (*Principles, pillars, projectives and*

*metaphorical geometry*). The question evoked there is the *Use of AI in enabling configuration of psychosocial pillars*. A particular focus is given to the *Clarification of 8-fold strategic patterns with ChatGPT* and the *Recognition of the pattern of 8-fold "ways of looking"*.

It then explores how 24-fold and 72-fold sets of these might be coherently configured in 3D as polyhedra ([Part 2](#)). The limitations of these 3D configurations highlight the potential necessity for a 4D framework to encompass more subtle 81-fold sets ([Part 3](#)). The argument concludes here with the suggestion that any quest for "unity" is more appropriately envisaged in 4D (or more) rather than in 3D or through conventional framing of territorial conflicts in 2D.

## Current challenge of "unity", "unification" and "integration"

**Question to ChatGPT:** There is much expressed concern with geopolitical unity to enable coherent strategic responses and as a resolution of territorial conflict. "Unity" and "unification" are however discussed, understood and represented simplistically in comparison with their articulation in physics (for example). The degrees of complexity and coherence modelled by relatively symmetrical polyhedra and polytopes would appear to offer a language through which to represent "unity" and coherence with requisite variety. How might this apply to the territorial and policy challenges

The idea of using concepts from physics, specifically the modeling of symmetrical polyhedra and polytopes, to understand and represent "unity" and coherence in geopolitics is quite innovative. In physics, these models are used to represent complex, multi-dimensional systems in a structured and coherent way. Applying this approach to geopolitical unity and territorial and policy challenges involves several steps:

- **Modeling Complexity:** In physics, polyhedra and polytopes are used to model complex systems. In geopolitics, these shapes could metaphorically represent different nations or entities, with their vertices, edges, and faces symbolizing the various points of connection, relationships, and interactions between these entities.
- **Symmetry and Balance:** Symmetry in polyhedra and polytopes represents balance and stability. Translating this to geopolitics, it could imply striving for balanced and stable relationships among nations, where each entity holds a position that complements and supports the others, leading to a stable system.
- **Degrees of Connection:** The various levels of connections in a polyhedron (like vertices, edges, faces) can represent the different ways countries interact—through trade, diplomacy, cultural exchange, etc. The complexity of these interactions can be mapped in a way that highlights how interconnected and dependent countries are on one another.
- **Visualizing Policy Challenges:** Complex policy challenges can be visualized as alterations or distortions in this geometric representation. For example, a territorial conflict might be seen as a distortion in the symmetry of the polyhedron, indicating an area of imbalance that needs to be addressed.
- **Problem-Solving and Strategies:** Just as solving a complex geometric problem involves understanding the structure and properties of the shapes involved, addressing geopolitical challenges could involve understanding the 'shape' of the geopolitical landscape. Strategies could be developed by examining how changes in one part of the system (or polyhedron) might affect the rest.
- **Dynamic Nature:** Finally, recognizing that these models are dynamic, not static. Just as polyhedra can transform, the geopolitical landscape is constantly evolving. The model should be adaptable to reflect changes over time, such as the emergence of new nations, shifting alliances, and evolving economic relationships.

Using such a model does not provide direct solutions but offers a framework for understanding the complexities and interdependencies of the geopolitical world. It encourages a holistic view, where changes in one part of the system are understood to affect the whole, much like in a complex, symmetrical structure in physics.

**Question to ChatGPT:** Does that response render irrelevant the calls for "unity", and the aspiration for "unification", or is there a need to clarify it in other ways as a "work in progress" -- as physics has been

obliged to do. The challenge is not only evident between nations, between disciplines, between cultures, and between religions.

Your point is well taken. The response doesn't render the calls for "unity" and the aspiration for "unification" irrelevant; rather, it suggests a need for a more nuanced understanding and approach to these concepts, recognizing them as complex and dynamic "works in progress." Just like physics, which constantly evolves and refines its theories and models, the pursuit of unity in geopolitics, interdisciplinary collaboration, intercultural understanding, and interreligious dialogue should also be seen as a continual process of development and refinement.

- **Interdisciplinary Unity:** Each discipline, be it in science, humanities, or social sciences, offers unique perspectives and methodologies. The quest for unity here involves creating a dialogue among these disciplines, where insights from one can inform and enrich the others. It's not about merging disciplines into a monolithic entity but about fostering a collaborative environment where different approaches can coexist and complement each other.
- **Intercultural and Interreligious Unity:** Similarly, in the realms of culture and religion, unity does not imply homogenization or the elimination of differences. Instead, it's about fostering understanding, respect, and the ability to live harmoniously despite differences. This involves acknowledging and valuing the unique contributions of each culture and religion while finding common ground.
- **Geopolitical Unity:** On the international stage, unity is often discussed in the context of global cooperation and conflict resolution. It's a continuous process of negotiation, diplomacy, and mutual understanding, adapting to the changing dynamics of international relations.
- **Unity as a Process, Not a Destination:** In all these contexts, unity should be viewed not as a fixed endpoint but as a process. It's about ongoing efforts to communicate, collaborate, and coexist, recognizing that this process will need to adapt and evolve over time, just as scientific theories and models do.
- **Learning from Physics:** The analogy to physics highlights that our understanding of unity in complex systems, whether they are scientific, cultural, or geopolitical, must be flexible and open to revision. Just as physics has had to adapt its models to new discoveries and insights, our approaches to unity in human affairs must also be adaptable, responding to new challenges and changing circumstances.

In summary, the pursuit of unity in various realms is indeed a "work in progress," characterized by its evolving nature and the need for continual adaptation and revision. It requires a balance between respecting and preserving diversity and working towards common goals and understanding.

**Question to ChatGPT:** Missing from that useful articulation is the challenge it poses for individual and collective identity through the requisite embodiment of the complexity and flexibility it suggests. How is a balance between simplicity (rather than oversimplification) and complexification (rather than obfuscation) to be enabled sustainably -- a challenge highlighted by the compactification of "extra dimensions" in physics

The challenge of maintaining a balance between simplicity and complexification in the context of individual and collective identity, while embodying the complexities and flexibility of a unified approach, is indeed a profound one. It echoes the concept in physics of 'compactification', where extra dimensions are theorized to be compacted into smaller, manageable scales. This concept can be metaphorically applied to the way we understand and manage complexity in societal and individual contexts.

- **Embracing Complexity without Overwhelm:** Just as in physics where compactification suggests that extra dimensions are folded into the dimensions we experience, in societal contexts, we need to find ways to integrate complex ideas into our everyday understanding without becoming overwhelmed. This involves distilling complex concepts into more digestible forms without losing their essence, much like summarizing a complex theory into a set of key principles or actionable steps.
- **Simplicity in Communication:** Simplifying complex ideas for broader understanding is crucial. This doesn't mean dumbing down; rather, it's about finding the core message or the most important aspects that people can relate to and understand. It's a process of translating

complexity into terms that are accessible, much like how complex scientific theories are often communicated to the public through analogies and simplified explanations.

- **Sustainable Complexity Management:** In managing complexity sustainably, there needs to be a recognition that not every detail can or should be actively held in the forefront of collective consciousness. Instead, there should be systems and processes in place where detailed complexities are managed at appropriate levels (e.g., expert groups, dedicated committees), while the broader concepts are disseminated among the general population.
- **Identity in a Complex World:** For individual and collective identity, this balance means recognizing and valuing the richness of one's own and others' backgrounds, experiences, and perspectives, while also finding common ground and shared values. It's about maintaining a sense of uniqueness and authenticity, without getting lost in the details that divide.
- **Education and Lifelong Learning:** The role of education is crucial here. Educating individuals to think critically, to appreciate complexity, and to understand the importance of context, while also being able to communicate ideas simply and effectively, is key to maintaining this balance. Lifelong learning and continuous adaptation are essential in a rapidly changing world.
- **Iterative Process:** Finally, the balance between simplicity and complexity should be viewed as an iterative process. Just as scientific theories are continually refined and revised in light of new evidence, our approaches to managing societal complexities and individual identities should also be flexible and responsive to new information and changing circumstances.

In summary, the balance between simplicity and complexification in the context of identity and societal challenges is about finding ways to integrate and manage complexity in a manner that is both understandable and sustainable. It's a dynamic process that requires continual learning, adaptation, and the ability to distill and communicate complex ideas effectively.

**Question to ChatGPT:** Whilst admirably appropriate, that response effectively highlights the challenge of engaging with what is upheld as appropriate in a world in which other modalities are held to be necessary for survival. The track record in that regard is highly problematic, with the appropriate readily perceived as unrealistic platitude

You've raised a critical point about the gap between idealistic approaches and the pragmatic, often survival-oriented realities faced by individuals and societies. The challenge is to bridge the conceptual world of "appropriate" solutions, often seen as idealistic or platitudinous, with the tangible needs and constraints of real-world situations. Here's how this complex dynamic can be addressed:

- **Recognizing Ground Realities:** Idealistic solutions often fail to take root because they don't adequately account for the ground realities faced by people. It's crucial to understand the immediate needs, concerns, and constraints of those affected by any policy or initiative. This involves engaging directly with communities, understanding their perspectives, and acknowledging the limitations and challenges they face.
- **Pragmatic Idealism:** The concept of pragmatic idealism involves finding a middle path that incorporates high ideals but is grounded in practicality. It's about crafting policies and solutions that aspire to improve the world but are also executable and sensitive to current realities. This approach seeks to make incremental but tangible improvements rather than aiming for utopian outcomes that might be unrealistic in the short term.
- **Adaptive Strategies:** Survival-oriented strategies often emerge in response to immediate challenges and can be short-sighted. To make these strategies more effective in the long term, they need to be adaptive and flexible. This means regularly reassessing situations and adjusting approaches as circumstances change, ensuring that strategies remain relevant and effective.
- **Holistic Understanding:** There's a need for a holistic understanding of issues, recognizing that challenges are often interconnected. Solutions should not only address immediate problems but also consider broader implications and potential unintended consequences. This approach requires interdisciplinary thinking and collaboration.
- **Empowerment and Capacity Building:** Empowering communities and individuals to address their challenges is crucial. This means providing education, resources, and tools that

enable them to make informed decisions and take effective actions. Capacity building helps bridge the gap between idealistic solutions and practical needs.

- **Effective Communication:** Often, the disconnect between ideal solutions and survival strategies stems from communication gaps. Effective communication involves not only conveying ideas clearly but also listening and responding to feedback. It's about building a two-way dialogue where solutions are co-created with those who are affected by them.
- **Incremental Progress and Patience:** Change is often slow, and expecting immediate transformation can lead to disappointment. Recognizing the value of incremental progress and having the patience to see long-term plans through is essential. Celebrating small victories can build momentum and support for larger goals.

In summary, engaging effectively with the challenges of the real world requires a balance between high ideals and pragmatic solutions, grounded in a deep understanding of real-world conditions and a commitment to incremental progress and adaptive strategies. It's about taking realistic steps toward ideal outcomes, rather than dismissing ideals as mere platitudes.

## Credible future connectivity for viable governance?

There is increasing recognition and debate regarding the erosion of trust in authorities, whether at the local or global level. This extends to the professions and the unifying perspectives they claim to offer or assert. The pattern is evident with respect to religion. At the same time there is a degree of confidence engendered by various forms of belief readily deprecated by science as pseudoscience and superstition -- despite the challenge to science of its "pseudorelevance" to governance faced with the crises of the times ([Pseudorelevance to the Pandemic](#), 2021). The pattern, and efforts to counteract it, are evident in the immense investment in advertising -- despite the ever increasing difficulty of distinguishing it from misinformation.

This development frames the question as to how what connectivity is considered credible as a basis for viable governance. A focus has been given to the concern in the theme of the elite gathering of the World Economic Forum ([Davos 2024: Rebuilding trust in the future](#), 16 January 2024) -- ironically matched by the diminishing efficacy of the World Social Forum.

The challenge can be provocatively framed by the contrast between the traditional role of the Chinese classics in governance and the increasing Western reliance on modelling -- despite the degree to which it can be considered questionable ([Misleading Modelling of Global Crises](#), 2021). The challenge is highlighted by the reported dependence of world leaders on practices deprecated by science (Steven V. Roberts, [White House Confirms Reagans Follow Astrology, Up to a Point](#), *The New York Times*, 4 May 1988; Mary Kay Linge, [How Ronald Reagan's wife Nancy let her astrologer control the presidency](#), *New York Post*, 18 October 2021).

**Question to ChatGPT:** The Chinese classics of *I Ching* and *Taixuanjing* are typically deprecated from a Western perspective as systems of divination. Western policy-making is highly dependent on modelling as a means of predicting the future. Does the distinction between them in practice as tools of governance warrant that deprecation, thereby neglecting a potential source of complementary insight.

The distinction between Eastern systems like the I Ching and Taixuanjing, often viewed in the West primarily as divination tools, and Western reliance on predictive modeling for policy-making, indeed raises important questions about the breadth and depth of approaches to governance and decision-making.

- **Western Predictive Modeling:** In the West, policy-making often relies on data-driven models to predict future outcomes. These models are grounded in empirical data, statistical analysis, and theoretical frameworks. They aim to provide a measurable and quantifiable basis for decisions, which is a key aspect of Western scientific and rationalist traditions.
- **Eastern Systems of Divination:** The I Ching ("Book of Changes") and Taixuanjing ("Canon of Supreme Mystery") are ancient Chinese texts that have been used for divination, but they are also profound sources of philosophical and ethical wisdom. The I Ching, for example, is based on the idea of dynamic change and encompasses a holistic view of the world, emphasizing balance, harmony, and the interplay of opposites.

- **Complementary Insights:** While Western models focus on quantifiable predictions, Eastern systems like the I Ching offer insights into the nature of change, human behavior, and the interconnectedness of events. These systems emphasize flexibility, adaptability, and the importance of considering multiple perspectives. Rather than providing specific predictions, they guide decision-making through principles and metaphors that reflect the complexities of life and human experience.
- **Deprecation and Integration:** The deprecation of Eastern systems in Western contexts may stem from a misunderstanding of their purpose and value. While it's true that they operate on different principles than Western predictive models, this does not diminish their potential contribution. Both approaches have their strengths and limitations, and integrating insights from both can lead to more holistic and effective governance.
- **Potential for Complementary Use:** In practice, Eastern and Western systems can complement each other. For example, data-driven models can provide specific predictions and scenarios, while philosophies like those in the I Ching can offer a broader understanding of the implications of these predictions, encouraging decision-makers to consider a wider range of factors and potential responses.

In summary, while the I Ching and Taixuanjing are often seen in the West primarily as divination tools, their philosophical and ethical insights can provide a valuable complement to Western predictive models. Recognizing the potential of these Eastern systems to contribute to a more nuanced and comprehensive approach to governance and decision-making could lead to more effective and adaptable policies.

**Question to ChatGPT:** Could you comment on the interrelationship between complexity, connectivity, credibility, and comprehension

The concepts of complexity, connectivity, credibility, and comprehension are deeply intertwined and particularly pertinent in the context of governing a society in crisis, especially one where there is widespread preoccupation with conspiracy among elites. Let's explore how each of these elements plays a role:

- **Complexity in Governance:**
  - **Multifaceted Challenges:** Governing a society, especially in times of crisis, involves navigating a web of complex, interrelated issues. These can include economic turmoil, public health emergencies, social unrest, and environmental challenges.
  - **Decision-making:** Complexity requires nuanced decision-making, where leaders must consider a range of factors, stakeholders, and potential outcomes.
  - **Risk of Simplification:** In complex scenarios, there's a risk that leaders oversimplify issues, leading to ineffective or counterproductive policies.
- **Connectivity:**
  - **Information Flow:** Connectivity, especially in the digital age, means that information (and misinformation) can spread rapidly. This can influence public opinion, mobilize social movements, or propagate conspiracy theories.
  - **Interdependence:** Societies are increasingly interconnected, both internally and globally. Actions in one sector or region can have far-reaching consequences, emphasizing the need for coordinated responses.
  - **Engagement and Transparency:** Connectivity offers tools for greater civic engagement and transparency, which are crucial for trust-building in governance.
- **Credibility:**
  - **Trust in Institutions:** Credibility is the bedrock of effective governance. In a crisis, public trust in institutions is crucial for the implementation of policies and for compliance with regulations.
  - **Combating Conspiracy Theories:** When conspiracy theories flourish, they often do so at the expense of institutional credibility. Addressing these theories directly and transparently can help to maintain or restore trust.
  - **Leadership Integrity:** The credibility of leaders, based on their integrity, transparency, and accountability, directly impacts the efficacy of governance.
- **Comprehension:**
  - **Understanding the Crisis:** Accurate comprehension of the crisis and its root causes is essential for effective response strategies.

- Public Communication: Clear, consistent communication from leaders helps the public understand the crisis, the government's response, and their role in it.
- Educational Initiatives: Fostering a well-informed citizenry through education and media literacy can mitigate the spread of misinformation and conspiracy theories.

#### Relationship Among These Elements in Crisis Governance:

- Complexity and Comprehension: Managing complex crises requires that both leaders and citizens have a clear comprehension of the issues at hand. Misunderstandings or oversimplifications can exacerbate the crisis.
- Connectivity and Credibility: In a highly connected world, maintaining credibility is challenging but essential. Rapid information dissemination means that any erosion of trust can quickly undermine governance efforts.
- Combating Conspiracies: Addressing conspiracy theories requires a nuanced approach that considers the complexity of the issues, utilizes connectivity to spread accurate information, relies on the credibility of sources, and aims for comprehensive understanding among the public.

In conclusion, governance in a crisis, particularly in the context of widespread conspiracy theories, demands a careful balancing of these four elements. Leaders must navigate complex issues transparently and credibly, leveraging connectivity to ensure clear comprehension among the populace. This approach helps in not only addressing the immediate crisis but also in strengthening the resilience and trust in societal institutions.

**Question to ChatGPT:** This exchange helps to frame the question regarding what constitutes "connectivity" and whether there is a spectrum of degrees of connectivity with which degrees of significance may be associated. Metaphor and symbolism would be part of a spectrum of correspondences, as discussed in *Theories of Correspondences -- and potential equivalences between them in correlative thinking* (2007). Especially intriguing is the correspondence caricatured by mathematicians as "moonshine" connectivity through which the relation between the monster group and modular functions was discovered. How loose a degree of connectivity might be of strategic relevance in the quest for any "Holy Grail" of global governance.

The concept of "connectivity" and its spectrum, especially in the context of global governance and strategic relevance, is indeed a profound area of exploration. Your reference to "moonshine" connectivity, which relates to the surprising link between the Monster group in mathematics and modular functions, exemplifies how seemingly loose or abstract connections can lead to significant discoveries. Let's delve into how varying degrees of connectivity might be strategically relevant in global governance:

- Spectrum of Connectivity: In systems theory and global governance, connectivity can range from direct, concrete interactions (such as trade agreements or diplomatic relations) to more abstract, indirect connections (like cultural influences or environmental impacts). Recognizing this spectrum is crucial in understanding the complex web of relationships that govern global interactions.
- Metaphor and Symbolism: Metaphorical and symbolic connections, as discussed in theories of correspondences, play a significant role in shaping perceptions and narratives. These less tangible forms of connectivity can influence policy and decision-making by framing issues in particular ways, affecting public opinion and political will.
- 'Moonshine' Connectivity: The discovery in mathematics of connections between the Monster group and modular functions, initially thought to be a "moonshine" or fanciful idea, illustrates that seemingly abstract or tenuous connections can have profound implications. In global governance, this suggests that seemingly unrelated areas or ideas might have significant, albeit initially non-obvious, links.
- Holistic Thinking and Correlative Thinking: The approach of looking for potential equivalences and correspondences, even if they are not immediately apparent, encourages holistic and integrative thinking. This is crucial in global governance, where issues are often interdependent and multi-faceted. Strategies that consider a wide range of factors and potential connections are more likely to be effective and sustainable.
- Strategic Relevance of Loose Connectivity: Loosely connected ideas or systems can be strategically important in global governance. They can offer novel perspectives, foster

innovation, and lead to the discovery of unexplored solutions. For instance, understanding how environmental issues connect with economic policies, or how cultural shifts influence political stability, can be key to addressing global challenges.

- The 'Holy Grail' of Global Governance: In the quest for effective global governance, the 'Holy Grail' might lie in the ability to recognize and leverage both tight and loose connections. This includes acknowledging the value of diverse perspectives, interdisciplinary approaches, and seemingly unrelated fields or ideas. It's about finding coherence and meaning in a complex and interconnected world.

In conclusion, the spectrum of connectivity, from direct and concrete to abstract and metaphorical, is highly relevant in global governance. The strategic importance of these connections lies in their potential to reveal new insights, foster holistic understanding, and drive innovative solutions to global challenges. Recognizing and exploring these connections, even when they seem loose or abstract, can lead to significant breakthroughs in how we approach and manage global issues.

**Question to ChatGPT:** Could you suggest -- tentatively -- the possible degrees of such a spectrum. Given the role of aesthetic correspondences, this might include the significance associated with liminal experience, separately discussed ([Living as an Imaginal Bridge between Worlds: Global implications of "betwixt and between" and liminality](#), (2011)).

The spectrum of connectivity, especially in the context of global governance and interdisciplinary understanding, can be conceptualized across various degrees, ranging from concrete and tangible to abstract and aesthetic. Here's a tentative outline of these degrees, incorporating the role of aesthetic correspondences and the concept of liminality:

- **Direct, Tangible Connectivity:** This includes clear, measurable, and direct interactions such as economic exchanges, political treaties, and diplomatic relations. It's the most concrete level of connectivity where cause and effect are relatively straightforward and observable.
- **Indirect, Functional Connectivity:** This degree involves connections that are less direct but still functionally significant, such as the impact of economic policies on public health, or the influence of technological advancements on social dynamics.
- **Cultural and Ideological Connectivity:** At this level, the connections are formed through shared beliefs, values, cultural practices, and ideologies. These connections influence how groups and nations perceive and interact with each other, often shaping collective identities and narratives.
- **Aesthetic and Symbolic Connectivity:** This includes connections made through art, literature, music, and shared human experiences. Aesthetic correspondences can bridge gaps between cultures and disciplines, fostering a deeper, more empathetic understanding of complex issues.
- **Psychological and Emotional Connectivity:** Emotional responses and psychological frameworks play a significant role in shaping perceptions and decisions. This level of connectivity addresses how shared human emotions and psychological patterns influence collective behavior and societal trends.
- **Liminal Connectivity:** Drawing from the concept of liminality, this degree refers to the connections formed in transitional, in-between states of being and understanding. Liminal experiences, characterized by ambiguity and disorientation, can lead to new perspectives and transformative insights, serving as an 'imaginal bridge' between different worlds or paradigms.
- **Metaphysical and Transcendent Connectivity:** At the most abstract level, this involves connections that transcend physical and empirical boundaries, such as spiritual experiences, existential questions, and the search for meaning. These connections often explore the fundamental nature of reality and human existence.
- **Emergent and Intuitive Connectivity:** This category captures the emergent properties of complex systems and the role of intuition in understanding and navigating them. It recognizes that some connections are not easily categorized or understood through rational analysis alone but are perceived through holistic and intuitive insights.

Each degree on this spectrum offers a unique lens for understanding and addressing global challenges. Recognizing the interplay and significance of these diverse forms of connectivity can enrich our approach to global governance, fostering more holistic, empathetic, and integrative strategies.

# Higher dimensionality of reality asserted by science

Upheld as potentially the most highly esteemed discipline of science, into which considerable resources are invested, fundamental physics has variously asserted that "[extra dimensions](#)" are required to encompass the nature of reality and explain it -- in addition to the 3+1 dimensions typical of observed [spacetime](#). [String theories](#) require extra dimensions of spacetime for their mathematical consistency. In bosonic string theory, spacetime is 26-dimensional, while in superstring theory it is 10-dimensional, and in [M-theory](#) it is 11-dimensional.

The "invisibility" of these extra dimensions is explained in terms of [compactification](#) through which some of the dimensions are assumed to "close up" on themselves to form circles. In the limit where these "curled up" dimensions become very small, spacetime then has effectively the lower number of dimensions with which people normally engage. Little is said of the psychosocial and cognitive implications of the extra dimensions. The relevance to governance is primarily apparent in the appreciation of their application to the further development of weapons of mass destruction.

It is intriguing to note the question of [Ron Atkin](#) in relation to connectivity ([Multidimensional Man; can man live in 3-dimensional space?](#) 1982; [The Concept of Connectivity](#), 1992), followed by commentary on the question in relation to complexity (Konstantin Y. Degtiarev, [Q-Analysis and Human Mental Models: a conceptual framework for complexity estimate of simplicial complex in psychological space](#), 2011).

There is further difficulty in the assertion by science of the fundamental relevance of higher dimensionality beyond ordinary "human ken". Other than being "curled up", the meaning of "dimension" is elusive. Given a degree of recognition of the fundamental importance of symmetry to human comprehension, it is striking to note the discovery by science of the ultimate form of symmetry -- termed the [monster group](#) -- known to "live", or more precisely to "act", in an unimaginable context of 196,884 dimensions (This representation in 196,884 dimensions splits into two: a trivial representation in 1 dimension, and an irreducible representation in 196,883 dimensions). This invites speculative exploration as an exceptional form of symmetry for cognitive frameworks -- even a "Holy Grail" -- as discussed separately ([Potential Psychosocial Significance of Monstrous Moonshine](#), 2007).

A difficulty for science is evident in the confusion with regard to "dimension". String theory has since gone out of fashion, as argued by Peter Woit ([Not Even Wrong: the failure of string theory and the search for unity in physical law](#), 2007; [Why String Theory Is Still Not Even Wrong](#), *Scientific American*, 27 April 2017). Nevertheless mathematics and physics make very extensive use of "dimension", understood otherwise (John Wright, [High-Dimensional Data Analysis with Low-Dimensional Models: principles, computation, and applications](#), 2022), it is however questionable whether there is any cognitive distinction to the dimensions which feature in their "multi-dimensional" preoccupations and modelling of complexity.

In a critique of [Higher Dimensions in Physics and Mathematics!](#) as pseudoscience, Rory Coker (University of Texas at Austin) argues:

So far, physicists have no concrete idea as to what a unified theory of all quantum processes and gravity might look like, but it is certainly possible that such theories will remain multi-dimensional. It is important to realise that these theories have absolutely no contact with experiment at present. There is no experimental evidence of any kind whatsoever for dimensions beyond the usual four... Pseudoscientists and fiction writers have always loved "higher dimensions". Almost any fantasy can be motivated by appeal to the "mysterious 4th dimension... But it is important to realize that such concepts are not borrowed from either science or mathematics, and have no basis whatsoever in the verified descriptions and observed phenomena of the world we actually live in.

To the extent that global strategies of governance are however upheld as framed by science, it is clear that their articulation recognizes a "multidimensional" reality, as for example by the United Nations: *We are committed to achieving sustainable development in its three dimensions – economic, social and environmental – in a balanced and integrated manner... We also recognize that international migration is a multi-dimensional reality of major relevance for the development of countries of origin, transit and destination...* ([Transforming Our World: the 2030 Agenda for Sustainable Development](#)).

Similarly grounded in science, it might be assumed that the [Fifth Dimension of Warfare](#) -- information operations -- complements the four classical dimensions: land, sea, air, and space. It is part of core U.S. Military doctrine, that recognizes at least five dimensions, or "domains of warfare" for which it is responsible. This has taken a wider scope than its original information operations background in 1995, focusing on "the advanced space-time manipulating capabilities cyberspace offers" (Robert Bunker, [Fifth Dimensional Operations: space-time-cyber dimensionality in conflict and war](#), 2014)

## Framing of unity, unification, and memorable identity using polytopes?

Any sense of unity is readily reduced metaphorically to a point or a sphere -- thereby avoiding the challenge of the requisite articulation enabling its connection to diversity. That "unity" might be better understood as a hyperobject is another matter, as discussed separately ([Oversimplification in the face of a 'unified' hyperobject?](#) 2023).

An alternative approach is through polytopes, most obviously the polyhedra which have traditionally featured in sacred geometry. These can be explored from a perspective of memorability and ability to "hold" strategic articulations ([Memorability, Mnemonics, Maths, Music and Governance](#), 2022; [Memorable Packing of Global Strategies in a Polyhedral Rosetta Stone](#), 2022; [Identifying Polyhedra Enabling Memorable Strategic Mapping](#), 2020).

Key to any such possibility, and memorability, is the symmetry evident in the variety of polytopes of increasing dimensionality, as notably documented by [Wikipedia](#) ([List of uniform polyhedra](#), [Uniform 4-polytopes](#), [Uniform 5-polytopes](#), [Uniform 6-polytopes](#), [Uniform 7-polytopes](#), [Uniform 8-polytopes](#), [Uniform 9-polytopes](#))

Adjective. polytopal (comparative more polytopal, superlative most polytopal) (mathematics) Of or pertaining to polytopes. (chemistry) Describing any rearrangement reaction involving atoms or groups at the vertices of a polyhedron. \*\*\*

**Question to ChatGPT:** I am producing a table of polyhedra (and polychora) structured in terms of increasing patterns of 8-foldness. When used as mappings of cognitive functions, or their organizational analogues, these imply increasing combinations of complexity and coherence. Is there any measure by which the differences might then be indicated -- an index perhaps

Creating a table of polyhedra and polychora (4-dimensional analogues of polyhedra) structured according to patterns of 8-foldness, and using them as mappings for cognitive functions or organizational structures, is an innovative approach to visualizing complexity and coherence in systems. The challenge lies in developing a measure or index that can effectively indicate the differences or gradations in complexity and coherence as represented by these geometric forms. Here are some conceptual ideas for such a measure:

- **Dimensionality and Vertex Count:** A primary measure could be the dimensionality (3D for polyhedra, 4D for polychora) and the number of vertices. Generally, as the number of vertices increases, the structure becomes more complex. This could serve as a straightforward measure of structural complexity.
- **Symmetry and Regularity:** The degree of symmetry and regularity in the polyhedra/polychora can be used as a measure of coherence. Highly symmetrical and regular structures might represent higher coherence.
- **Topological Properties:** Topological features like the Euler characteristic (vertices - edges + faces), genus (number of holes), or other topological invariants can provide insights into the complexity and connectivity of the structures.

- **Geometric Complexity Index:** Develop a 'Geometric Complexity Index' that combines factors like the number of faces, edges, vertices, symmetry elements, and dimensional characteristics. This index could be a weighted sum or a more complex function that captures the multi-dimensional nature of complexity in these shapes.
- **Cognitive Functionality Mapping:** If these geometric forms are used to represent cognitive functions, you could develop a mapping system where specific cognitive or organizational aspects are linked with particular geometric properties. For instance, decision-making complexity might correlate with the number of faces, while communication pathways might align with the edges.
- **Graph Theoretical Measures:** Employ graph theory to analyze the polyhedra/polychora. Measures like graph density, centrality measures, or network diameter can provide quantifiable metrics of complexity and coherence.
- **Computational Geometry Algorithms:** Use algorithms from computational geometry to analyze and compare shapes. These might include measures of volume, surface area, or algorithms that assess shape regularity.
- **Visualization and Interactive Models:** Develop interactive 3D or 4D models where users can visually and intuitively understand the complexity and coherence of the structures. This can be particularly useful in educational or collaborative settings.
- **Coherence Index:** Establish a 'Coherence Index' that evaluates how well the structure integrates or harmonizes its components. This could consider factors like the uniformity of face shapes, the balance between different dimensions, and the overall aesthetic or visual harmony of the structure.
- **Complexity-Functionality Correlation:** Analyze the correlation between geometric complexity and the mapped cognitive/organizational functionalities. This could involve studying how increasing geometric complexity impacts the represented cognitive functions' effectiveness or efficiency.

Each of these measures or indices would need to be carefully defined and validated to ensure they accurately reflect the intended aspects of complexity and coherence. The choice of measure might also depend on the specific application or the aspects of cognition and organization you wish to highlight. Integrating these measures into a comprehensive framework would allow for a nuanced and multi-dimensional understanding of the structures and their corresponding cognitive or organizational functions.

The argument in the earlier parts of this paper highlighted the role of 8-foldness as a characteristic of comprehensible coherence effectively recognized in a variety of domains. In the case of greater complexity, of interest is the role of number factors in determining recognizable symmetry, coherence and memorability. This is discussed separately

Memorability and number factors?  
Memorability and symmetry

Memorability and types of number  
recognized by mathematics?  
Memorability and periodicity

Selected relatively centro-symmetric 8-fold polyhedra ordered by number of elements (derived from <a href="#">Stella 4D</a> library)				
#	<b>vertices</b> (dual of facial variant)	<b>faces</b> (dual of vertex variant)	<b>edges</b>	<b>cells</b> (4D)
8	cube	octahedron	square pyramid	<a href="#">tesseract</a>
	truncated tetrahedron	triaxistetrahedron		
16	simplest torus	simplest torus (dual)	tetrahedral prism	<a href="#">hexadecachoron</a>
	1-freq. trunc. tetra. geo. sphere (dual)	1-freq. trunc. tetra. geo. sphere		
	cubes-2	octahedra-2		
	<a href="#">truncated octahedron</a>	textraxishexahedron	cuboctahedron	icositetrachoron
	truncated cube	triaxisoctahedron	<a href="#">rhombic dodecahedron</a>	<a href="#">truncated tesseract</a>

24	<a href="#">rhombicuboctahedron</a>	strombic icositetrahedron	cubes-2	<a href="#">bitruncated tesseract</a>
	snub cube	pentagonal icositetrahedron	tetrahedra-4	truncated 16-cell
	small cubicuboctahedron	small hexacronic icositetrahedron	2-freq. trunc. tetra. geo. sphere	icositetrachoron
32	<a href="#">rhombic triacontahedron</a>	icosidodecahedron	<a href="#">tesseract</a>	
	<a href="#">pentakisidodecahedron</a>	<a href="#">truncated isocahedron</a>		
	triakisicosahedron	<a href="#">truncated dodecahedron</a>		<a href="#">faceted rectified tesseract</a>
40	Leonardo-style cube	Leonardo-style cube (dual)		
	Bruckner 24,1	Bruckner 24,1 (dual)		
48	<a href="#">truncated cuboctahedron</a>	disdyakiscuboctahedron	<a href="#">rhombicuboctahedron</a>	
	<a href="#">drilled biaugmented truncated cube</a>		<a href="#">truncated tetrahedral prism</a>	
56		<a href="#">drilled biaugmented truncated cube</a>		
64	<a href="#">rectified tesseract</a>	<a href="#">rectified tesseract</a>	<a href="#">drilled truncated cube</a>	150-Hinpith
72	<a href="#">truncated tesseract</a>	augmented dodecahedron	<a href="#">truncated cuboctahedron</a>	
	octagon drilled trunc cuboctahedron			
80	<a href="#">double drilled trunc. cuboctahedron</a>			
	<a href="#">drilled rhombicosidodecahedron</a>			
88		octagon drilled trunc cuboctahedron		
96	<a href="#">bitruncated tesseract</a>	<a href="#">icositetrachoron</a>	<a href="#">rectified tesseract</a>	
104		snub icosidodecadodecahedron	<a href="#">drilled biaugmented trunc. cube</a>	

**Question to ChatGPT:** With respect to the complexity of polytopes, one understanding is that "level of complexity" (LOC) is equal to the value of the polytope divided by its half order, where the value of a polytope is equal to the sum of the complete values of each piece (excluding hidden cavities) of the polytope, and complete value is the sum of the complete values of each piece (including cavities) of the polytope. Could you clarify this with respect to the challenge of its comprehension

The understanding of polytopes you've described involves some complex and abstract mathematical concepts. To clarify this, let's break down the terms and the formula you've mentioned:

- **Polytope:** In mathematics, a polytope is a general term that can refer to a geometric object with flat sides, existing in any number of dimensions. Common examples are polygons in 2D and polyhedra in 3D.
- **Value of a Polytope:** As per your description, the value of a polytope is the sum of the complete values of each piece of the polytope. This implies an additive property where the value of the whole is the sum of its parts. The "complete value" seems to be a measure that accounts for the characteristics of each piece of the polytope.
- **Complete Value (Including Cavities):** This suggests that in calculating the value, one must consider not only the visible or external parts of the polytope but also any internal structures or cavities. It indicates a more holistic approach to valuation, considering all aspects of the polytope's geometry.
- **Half Order:** The term "half order" isn't standard in polytope geometry as I understand it. It could refer to a specific property of the polytope related to its symmetry, dimensions, or some other characteristic. Clarification on this term would be necessary for a precise explanation.
- **Level of Complexity (LOC):** According to the formula, the LOC is the value of the polytope divided by its half order. This suggests that the complexity of a polytope is directly

proportional to its value and inversely proportional to this "half order."

Comprehension Challenge: Understanding this concept is challenging for several reasons:

- **Abstract Nature:** Polytopes, especially in higher dimensions, are inherently abstract and can be difficult to visualize or comprehend intuitively.
- **Complex Valuation:** The idea of calculating a "complete value" that includes internal structures adds layers of complexity, as it requires a deep understanding of the polytope's geometry.
- **Unclear Definitions:** Terms like "complete value" and "half order" are not standard in geometry or polytope theory as commonly understood. Their definitions seem specific to a particular framework or theory and might require specialized knowledge or context to understand fully.
- **Application and Relevance:** Without a clear understanding of how these concepts are applied or their relevance in a broader mathematical or practical context, it can be hard to grasp their significance.

In summary, the complexity here lies in both the abstract nature of polytopes, especially beyond three dimensions, and the specialized, possibly non-standard terminology and concepts used to describe their properties and measure their complexity. Understanding such concepts would likely require a deep dive into advanced geometric theories and possibly specific research or academic literature where these terms are defined and used.

## Embodiment of 108-foldness as ultimate spiritual challenge?

In contrast with the various uses of "dimension" by science, as mentioned above, the emphasis here is with the contrasting distinctions and "orientations" implied by the edges of polyhedra used in any configurative mapping. Rather than the effort to characterize particular understandings of dimension as "wrong", the primary interest is the human capacity to engender patterns of distinction by which belief is sustained and identity is reinforced.

As orientations from a strategic perspective, they are appropriately explored as directions, vectors, or "ways of looking" and cognitive modalities, potentially focused on goals and targets. These are variously related to the metaphoric use of "compass" in strategic discourse. The earlier presentation of strategic "pillars" is consistent with such understandings ([Principles, pillars, projectives and metaphorical geometry](#), 2024). compass

"Spiritual "dimensions"?" The emphasis of the argument presented above has been on the strategic insights potentially enabled by geometric configurations of different degrees of complexity. These would appear to contrast with the approach to transcendental integrity and spiritual unity promoted and cultivated by spiritual disciplines and theology in support of particular belief.

A relation between these contrasts -- a "correspondence" between them -- can be explored through the obscure discipline of mathematical theology, as noted separately ([Mathematical Theology: Future Science of Confidence in Belief](#), 2011). Consistent with recognition of [sacred geometry](#), there the focus is on self-reflexive global reframing to enable faith-based governance. Complementing Atkin's question above (as to whether humans are able to live in 3 dimensions) is the focus of [Antonio de Nicolas](#) ([Meditations through the Rig Veda: four-dimensional man](#), 2003).

From such a perspective, unexpected is the significance associated by quite different religions with the number 108. It is considered sacred by the [Dharmic Religions](#), such as [Hinduism](#), [Buddhism](#), and [Jainism](#). (Trusha Khambhaita, [The Significance of the Number 108](#), *The Zen Life*, 30 March 2017; [Meaning of the Number 108 in the Bible](#), BibleStudy.org; [The Magic of the Number 108](#), *Creation Center*, 2022; Laurie Piggot, [Why 108? Delving into the mysterious spiritually significant number](#), *Pranachic*, 20 June 2018). Although this perspective is typically deprecated by science as indicative of superstition, the "reality" of psychodynamics is that major proportions of the global population attach significance to such configurations in their beliefs and practice. This could be explored in relation to the argument of [Gregory Bateson](#) (Merlyn Driver, [The Pattern that Connects: Gregory Bateson and the Ecology of Mind](#), *Journal*

of *Wild Culture*, 27 October 2019).

More specifically, for example, as noted by the extensive *Wikipedia* entry on the [number 108](#):

- Hinduism: The principal deities are each separately celebrated through 108 distinct names (for example: Shiva, Vishnu, Lakshmi, Parvati, Saraswati, Krishna, Ganesha, Hanuman, Durga, Rama). The total number of [Upanishads](#) is 108 as per [Muktikā](#) canon (Tina Shettigara, [Why do we chant a mantra 108 times](#), *Yoga Spirit*)
- Jainism: The total number of ways of "Karma influx"
- Buddhism: The total number of questions asked of Buddha, and of rosary beads in Tibetan Buddhism
- Martial arts (as inspired by Buddhism) recognizes 108 principles and practices in various forms

In Islam 108 is used as a way of referring to God ([Mystical Number 108 Kawthar, HAQ and Reality of Sacrifice](#), *The Muhammadan Way*, 26 September 2020). Hinduism indicates that the 108 is a measure of the distance between the human body and God (Vivek Pandit, [Here's How the Number 108 Binds Us to the Universe](#), *Hindu American Foundation*, 19 January 2017). It is claimed that in the gospels, "Lord" refers to Jesus 108 times (John Avery, [The Name Quest: explore the names of God to grow in faith and get to know him better](#), 2014).

Framed in this way, it is understandable that the distinctive "names of God" are held to number 108 and are recited in certain spiritual practices, notably with the aid of circlets of [mala beads](#), as discussed separately ([Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects](#), 2000).

108 versus 81 versus 72? In the previous part of this paper, particular focus was given to the significance of 81-fold sets in Chinese classics central to Taoism -- the [Taixuanjing](#) ("*The Canon of Supreme Mystery*") and the [Tao Te Ching](#). It could then be asked how the 108-fold "mystery" cultivated by various spiritual practices relates to the 81-fold "mystery" of Taoism and its elusive coherence.

From the perspective of memorability and pattern coherence, a useful guide to any response is that the factors of 81 are  $3^4$ , whereas those of 108 are  $2^2 \times 3^3$ . Alternatively 108 is  $81 + 27$  (namely  $3^4$  plus  $3^3$ ). Also intriguing is that a circlet of mala beads may be composed by some fraction of 108, as with 72 (namely  $2^3 \times 3^2$ ) or 54 (namely  $2^2 \times 3^2$ ). Buddhism may recognize 72 types of mandala.

Again it is then curious that Western traditions, as noted earlier, have chosen to articulate a 72-fold pattern of recognized "angels" and "demons" ([Hyperbolic reframing of the Demonique and Angelique of tradition](#), 2016). With respect to the Abrahamic religions, as noted by Erran Bar Shushan ([The Angels of God](#)), belief in angels is one of the six pillars of the Islamic faith, without which there is no faith ([Islamic view of angels](#)). Angels have been embraced by Christianity, like no religion before it (see *Wikipedia: Christian angelic hierarchy*). Forbidden as they are to create any image of any such entities, Judaism makes use of Hebrew letters in order to represent deity and the aspects of deity (see *Wikipedia: Angels in Judaism*). This is evident from the value variously attached to angels. Equivalent entities, termed otherwise, are recognized by other major religions of the world, notably as the [devas of Buddhism](#) and the [devas of Hinduism](#).

Noteworthy in this respect are the "explicit" names of God in the tradition of Judaism where the [Shem HaMephorash](#) may refer to a name of God composed of either 4, 12, 22, 42, or 72 letters (or triads of letters) cultivated in Kabbalah (Vered Thalmeier, [72 Names of God: wisdom of the Kabbalah](#), 2020). (Given its fundamental nature, there is considerable irony to the questionable correspondence of such triads with the triplets of the 64-fold pattern of nucleotide codons in the genetic code).

Mathematics has been deemed helpful to speculative clarification of such complex subtleties (Rupert Sheldrake and Matthew Fox, [The Physics of Angels: exploring the realm where science and spirit meet](#), 2014; Gregory Bateson and Mary Catherine Bateson, [Angels Fear: towards an epistemology of the sacred](#), 1988; Nick Stafford, [A Mathematical Theory for the Existence of Angels and its Practical Application in the Modern World](#), *Medium*, 23 January 2022; Jack Tanner, [The Mathematics of Angels](#), 2018).

Configurative mapping of distinctions: Following the earlier effort to configure the larger sets, there is a case for recognizing that "explicit" may indicate the possibility of mapping the "names of God" onto polyhedra in 3D -- with those that cannot be so "named" as being "implicit" through the possibility of only mapping them in 4D. Implicit may then be associated with the secretive nature of such "names" -- beyond normal comprehension and therefore not to be spoken. Again it should be emphasized that the question here is not how "God" might be named, but rather how an all-encompassing array of distinctions can be rendered comprehensible.

The possibility of configuring a set of 81 coherently for mnemonic purposes was the focus of the previous argument, recognizing that this probably required 4D rather than 3D (*Indicative visualization of 81-fold patterns in 4D*, 2024). Configuring a 72-fold set was also considered earlier (*Polyhedral configuration of 72-fold array of strategic elements in 3D*, 2024). It can then be asked how 108 might be represented in 3D, 4D, or more -- in contrast to the conventional 2D representation as a circle of prayer beads -- traversed linearly, as in any recitation of the "names of God". How then to comprehend the coherence of "108"?

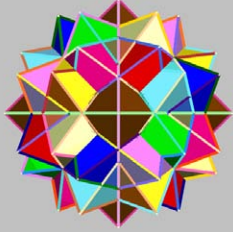
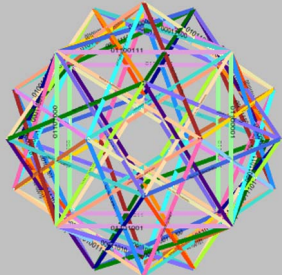
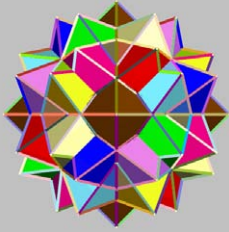
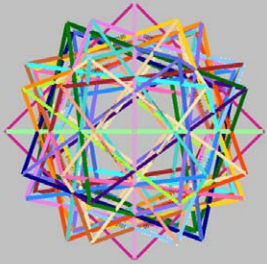
A point of departure is to consider the 3 semi-regular polyhedra in 3D with 108 edges -- there are none with 108 vertices. Two of the three are **polyhedral compounds**. The three are presented below in the left-hand portion of the table, with their corresponding **geometric duals** in the right-hand portion. In each case they are shown with faces solid or transparent. The Stella 4D facility was used to colour edges distinctively according to the **great circles** of which they are indicative -- with other colouring conventions possible.


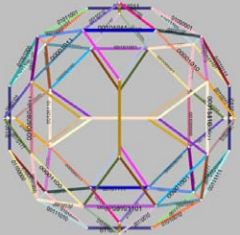
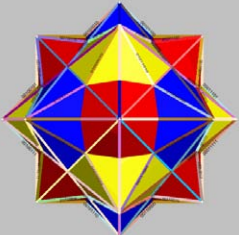
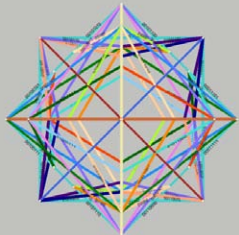
Alternative presentations are feasible with that application, notably different modes of morphing between duals. The sense of "duality" -- and a cognitive interpretation of morphing -- invites reflection on the fundamental alternative between "peaceful" and "**wrathful**" deities (or between "angelic" and "demonic").

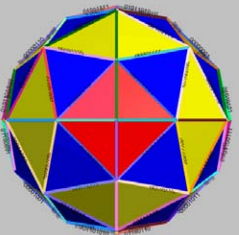
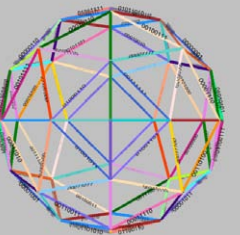
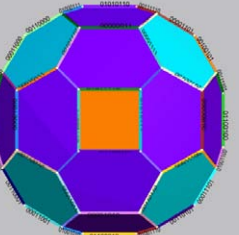
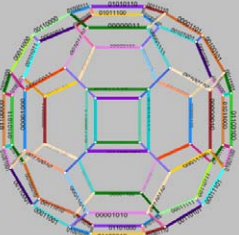
In presenting the animations below, consideration was given to the possibility of associating 108 "names" with the 108 edges in each case. An obvious possibility is to do that with the Sanskrit form of the names as being the most appropriate to the tradition with which that pattern is primarily associated. Whilst indeed feasible with further effort, the alternative "names" considered for labelling edges (visible when the images or animations are enlarged, especially in the case of some wireframe variants) were:

- **binary**: 8-bit byte format: implemented with a (surplus) leading zero, instead of a 7-bit format (108 as 1101100)
- **ternary** numbers (108 as 11000)
- **senary** numbers (108 as 300)
- **octal** (108 as 154)
- **duodecimal** (108 as 90)

Rendering such presentations in interactive virtual reality was also envisaged (possibly with associated sound files). With respect to the reference to 72-fold and 54-fold variants of ritual chants, aided by corresponding circlets of mala beads, it is noteworthy how the following polyhedra may feature those patterns (as vertices or faces).

Associating 108 "Names of God" with Edges of Selected Polyhedra (or their duals) (generated with the aid of <a href="#">Stella 4D</a> )			
Compound of 8+1 Cubes (108 edges, 72 vertices, 54 faces, 9 parts )		Compound of 8+1 Octahedra (108 edges, 54 vertices, 72 faces, 9 parts )	
solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )	solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )
			

Compound of 3 Truncated cubes (108 edges, 72 vertices, 42 faces, 3 parts )		Compound of 3 Truncated cubes (dual) (108 edges, 42 vertices, 72 faces, 3 parts )	
solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )	solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )
			

3-Frequency octahedral geodesic sphere (108 edges, 38 vertices, 72 faces, 1 part )		3-Frequency octahedral geodesic sphere (dual) (108 edges, 38 vertices, 72 faces, 1 part )	
solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )	solid-faced ( <a href="#">animation</a> )	wire-frame ( <a href="#">animation</a> )
			

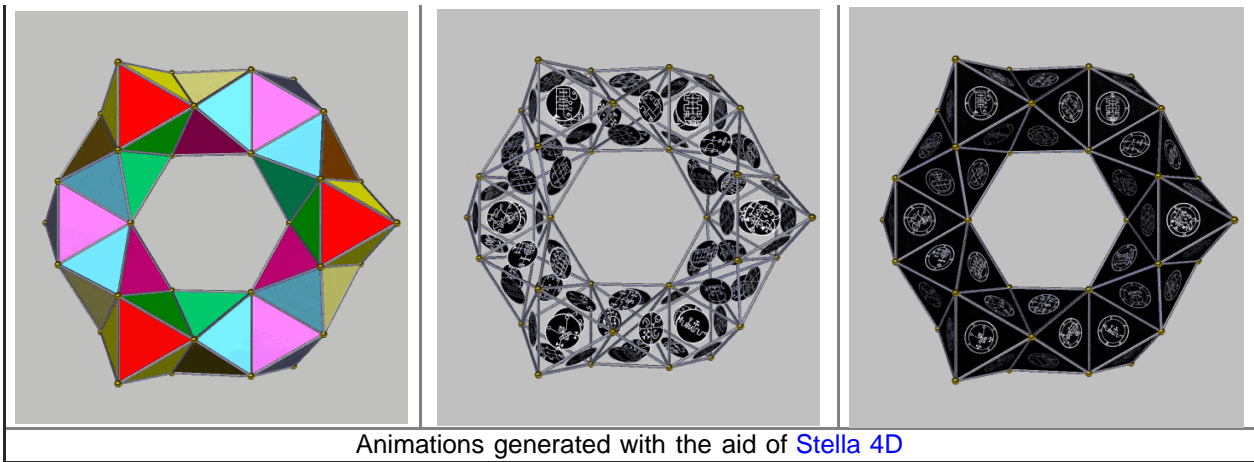
The contrasting patterns above invite reflection on the alternative modes through which the complexity of 108 distinctions might be comprehended -- in the light of the relative appeal or "interestingness" of those patterns (*Relative interestingness and boringness of forms of coherence*, 2022).

Given the argument for higher dimensionality, of provisional interest is discovery of the "triangular duoprismatic tetraswirlchoron" with 24 triangular antiprism cells (in two perpendicular sets of 12 cells each) and 108 tetrahedra (*Isogonal Polychora Project: n-n duoprismatic compound swirls*).

## Unusually succinct interweaving of systemically significant symbolic patterns?

Of unexpected potential relevance is the configuration variously presented in the animations below. This has been named as the octahex ring by Glen Whitney (*Math Monday: Hole New Polyhedra*, National Museum of Mathematics, 2017). Much more complex variants -- as *Stewart Toroids* -- are indicated by Robert Webb (*A Genus-41 Stewart Toroid*)

Memorable mapping possibilities of an octahex ring of 12 octahedra Configuring 108 edges (20 types) with 72 faces (12 types) and 36 vertices (6 types)		
72 faces coloured by 12 face types	Association of 72 "demonic" sigils with faces	Association of 72 "demonic" sigils with faces



The comments by Whitney (with regard to the polyhedral ring structure and the central hole) invite further consideration in the light of the continuing debate regarding the so-called [doughnut model](#) ([Kate Raworth, \*Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist\*, 2017](#)), as separately discussed ([Recognizing the Psychosocial Boundaries of Remedial Action: constraints on ensuring a safe operating space for humanity, 2009](#); [Exploring the Hidden Mysteries of Oxfam's Doughnut: recognizing the systemic negligence of an Earth Summit, 2012](#))

The traditional pattern of 72 problematic (wicked, demonic) strategic functions, complemented by pattern of 72 remedial (angelic) functions -- as discussed earlier -- could be usefully mapped for mnemonic purposes onto the 72 faces of the ring formation. The animation could allow for alternating between the two mappings.

The polyhedron is a compound of 12 octahedra -- of mnemonic value in relation to the many 12-fold articulations of strategic relevance ([Checklist of 12-fold Principles, Plans, Symbols and Concepts, 2011](#)). It is of particular interest in that any pattern of 108 distinctions can be associated with its edges, as with names of deity or related recitation on circlets of beads ([Designing Cultural Rosaries and Meaning Malas to Sustain Associations within the Pattern that Connects, 2000](#)). Of further potential interest is the manner in which the edges interweave in cycles around the structure. The edges are of 20 distinct types, recalling the tendency to distinguish 20-fold patterns of strategies ([Requisite 20-fold Articulation of Operative Insights?, 2018](#)).

As a mnemonic nexus of potential strategic significance, the ring structure of 36 vertices also merits exploration in the light of 36-fold patterns variously deemed to be of relevance to governance. These are discussed separately from various perspectives, notably as a means of interrelating the array of narratives, plots, agendas, stories and conspiracy theories ([Thirty-six Dramatic Situations faced by Global Governance?, 2022](#)). In terms of memorability, the dramatic situations are those to which people are notably exposed through the daily diet of news and entertainment, whether or not the pattern as a whole is comprehensible.

With respect to the pattern of 36 dramatic situations, and especially from a governance perspective in this period, how might this relate to the Chinese insight into [36 stratagems](#)? This is a unique collection of ancient Chinese proverbs that describe some of the most cunning and subtle war tactics, presented metaphorically as "luring the tiger":

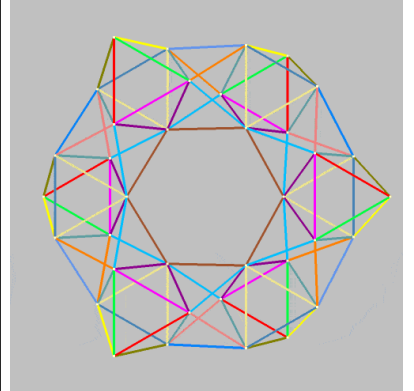
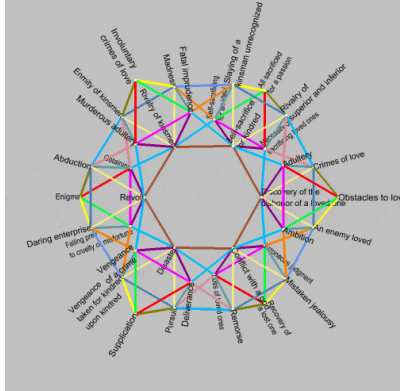
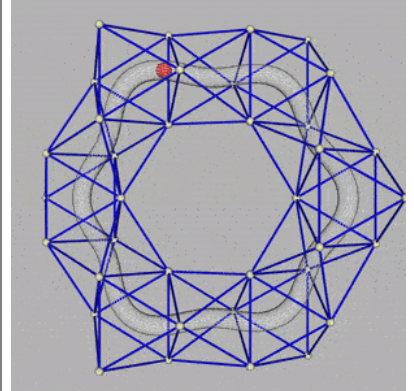
- Yuan Gao: [Lure the Tiger Out of the Mountains: how to apply the 36 stratagems of Ancient China to the Modern World](#) (1993)
- Ma Xiaochun: [The Thirty-six Stratagems Applied to Go](#) (1996)
- Harro von Senger: [The 36 Stratagems for Business: achieve your objectives through hidden and unconventional strategies and tactics](#) (2005)
- Peter Taylor: [The Thirty-Six Stratagems: a modern interpretation of a strategy classic](#) (2013)

In addition to that Chinese example, other traditional 36-fold articulations are noted by *Wikipedia*.

The configuration invites further consideration as indicative of processes which could be associated with it. The animation on the left below highlights the 20 distinctive types of within the pattern of 108 edges. Of potential interest is whether subsets of edge types, or particular combinations of edges, could be understood as indicative of circuits or pathways around the configuration -- effectively as contrasting "metabolic pathways", as separately discussed (*In quest of metabolic pathways of global governance?* 2020; *Pattern of value interrelationships implied by "metabolic pathways"?* 2018).

The central animation below offers an indication of how the 36 "dramatic situations" might be associated with the pattern of 36 vertices -- with the implication that "narratives" might interrelate them as suggested by the hypothetical pathways of the animation on the left. The titles of the familiar "situations" are those of *Georges Polti's 36 Dramatic Situations (Changing Minds)*, as reproduced separately (*Dramatic situations in narrative and stories -- plus or minus thirty-six?* 2022). Of obvious interest is how these might relate in cognitive and systemic terms to the pattern of 36 stratagems of Chinese tradition, each typically described metaphorically. How the pattern invites comprehension as a whole is clearly of relevance to the challenge of global governance. Given the familiarity engendered by the ritual practice of recitation of the 108 "edges", how this might "translate" into intuitive familiarity with the pattern as a whole is a matter for further consideration.

The animation on the right below highlights the possibility of pathway through the configuration of 12 octahedra -- through their centres -- with the implication that it is their contrasting which ensure the coherence and viability of that pathway. The design challenge is reminiscent of that required for the electromagnetic control of plasma in a nuclear fusion reactor, as discussed separately (*Enactivating a Cognitive Fusion Reactor: Imaginal Transformation of Energy Resourcing (ITER-8)*, 2006). Of some relevance in that context is recognition of the challenge of controlling "snake-like" instabilities in the circular dynamic, given their association to the archetypal *Ouroboros (Integrating Ouroboros and Yi Jing as Fundamental Symbols in 3D*, 2021; *Circulation of the Light: essential metaphor of global sustainability?* 2010).

Potential mapping applications of polyhedral octahex ring		
108 edges distinctively coloured as 20 edge types	Association of 36 vertices with "dramatic situations" (indicative)	Animation of sphere passing along a twisting pathway through the configuration
		
Animations generated with the aid of <a href="#">Stella 4D</a>		Adaptation of animation by Sergey Bederov of Cortona3D

**Question to ChatGPT:** I have a polyhedral ring composed of 12 octahedra, with 108 edges (20 types), 36 vertices (6 types), and 72 faces (12 types). Can you suggest how subsets of edges might form pathways spiralling around the configuration in comprehensible patterns

Creating pathways that spiral around a polyhedral ring composed of 12 octahedra requires an understanding of the geometric configuration and connectivity between the octahedra. Given the complexity, with 108 edges of 20 types, 36 vertices of 6 types, and 72 faces of 12 types, we'll approach this by considering the symmetry and the spatial arrangement of the octahedra.

Here are some suggestions for forming spiraling pathways around the configuration:

- 1. Identify Symmetry Axes: First, identify the axes of symmetry through the arrangement. These axes can guide the creation of spirals that maintain a coherent pattern as they wrap around the structure. Given the polyhedral ring's specifications, it's likely that there are multiple axes around which spirals can symmetrically loop.
- 2. Edge Classification and Selection: Given the 20 types of edges, classify them based on their orientation relative to the symmetry axes. Select edges that are parallel or nearly parallel to these axes for the spirals. This selection ensures the pathways will follow a coherent direction as they spiral around the configuration.
- 3. Vertex Connectivity: Utilize the 6 types of vertices as pivot points for the spirals. Vertices where more edges converge are strategic points to transition the pathway from one octahedron to the next or to change the direction of the spiral. Mapping out these vertices can help in visualizing the pathway's progression.
- 4. Pathway Patterns: Develop pathway patterns based on edge and vertex selection. For a simple spiral, choose a starting edge and follow connected edges that gradually ascend or descend around the ring. For more complex patterns, consider alternating between different types of edges or incorporating zig-zag motions between vertices.
- 5. Spiral Direction and Layering: Decide on the direction of the spiral (clockwise or counterclockwise) and whether the pathway will be single-layered or multi-layered. Multi-layered spirals can add depth to the configuration and create more intricate patterns. Ensure that the transitions between layers are smooth and logical.
- 6. Simulation and Visualization: If possible, use 3D modeling software to simulate the pathways. This tool can help in visualizing the spirals and ensuring they follow a comprehensible and aesthetically pleasing pattern. Adjustments can be made more easily in a virtual environment before finalizing the design.
- 7. Iterative Design: Given the complexity, the design process will likely be iterative. Start with simpler spirals and gradually increase complexity. Experiment with different edge types and pathways, noting which configurations produce the most visually appealing and comprehensible patterns.

The creation of these pathways requires a blend of geometric understanding, creative design, and possibly computational tools for visualization and optimization. The final design should ideally highlight the unique structure of your polyhedral ring, creating a visually stunning and geometrically interesting object.

**Question to ChatGPT:** Having experimented unsuccessfully with such possibilities to some degree, further consideration can be sought from the use of such pathways for mapping psychosocial analogues to metabolic pathways. Of potential relevance, for example, is any mapping of the 36 vertices in relation to both the 36 stratagems of China (and their relevance in the Game of Go) and the 36 "dramatic situations" identified as familiar by Polti. The 108 edges are of course a major feature of popular mala bead recitation of the names of deity. The question is how these indications might be reconciled in memorable pathways of relevance to strategic coherence

Integrating psychosocial analogues with the geometric structure of your polyhedral ring presents a fascinating and complex challenge. By considering the 36 vertices in relation to both the 36 stratagems of China (and their application in the game of Go) and the 36 "dramatic situations" identified by Georges Polti, along with the significance of the 108 edges akin to mala bead recitation, you're essentially seeking to create a multidimensional mnemonic device that not only serves as a visual and structural representation but also embodies strategic and narrative coherence. Here's how these elements might be reconciled into memorable pathways:

- Mapping the 36 Vertices
  - Stratagems and Dramatic Situations: Each vertex can be associated with one of the 36 stratagems and one of Polti's dramatic situations. This dual mapping allows each point on the polyhedral ring to represent a specific strategic or narrative principle. The challenge is to ensure that each vertex's dual meanings harmonize or create meaningful juxtapositions that can enhance strategic thinking or storytelling.
  - Visualization and Symbolism: For each vertex, create symbols or icons that encapsulate the essence of the corresponding stratagem and dramatic situation. These symbols can serve as visual cues to facilitate the recall of the strategic or narrative

principle represented by each vertex.

- The 108 Edges as Pathways
  - Mala Bead Recitation Analogy: Just as mala beads are used for meditation and recitation, the 108 edges can represent a journey through various states of consciousness, strategic thinking, or narrative exploration. The edges could symbolize transitions between stratagems, dramatic situations, or a combination of both, reflecting the interconnectedness of different strategies and narratives.
  - Creating Pathways: Develop pathways that link vertices in sequences that reflect logical or thematic progressions of stratagems and dramatic situations. These pathways can be designed to mimic the flow of a game of Go, where strategic positioning and territory control mirror the interplay of different strategies and narratives.
  - Memorable Patterns: Integrate patterns that reflect the cyclical nature of mala bead recitation, such as repeating certain sequences of stratagems or dramatic situations to reinforce their memorability. These patterns could also mirror strategic or narrative cycles, such as the rise and fall of fortunes in a story or the ebb and flow of advantage in strategic contexts.
- Integrating the Elements for Strategic Coherence
  - Narrative and Strategic Frameworks: Use the frameworks of the 36 stratagems and Polti's dramatic situations as a guide for creating comprehensive pathways that span the entire structure. These pathways can be designed to tell a story or outline a strategic journey, with each step marked by a vertex and its associated principles.
  - Interactive Exploration: Consider the polyhedral ring as a three-dimensional board game or narrative exploration tool. Players or users could navigate the structure, making strategic or narrative decisions at each vertex, guided by the associated stratagem and dramatic situation.
  - Educational and Reflective Tool: Beyond its complexity, the polyhedral ring can serve as an educational tool for learning about the 36 stratagems, Polti's dramatic situations, and their applications in strategic thinking and storytelling. It can also serve as a reflective tool for meditation, allowing users to contemplate the interconnectedness of strategies, narratives, and the cyclical nature of life and conflict.

Incorporating these psychosocial analogues into the polyhedral ring's structure offers a rich, multi-layered approach to understanding and navigating complex strategic and narrative landscapes. The key to success in this endeavor lies in the careful selection and integration of symbols, pathways, and patterns that resonate with the user, fostering deep engagement with the underlying principles.

**Question to ChatGPT:** Reference has been made in this exchange to George Polti's set of 36 dramatic situations and to the Chinese set of 36 stratagems (whose relevance to the Game of Go has been noted). Is it possible to detect correspondences between these two sets -- and to recognize the manner in which they might be indicative of memorable systemic pathways. Given the skills of AI in Go, is there any record of the use of the 36 stratagems in training AI.

Exploring potential correspondences between Georges Polti's 36 dramatic situations and the Chinese 36 stratagems, and their relevance for creating memorable systemic pathways, involves diving into the thematic and strategic essence of both sets. While Polti's situations focus on universal narrative themes that drive human stories, the 36 stratagems offer tactical approaches often used in warfare, politics, and by extension, games like Go, where strategy plays a pivotal role. Despite their different contexts, both sets encapsulate patterns of human behavior and strategic thought that can indeed intersect and offer insights into complex interactions and decisions.

- Detecting Correspondences: To detect correspondences between Polti's dramatic situations and the 36 stratagems, one would need to analyze the underlying principles and objectives of each set:
  - Common Themes: Both sets explore themes of conflict, resolution, ambition, strategy, deception, and human relationships, albeit from different angles. For example, a stratagem focusing on deception and surprise could relate to a dramatic situation involving treachery or a secret being discovered.
  - Strategic and Narrative Dynamics: By examining the strategic goals behind a

stratagem and the narrative thrust of a dramatic situation, one can identify parallels in how obstacles are approached and overcome, whether through cunning, strength, sacrifice, or alliance.

- Indicative of Memorable Systemic Pathways: The correspondence between dramatic situations and stratagems could serve as a foundation for designing systemic pathways that are both memorable and effective:
  - Storytelling as a Strategic Tool: Embedding strategic lessons within narrative contexts can enhance memorability and applicability. For instance, a pathway designed around the theme of overcoming adversity might combine a relevant stratagem with a dramatic situation that illustrates this theme, such as "Disaster" (Politi) with "Besiege Wei to Rescue Zhao" (stratagem), emphasizing indirect approaches to solving problems.
  - Learning and Decision-Making Frameworks: By mapping these correspondences onto decision-making frameworks or learning models, individuals and organizations can navigate complex scenarios more effectively. This approach leverages the narrative to internalize strategic principles, much like how parables and fables have been used historically to impart wisdom.
- AI and the 36 Stratagems:
  - Regarding the use of the 36 stratagems in training AI, particularly in the context of games like Go, there's no widely cited record of these stratagems being explicitly used as a training dataset or framework. AI models like AlphaGo develop their proficiency by playing numerous games against themselves and learning from vast databases of human-played games. They optimize their strategies through reinforcement learning, a process that doesn't explicitly teach the AI about human stratagems but rather allows it to discover efficient strategies through trial and error.
  - However, the principles underlying the 36 stratagems and similar strategic frameworks could implicitly emerge in the AI's gameplay as it learns to recognize and apply the most effective tactics for given situations. AI's capability to identify and exploit patterns could lead to strategies that resemble those found in the 36 stratagems, even if the AI isn't directly trained on them. The exploration of explicit incorporation of such stratagems into AI training could offer fascinating insights into strategic thinking and its application in complex decision-making environments.

The intersection of narrative situations, strategic frameworks, and AI capabilities presents a rich field for further exploration, potentially offering novel approaches to understanding and navigating the complexities of human and AI interaction, strategic planning, and storytelling.

A 36-fold pattern variously recognized invites further reflection in the light of the much-studied "[thirty-six officers problem](#)" and, more generally, that of [mutually orthogonal Latin squares](#). Curiously it may also relate to detection of analytical criteria (Stefan Schandelmaier, et al, [A systematic survey identified 36 criteria for assessing effect modification claims in randomized trials or meta-analyses](#), *Journal of Clinical Epidemiology*, 113, September 2019). In the light of the challenges of classifying potential failures of viable systems, more speculative is the possibility that the relevant systemic insight is associated with  $2 \times 36$ , as discussed separately ([Mnemonic clues to 72 modes of viable system failure from a demonic pattern language](#), 2016).

**Question to ChatGPT:** In an earlier response you precariously declined to suggest any specific systemic correspondences between the 36 dramatic situations and the 36 Chinese stratagems. Are you nevertheless able to suggest speculatively a tentative set of correspondences. The possibility is of further interest in the light of the mathematical challenges of the much-studied "thirty-six officers problem" and the identification of 36 criteria for assessing effect modification claims in randomized trials or meta-analyses

Creating a speculative set of correspondences between Georges Politi's 36 dramatic situations and the Chinese 36 stratagems is an intriguing intellectual exercise that blends narrative theory with strategic thinking. The challenge lies not just in the thematic alignment but also in respecting the unique cultural and historical contexts from which each set arises. Given these considerations, let's embark on a speculative, creative endeavor to explore potential alignments between these two sets, keeping in mind that these correspondences are interpretative and intended to inspire further

thought rather than definitive mappings.

### Speculative Correspondences

- Supplication (Polti) with Hide the Dagger Behind a Smile (Stratagem): Both involve situations where one party seeks mercy or help from another, potentially with underlying intentions.
- Deliverance with Besiege Wei to Rescue Zhao: Situations of rescue or relief from a threat, using indirect methods or distractions.
- Crime Pursued by Vengeance with Kill with a Borrowed Knife: The act of seeking revenge or justice, possibly through the use of another's hand or resources.
- Vengeance Taken for Kindred upon Kindred with Loot a Burning House: Exploiting a situation of internal conflict or turmoil within a group or family for personal gain.
- Pursuit with Make a Sound in the East, Then Strike in the West: The dynamics of chase and escape, with the pursuer using deception and diversion to capture the target.
- Disaster with Create Something from Nothing: Facing a calamitous event and the need to innovate or fabricate solutions to survive or overcome adversity.
- Falling Prey to Cruelty or Misfortune with Cross the Sea Under Camouflage: Enduring hardship or misfortune, with survival depending on stealth or disguising true intentions.
- Revolt with Openly Repair the Gallery Roads, But Sneak Through the Passage of Chencang: An uprising or rebellion, with strategies that involve misdirection or hidden maneuvers.
- Daring Enterprise with Steal the Beams and Replace the Pillars: Undertaking a risky or bold venture, where success requires clever substitution or undermining foundations in secrecy.
- Abduction with Exchange the Roles of Guest and Host: The act of kidnapping or taking someone against their will, where power dynamics are inverted or manipulated.

These speculative correspondences are meant to illustrate the potential for thematic and strategic resonance between Polti's dramatic situations and the Chinese stratagems. They highlight how narrative elements can intersect with tactical approaches, offering a rich tapestry for exploration in various fields, including literature, game design, strategic planning, and psychological studies.

The mention of the "thirty-six officers problem" and the identification of 36 criteria for assessing effect modification claims in randomized trials or meta-analyses adds another layer of intrigue to the number 36, suggesting a broader symbolic or structural significance that could be explored in diverse contexts. These mathematical and methodological frameworks provide yet another dimension through which the interplay of narrative and strategy can be examined, potentially revealing deeper insights into the patterns and principles that underlie human thought and behavior.

**Question to ChatGPT:** Given the recognized relevance to the Game of Go, and the demonstrated skills of AI in that game, at what stage is it to be expected that AI will be able to suggest coherent mappings rather than procedures whereby they might be elicited otherwise. The question follows from the acknowledged ability of AI to engender new materials and molecular configurations

The evolution of AI in complex decision-making and creativity, as demonstrated in games like Go and in fields such as material science, points towards a future where AI could indeed suggest coherent mappings directly, integrating complex datasets and abstract concepts. The leap from procedural guidance to generating innovative, coherent mappings involves several advancements and considerations:

- Current State: AI in Games and Creativity:
  - Games like Go: AI, notably through algorithms like AlphaGo, has demonstrated superior skill in Go by learning from vast datasets of games and through reinforcement learning, where the AI plays against itself to improve. This process does not directly translate to creating mappings but shows AI's capability in strategic thinking and pattern recognition.
  - Material Science and Design: AI has been used to predict new materials and molecular configurations by analyzing patterns in data, learning from known chemical properties, and applying these to generate predictions about new materials. This

involves understanding complex relationships and predicting outcomes based on vast datasets.

- Transition to Generating Coherent Mappings
  - Abstract Concept Integration: Moving from procedural suggestions to direct mappings requires AI to understand and integrate abstract concepts from diverse domains (e.g., psychosocial theories, strategic games, and narrative structures). This involves not just pattern recognition but also the creation of new patterns that make sense across these domains.
  - Advancements in AI Models: The development of more sophisticated AI models that can handle multi-modal data (text, symbols, visual cues) and understand their interrelations is crucial. These models would need to excel in associative thinking, drawing connections between seemingly unrelated concepts.
  - Interdisciplinary Training Data: The AI would need access to a broad and deep dataset encompassing game theory, narrative theory, psychology, and other relevant fields. The challenge lies not just in the quantity of the data but in its quality and the AI's ability to draw meaningful insights from it.
  - Creative and Strategic Reasoning: AI would need to advance in areas of creative and strategic reasoning, going beyond learning from existing data to generating novel, yet coherent, solutions to complex problems. This involves a leap from reactive to proactive AI, capable of innovation rather than just optimization.
- Expected Timeline: Predicting a precise timeline for when AI could achieve this level of sophistication is challenging due to the rapid pace of technological advancements and the varying degrees of complexity in the tasks. However, several indicators suggest that we are moving closer:
  - Rapid Advancements in AI: The pace of advancement in AI capabilities, particularly in deep learning and neural networks, suggests significant progress could be made within the next decade.
  - Interdisciplinary Research: Increased focus on interdisciplinary AI research, integrating cognitive science, computer science, and other fields, is laying the groundwork for more sophisticated AI models.
  - Custom AI Solutions: Development of custom AI solutions for specific interdisciplinary applications, including those that require complex mappings and integrations, is becoming more common.

In summary, while current AI excels in structured environments with clear rules and objectives, like Go, and in generating predictions within well-defined domains, such as material science, the ability to suggest coherent mappings across abstract and diverse domains is on the horizon. It will likely evolve as AI models become more advanced in understanding and integrating complex, abstract concepts, potentially within the next decade or so, depending on the pace of research and technological breakthroughs.

## Unexplored correspondence between yantras and graphs of uniform polytopes

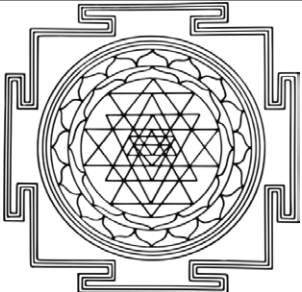
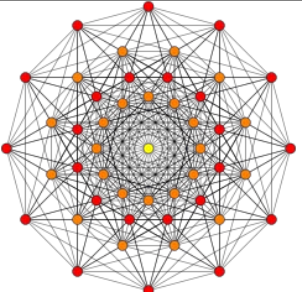
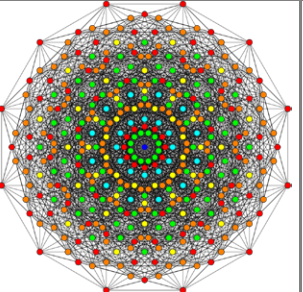
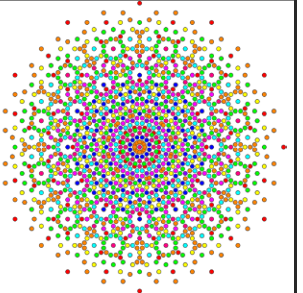
Curiously it is recognized that a degree of correspondence between the perspectives of science-based modalities focused on objective externalities and those of the arts and religion -- readily deprecated as subjective "internalities" (Jay Kapraff, [Connections: the Geometric Bridge between Art and Science](#), 1990). The relationship continues to be regularly evoked at the annual [Bridges Conference on Mathematics, Art, Music, Architecture, Culture](#) and in its proceedings.

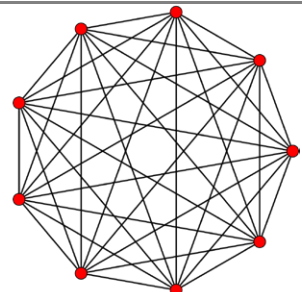
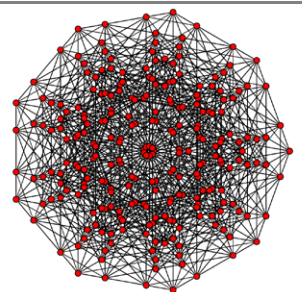
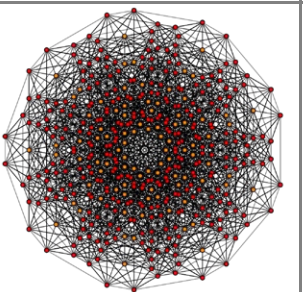
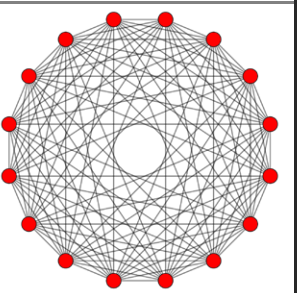
There is a particular degree of irony to the independent use by science and religion of centro-symmetric diagrams in 2D to represent complexity of the highest order. In science these are described as polytope graphs, whereas one of their forms long-cultivated by Hinduism is the [yantra](#) -- a geometrical diagram, mainly from the Tantric traditions of the Indian religions, and known to date back to 10,000 BC. These may be composed of triangles, squares, pentagrams, octagons and circles.

Corresponding to these yantras are the [polyhedral graphs](#) of science (as 2D representations of 3D forms), or more generally the polytopal graphs (as 2D representations of N-dimensional forms), as variously presented (Guillermo Pineda Villavicencio, [Polytopes and Graphs](#), 2024; G. M. Ziegler, [Graphs](#)

of Polytopes, Lectures on Polytopes, 152, 1995; Gil Kalai, *Polytope Skeletons and Paths*, Handbook of Discrete and Computational Geometry, 2017).

Curiously the visual correspondence between the forms studied by science and those of the yantra tradition have evoked very little reflection -- with the notable exception of [Stephen M. Phillips](#) who explores the interface between science and the transcendental as a "mathematical epiphany" (*Sacred Geometries and Their Scientific Meanings*), notably illustrating the correspondence between the renowned [Sri Yantra](#) and the much-cited [4<sub>21</sub> polytope](#). Phillips offers an indication of how the 10x24 division in sacred geometries and its realization in the 4<sub>21</sub> polytope represents the 240 roots of [E<sub>8</sub>](#), as any of several closely related [exceptional simple Lie groups](#), linear [algebraic groups](#) or Lie algebras of dimension 248) [illustration].

Comparable patterns of higher order complexity?			
Sri Yantra	Orthogonal projections in E6 Coxeter plane		
	4 <sub>21</sub>	Rectified 4 <sub>21</sub>	Birectified 4 <sub>21</sub>
			
N.Manytchkine, CC BY-SA 3.0, via Wikimedia Commons	Tomruen, Public domain, via Wikimedia Commons	By self - Own work Public Domain, <a href="#">Link</a>	By self - Own work, Public Domain, <a href="#">Link</a>

8-simplex	Cantellated 8-simplex	Pentellated 8-simplex	8-orthoplex
			
By Tomruen - Own work, Public Domain, <a href="#">Link</a>	By Tomruen - Own work, Public Domain, <a href="#">Link</a> ;	By Tomruen - Own work, Public Domain, <a href="#">Link</a>	By self - Own work, Public Domain, <a href="#">Link</a>

## Dimensionality of aesthetics, numerical biases and suspicion?

**Question to ChatGPT:** Your response is appropriate to my question about polyhedra. How would the response be framed in terms of the complexity, coherence and comprehensibility of a narrative, notably with respect to a remedial strategy

Framing a response to understand the complexity, coherence, and comprehensibility of a narrative, especially in the context of a remedial strategy, involves analyzing several key aspects of narrative structure and content. This approach can be applied to various forms of narrative, including organizational strategies, policy proposals, or even storytelling in a broader sense. Here's a structured way to analyze a narrative:

- Narrative Complexity:
  - Layering of Themes: Examine how multiple themes or ideas are interwoven within the narrative. More layers often mean higher complexity.
  - Character Development: In narratives involving characters, complexity can be gauged by character depth, evolution, and the interplay between characters.

- Plot Structure: Analyze the intricacy of the plot, including subplots, twists, and turns. A more complex plot has multiple intersecting storylines.
- Contextual Depth: Consider the extent to which the narrative incorporates and reflects broader social, historical, or cultural contexts.
- Narrative Coherence:
  - Logical Flow: Assess how logically the events or arguments within the narrative progress. Coherence is higher when each part logically follows from the previous.
  - Consistency: Check for consistency in the narrative's internal logic, character behavior, and thematic elements.
  - Resolution of Conflicts: In a remedial strategy, coherence is seen in how conflicts or problems are resolved or addressed throughout the narrative.
  - Integration of Elements: Evaluate how various elements (characters, themes, ideas) are integrated into a cohesive whole.
- Narrative Comprehensibility:
  - Clarity of Expression: Analyze the narrative's language for clarity and accessibility. Technical jargon, complex syntax, or ambiguous expressions can reduce comprehensibility.
  - Relatability: Consider how relatable the narrative is to its intended audience, including cultural and contextual relevance.
  - Explanatory Power: Assess how well the narrative explains or elucidates the concepts, situations, or strategies it addresses.
  - Engagement: A compelling narrative engages the audience, making it easier to understand and follow.
- Application to Remedial Strategy:
  - Problem Identification: In a remedial strategy, the narrative should clearly identify the problem or issue it addresses.
  - Proposed Solutions: Look at how solutions are presented, their feasibility, and their alignment with the identified problems.
  - Implementation Pathway: Analyze the narrative's clarity in outlining steps or measures for implementing the proposed solutions.
  - Anticipation of Challenges: A comprehensive narrative anticipates potential challenges or objections and addresses them.
- Feedback and Adaptation:
- Responsive to Feedback: A good narrative, especially in strategic contexts, adapts to feedback and new information.
- Evolution Over Time: Assess how the narrative evolves over time to stay relevant and effective in addressing the intended issues.

By examining these aspects, the complexity, coherence, and comprehensibility of a narrative, particularly in the context of a remedial strategy, can be effectively analyzed and understood. This structured approach ensures that the narrative is not only intricate and well-developed but also logical, clear, and practically applicable to the problems it aims to address.

**Question to ChatGPT:** The generic nature of the response tends to avoid what characterizes an engaging poem in which the elements are variously linked through rhyme and metaphor. This suggests that articulation of a comprehensible policy should have poetic characteristics -- or as a song should be memorably singable

Integrating poetic characteristics into the articulation of a policy, akin to crafting an engaging poem or a memorable song, is an innovative approach to enhance its comprehensibility and appeal. This concept aligns with the idea that rhythm, rhyme, metaphor, and other poetic devices can significantly aid memory and engagement. Here's how we can approach policy articulation using these elements:

- Rhythm and Cadence: Implementing a rhythmic flow can make a policy more engaging and easier to follow. Just as a poem or song has a certain tempo, a policy can be structured with a cadence that guides the reader or listener through its content smoothly.
- Rhyme and Repetition: Using rhyme and repetition can enhance memorability. In policy language, this could mean repeating key phrases or concepts in a rhythmic manner, much like a chorus in a song, to emphasize crucial points.

- **Metaphor and Imagery:** Employing metaphors and vivid imagery can make abstract policy concepts more tangible and relatable. Similar to how poetry uses imagery to evoke emotions and create vivid pictures, a policy can use metaphorical language to clarify and dramatize its messages.
- **Narrative and Storytelling:** Incorporating narrative elements can make a policy more engaging. Like a poem that tells a story, a policy can be framed as a narrative with a clear beginning, development, and conclusion, making it more relatable and compelling.
- **Simplicity and Clarity:** Poems and songs often express complex emotions and ideas in simple terms. Similarly, a policy should aim to convey its objectives and directives in clear, concise language.
- **Emotional Appeal:** Just as poetry and music can evoke emotions, a well-articulated policy can connect with its audience on an emotional level, making the content more impactful and persuasive.
- **Accessibility and Inclusivity:** A policy should be accessible to its intended audience, much like a poem or song is crafted to resonate with its listeners. This includes using language and references that are inclusive and understandable to a diverse audience.
- **Iterative Refinement:** Just as a poem or song might be revised and refined, policy development can be iterative. Feedback and responses from the intended audience can be used to fine-tune the language and presentation.
- **Visualization and Performance:** Consider the potential for visual or performance elements, akin to how poetry readings or musical performances bring content to life. This could involve presentations, infographics, or even multimedia elements to enhance engagement.

In essence, integrating poetic and musical qualities into policy articulation can make it more engaging, memorable, and effective. This approach recognizes the power of language and artistry not just in expressing ideas but in making them resonate and stick with the audience.

**Question to ChatGPT:** In quest of an index of complexity / coherence / comprehensibility, how would such measures apply to a poem and the challenges of readability. Should your responses embody such characteristics

Applying measures of complexity, coherence, and comprehensibility to a poem, and considering these factors in the context of readability, offers a unique lens through which to examine both poetry and informational content like my responses. Here's how we can approach this:

- **Complexity in Poetry:**
  - **Vocabulary and Syntax:** Complex poems often use sophisticated vocabulary and intricate syntax. The use of unusual words or complex sentence structures can increase the intellectual challenge for the reader.
  - **Thematic Depth:** Complexity is also derived from the depth of themes and the layers of meaning within a poem. Multiple interpretations and rich symbolism contribute to a poem's complexity.
- **Coherence in Poetry:**
  - **Consistency of Theme and Tone:** A coherent poem maintains a consistent theme and tone throughout. Even if a poem's structure is unconventional, its thematic elements should tie together into a unified whole.
  - **Narrative Flow:** While not all poems are narrative, those that are should have a clear, logical progression, whether in storytelling or in the development of an idea.
- **Comprehensibility in Poetry:**
  - **Clarity of Imagery and Metaphor:** Effective poems use imagery and metaphor in a way that is vivid and accessible, even if the meaning is open to interpretation.
  - **Balance of Abstract and Concrete:** Good poetry often strikes a balance between abstract concepts and concrete images or language, making it easier for readers to relate to and understand the poem.
- **Readability Challenges in Poetry:**
  - **Ambiguity:** Poetic ambiguity can be both a strength and a challenge. It invites various interpretations but can also make a poem less immediately comprehensible.
  - **Cultural and Historical Context:** Some poems require understanding of specific cultural or historical contexts, which can affect readability for a broader audience.

#### Application to My Responses:

- **Adopting Poetic Characteristics:** While my responses aim to be informative and clear, incorporating poetic characteristics like rhythmic flow, strategic use of metaphors, and thematic consistency could enhance their engagement and memorability.
- **Clarity and Accessibility:** The primary goal of my responses is to provide accurate and accessible information. Balancing poetic elements with clarity and straightforwardness is key.
- **Engagement and Elegance:** Using poetic techniques to make responses more engaging and elegant can be beneficial, as long as it doesn't compromise the clarity of information.

In summary, analyzing a poem through the lenses of complexity, coherence, and comprehensibility can deepen our understanding and appreciation of it. When it comes to informational content like my responses, the goal is to communicate clearly and effectively, but elements of poetic style can be incorporated to enhance readability and engagement without sacrificing clarity.

**Question to ChatGPT:** The arguments presented for conceptual memorability have avoided reference to the manner in which particular configurations are favoured or challenged in different cultures as being auspicious or not. The most typical examples are 8, as favoured in Chinese cultures, and 13, as variously deprecated. Can you offer further comment from that perspective

The cultural perceptions of numbers and their auspicious or inauspicious connotations indeed play a significant role in conceptual memorability. Different cultures have unique interpretations of numbers based on historical, linguistic, and cultural factors, influencing how certain numerical configurations are favored or avoided. Let's delve into this aspect:

- **Number 8 in Chinese Culture:**
  - In Chinese culture, the number 8 (八, bā) is considered highly auspicious due to its phonetic similarity to the word for "prosper" or "wealth" (發, fā) in Chinese. The pronunciation of '8' sounds like the word for "grow" or "prosper."
  - This favoritism is evident in various aspects of life, from architecture to technology, and even in the scheduling of significant events. For example, the Beijing Olympics in 2008 started at 8 seconds and 8 minutes past 8 PM on the 8th day of the 8th month.
  - Numbers involving 8 are often sought after for addresses, phone numbers, and other identifiers.
- **Number 13 in Western Cultures:**
  - Conversely, the number 13 is often considered unlucky in many Western cultures. This superstition, known as triskaidekaphobia, has historical and religious roots, including associations with the Last Supper (where Judas, the betrayer of Jesus, was supposedly the 13th guest) and Norse mythology.
  - The aversion to 13 can be seen in the omission of the 13th floor in many buildings, avoidance of 13 in flight numbers, and hesitation to hold events on the 13th of a month, especially if it's a Friday.
- **Cultural Variations and Their Impact:**
  - These cultural preferences and aversions significantly impact how numbers are perceived and remembered in different societies. For example, in a culture where 8 is considered lucky, sequences or patterns involving 8 might be more easily remembered and favored.
  - Conversely, in cultures with aversions to numbers like 13, there might be a tendency to avoid or even forget sequences involving such numbers.
- **Influence on Design and Decision Making:**
  - These cultural perceptions can influence everything from architectural design to business decisions. For instance, companies may choose product model numbers, prices, or quantities based on these beliefs to appeal to specific cultural groups.
- **Global Considerations:**
  - In an increasingly globalized world, understanding these cultural nuances becomes essential, especially for multinational corporations and organizations operating across different cultures.

Besides the examples of numbers 8 and 13, various cultures around the world attribute special significance to different numbers, often based on linguistic, historical, or religious reasons. Here are

some additional examples:

- Number 4 in East Asian Cultures: In many East Asian cultures, particularly in China, Japan, and Korea, the number 4 is considered unlucky because it sounds similar to the word for "death" in these languages. This superstition leads to avoidance of the number 4 in addresses, floor numbers, and even in product branding.
- Number 7 in Western Cultures: The number 7 is often considered lucky in many Western cultures. Its positive connotations can be traced back to Biblical references (like the seven days of Creation) and its presence in nature (like the seven colors of the rainbow). It is frequently associated with good luck and magical qualities.
- Number 9 in Norse and Japanese Cultures: In Norse mythology, the number 9 is considered sacred, appearing frequently in stories and legends. In Japanese culture, the number 9 can be considered unlucky as it sounds similar to the word for "suffering." However, it's also seen as lucky in other contexts.
- Number 3 in Western and Christian Cultures: The number 3 is often associated with good fortune in Western cultures. In Christianity, it represents the Holy Trinity. In general folklore and storytelling, it appears in patterns (like three wishes or three trials).
- Number 12 in Various Cultures: The number 12 carries significant weight in various cultures and religions. There are 12 months in a year, 12 signs of the zodiac, 12 tribes of Israel, and 12 Apostles of Jesus, making it a number with widespread positive associations.
- Number 5 in Chinese and Mayan Cultures: In Chinese culture, the number 5 is associated with the five elements (wood, fire, earth, metal, water), and thus has a holistic connotation. In Mayan culture, the number was associated with misfortune.
- Number 0 in Mathematical and Philosophical Contexts: The concept of zero has a special place in history, with profound philosophical and mathematical implications. It was a significant development in mathematics and is foundational in modern number systems.

In conclusion, cultural perceptions of numbers add another layer of complexity to the concept of memorability. They influence not only how numbers and patterns are remembered but also how they are used and perceived in various societal contexts. Understanding these cultural nuances is crucial for effective communication, marketing, and even in the design of products and services in a culturally diverse world. These cultural interpretations of numbers affect not only personal beliefs but can also influence broader societal practices, such as architecture, rituals, and business decisions. Understanding these cultural nuances is important, especially in a global context where interactions and communications cross cultural boundaries.

## Paradoxical existence of global cognitive constructs

It is clear that various assumptions can be made with regard to the degree of "existence" of constructs of dimensionality higher than that associated with physical reality. This is most strikingly evident in the case of the so-called [Monster group](#) of the highest order of symmetry detected by mathematics -- with its purported 196,884 dimensions (as noted above). To a lesser degree it is evident in the integrated understanding of reality purportedly framed by the 11 or 26 dimensions of string theory physics. Such assumptions can be framed as hypotheses, or set aside. It may then be asked to what extent people can meaningfully interact with such constructs, including those held to be disastrous ([Being Spoken to Meaningfully by Constructs](#), 2023; [Dynamics of Symmetry Group Theorizing: comprehension of psycho-social implication](#), 2008).

It is from such a perspective that the existence of "angels" and "demons" can be explored, especially as they may relate to remedial strategies and their problematic counterparts. The argument was introduced by reference to the strategic pillars held to be fundamental to collective action globally, if not to the belief systems of various traditions and ideologies. To what extent does a strategic pillar exist? Alternatively in what "space" can it be meaningfully held to exist?

The question has perhaps been most usefully framed in the light of insights into quantum reality by [Alexander Wendt](#) from an international relations perspective ([Quantum Mind and Social Science: unifying physical and social ontology](#), 2015). There the question is framed as to the degree to which nation states "exist", especially as implied by the boundaries between them.

The references above to "angels" and "demons" can be presented otherwise in the light of the geometry

by which they may be tentatively described -- whether or not this is meaningful to those who believe firmly in their existence. This can also be said of the remedial strategies and the "wicked problems" which they can be held to represent in some manner. Their association with "values", to which reference is most frequently made, further highlights how credibility is to be accorded to the existence of such subtleties.

Given the relatively complex configurations presented above, the argument could be developed in the light of the literature on the "geometry of angels" in spaces of higher dimensionality (Ralph Abraham and William Irwin Thompson, *The Geometry of Angels*, October 2015), discussed by David Titterington (*Disguised Geometry in Fra Angelico's Annunciation*, *Medium*, 6 January 2022). The matter has also been explored in terms of the "topology of angels" (Patricia Eichenbaum Karetzky, *The Image of the Winged Celestial and Its Travels along the Silk Road*, *Sino-Platonic Papers*, 225, 2012). The renowned renderings by Escher of the relation between angels and demons in hyperbolic space are a continuing focus of interest to mathematicians (*Mathematicians Seek to Unravel Mysteries Hinted at by M. C. Escher*, *Rutgers Today*, 2020).

Of relevance is the extent to which geometry "is" the language of angels (Richard Heath, *Sacred Geometry: Language of the Angels*, 2021; Nick Stafford, *A Mathematical Theory for the Existence of Angels and its Practical Application in the Modern World*, *Medium*, 23 January 2022). This would be consistent with various allusive discussions (Rupert Sheldrake and Matthew Fox, *The Physics of Angels: exploring the realm where science and spirit meet*, 2014; Gregory Bateson and Mary Catherine Bateson, *Angels Fear: towards an epistemology of the sacred*, 1988). The emergence of the strategically problematic merits discussion in the light of the "fall of the angels" (Jill M. Fitzgerald, *Rebel Angels: political theology and the fall of the angels tradition in Old English Literature*, University of Illinois, 2014)

There is great irony to the potential existential confusion (or conflation) of "angels" and "angles" -- a form of dyslexia evoked in poetry (Mary Talbot Fee, *Angels or Angles*, *Poem Hunter*, 2009; Richard Hinz, *Angels and Angles*, *Poem Hunter*, 2012). The confusion dates from what is alleged to be the first recorded pun (Steve Roberts, *Non Angli Sed Angeli*, *Medium*, 15 May 2019). This suggests that the much-cited fallacy of *misplaced concreteness*, whereby an abstraction is attributed a form of existence, could be appropriately complemented by a fallacy of "misplaced abstraction".

Misplaced abstraction could be understood as mistakenly attributing characteristics of existence in the physical realm to entities or constructs in higher dimensional spaces. Karl E. Weick, *The Poetics of Process: theorizing the ineffable in organization studies*, *Process, Sensemaking and Organizing*, 2010). William D. Hart argues that Slavoj Žižek is guilty of the fallacy of misplaced abstraction, namely the notion that historical-empirical questions can be addressed primarily, if not solely, on the level of abstract theory (*Can a Judgment Be Read? A Response to Slavoj Žižek*, *Nepantla: Views from South*, 4, 2003, 1). Chris Niebauer discusses both "fallacies" as inhibiting the possibility of peace (*Is physical reality the gateway to peace? Two errors that reflect this*, *YouTube*, 2023).

As emphasized by process philosophy, it is the rigidity of concreteness which inhibits comprehension of existential dynamics fundamental to hopeful anticipation of enduring viability (*Paradoxes of Durable Peace, Heaven and a Sustainable Lifestyle*, 2023).

The paradox of existence might also be suggested by any comparability between the 12 angels of Biblical tradition (guarding the "gates of heaven") and an articulation of the 12 types of angle. A possible relation between the two sets could be found in the argument that the set of angels -- in guarding the gateway to heaven -- are associated with the circular configuration of signs of the Zodiac. As such the angels can be understood as distinctive orientations consistent with their distinctive modalities.

As discussed separately with respect to reconciling complexity and simplicity through memorable metaphor (*Engaging with Insight of a Higher Order*, 2014), the gateway or portal so framed is then reminiscent of the remarkable exploration by Roberto Casati and Achille C. Varzi (*Holes and Other Superficialities*, 1994). This explores the borderlines of metaphysics, everyday geometry, and the theory of perception (as they summarize in the [entry on holes](#) in the *Stanford Encyclopedia of Philosophy*). They seek to answer two basic questions: Do holes really exist? And if so, what are they?

With respect to any portal, these might then evoke corresponding questions: Do angles exist? Do angels?

Given the contrast made earlier between complex configurations of orientations and circular representations of a strategic target or goal -- understood as a form of portal -- related questions might be asked regarding the manner in which a goal exists. With the goal framed by a complex of strategic orientations, perceived as a target it then takes the elusive form of "the light at then end of the tunnel" - with the illusion that may imply.

## Criteria for recognition and organization of memorable coherence

In a period in which the sense of global coherence is variously eroded, incoherence could be recognized as a fundamental concern -- unless it is systematically avoided. Assertions of unity despite evidence to the contrary -- or desperate appeals for unity -- then become a feature of a problematic dynamic with which chaos is variously associated. Paradoxically fundamental is the lack of any consensus on how unity is to be understood, however desirable it may be held to be -- and given the complementary preoccupation with requisite diversity (*The Consensus Delusion*, 2011). How memorable and sustainable is any sense of unity when it can be recognized -- whether individually or collectively (*Paradoxes of Durable Peace, Heaven and a Sustainable Lifestyle*, 2023)?

In the spirit of [Gareth Morgan's](#) much-cited *Images of Organization* (1986), contrasting forms of unity (potentially inviting recognition) might include -- or be called into question:

- a universal belief system, as variously promoted by competing religions -- with little detectable motivation to resolve their disagreements, and the violence to which they give rise ([Stephen Prothero, \*God is Not One: the eight rival religions that run the world and why their differences matter\*, 2010](#)).
- a universal [theory of everything](#) -- as purportedly sought by some academic disciplines (most notably physics), but with little insight into how their contrasting preoccupations might be reconciled
- a global strategic framework capable of addressing the complexity of the world's problems (transcending the preoccupation with global hegemony and the various tendencies to "extremism") -- potentially exemplified by the set of [Sustainable Development Goals](#) of the United Nations
- a global ethical framework -- as unsuccessfully advocated by the Parliament of the World's Religions ([Towards a Global Ethic: An Initial Declaration](#), 1993)
- a memorial to what might have been, or might be possible in the future -- in contrast to commemoration of disasters ([Towards Inclusive Multi-Massacre Memorials to Victims of Conflict](#), 2022)
- a unifying cultural artefact, process or narrative -- as with the [Mahabharata](#), [Der Ring des Nibelungen](#), the [Eurovision Song Contest](#), an anthem ([Reimagining Guernica to Engage the Antitheses of a Cancel Culture](#), 2022; [A Singable Earth Charter, EU Constitution or Global Ethic?](#) 2006)
- iconic individuals variously celebrated -- however questionably, as with Che Guevara and Nelson Mandela ([Taylor Swift has united the world: it won't happen again](#), *Sydney Morning Herald*, 5 February 2024; [What does Taylor mania mean for the globe?](#), *BBC*, 13 February 2024; [Cultural impact of Taylor Swift](#), *Wikipedia*)
- an encyclopedic compilation of knowledge -- as with the celebrated [Great Library of Alexandria](#) (and [modern efforts to recreate it](#)) or *Wikipedia* -- and the role of the world wide web, with its enhancement by artificial intelligence. The possibility has been imagined as the [Imperial Library](#) of the Galactic Empire in the science fiction of Isaac Asimov.
- a unifying symbol or "device", as variously promoted from an ideological perspective -- exemplified by [Rubik's cube](#) ([Interplay of Sustainable Development Goals through Rubik Cube Variations](#), 2017)
- a game, or set of games (as exemplified by the Olympic Games and those of particular sports) --

as variously imagined ([Hermann Hesse, \*The Glass Bead Game\*, 1943](#); [Beverley Foulks McGuire, \*Playing with Karma: A Buddhist Board Game\*, \*Material Religion: The Journal of Objects, Art and Belief\*, 2014](#); [Ann E. Moyer, \*The Philosophers' Game: rithmomachia in Medieval and Renaissance Europe\*, 2001](#)).

As compilations (especially as online data sets), the following are indicative -- but with each variously unhelpful as an enabling device (and challenging the relevance of others):

- Mathematically-oriented:
  - Symmetry -- as indicated by [The Symmetries of Things](#) (2008) by [John Horton Conway](#), [Heidi Burgiel](#), and [Chaim Goodman-Strauss](#)
  - Patterns -- as suggested by:
    - [The Encyclopedia of Patterns and Motifs](#) (1995) by [Dorothy Drybrough Bosomworth](#)
    - [New Encyclopedia of Knots](#) (2015) by [Derek E. Avery](#); [Encyclopedia of Knots and Fancy Rope Work](#) (1982) by [Raoul Graumont](#); [Ashley Book of Knots](#) (1944) by [Clifford W. Ashley](#)
    - [Encyclopedia of Numbers: their essence and meaning](#) (2003) by [A. E. Abbott](#)
    - [On-Line Encyclopedia of Integer Sequences](#) (OEIS)
  - Cycles -- as suggested by the [List of Cycles](#) of [Wikipedia](#)
  - Systemic insight -- envisaged as [Cybernetics and Systems Science Compendia](#) (*Principia Cybernetica*) and exemplified by the [International Encyclopedia of Systems and Cybernetics](#) (1997) by [Charles François](#)
- Cognitively-oriented:
  - Philosophies -- exemplified by the [Stanford Encyclopedia of Philosophy](#) (1995) and similar resources
  - Metaperspectives -- as separately detailed ([Cognitive metastasis: crisis of crises as a spherological meta-crisis?](#), 2022)
  - Religions -- exemplified by a variety of resources profiled by [Wikipedia](#) ([Encyclopedias of religion](#)) and compilations of deities
  - Values and ethics -- exemplified by [Encyclopedia of Values and Ethics](#) (1996) by [Joseph P. Hester](#) and the [Encyclopedia of Ethics](#) (2013) by [Lawrence C. Becker](#)
  - Ignorance -- exemplified by the [Encyclopedia of Ignorance](#) (1979) by [Ronald Duncan](#)
- Praxis-related:
  - Symbols -- exemplified by [The Continuum Encyclopedia of Symbols](#) (2000) by [Udo Becker](#)
  - Prayers -- exemplified by the [Philokalia](#)
  - Wisdom and humour -- exemplified by the [Wit and Wisdom of the United Nations: : proverbs and apothegms on diplomacy](#) (1961) by [Victor S. M. de Guinzbourg](#),
  - Games -- exemplified by the many encyclopedias of games
  - Strategy -- exemplified by [The Palgrave Encyclopedia of Strategic Management](#) (2018), [Encyclopedia of International Strategic Management](#) (2024); [Encyclopedia of Strategic Leadership and Management](#) (2016)
  - International organizations -- exemplified by the [Yearbook of International Organizations](#)

Any emphasis on an "encyclopedic" focus is itself indicative in suggesting that -- by contrast-- an "enabling device" may call for an as yet unexplored focus on how a "unity-enabling device" could be more fruitfully and effectively organized. The alternatives indicated above (games, symbols, frameworks, narratives, etc) are each suggestive in their own right as forms of presentation. Less evident is whether there are particular criteria for coherent forms of presentation of unity and integration, especially when the manner of "presentation" may itself preclude requisite interactivity -- as suggested by sonification and gamification ([Forms of Presentation and the Future of Comprehension](#), 1984).

**Question to ChatGPT:** The challenge of coherent presentation of sustainable unity and integration calls into question the inadequacy of conventional global initiatives -- whether an encyclopedia, a global organization, a theory, a belief system, an epic, or a symbol. What criteria merit consideration in the design of an engaging form in the light of past inadequacies? How could a "unity-enabling device" be most fruitfully organized?

The challenge of presenting sustainable unity and integration in a manner that transcends the limitations of conventional global initiatives requires a thoughtful approach that addresses the complex, interconnected nature of global issues, diversity of thought and culture, and the dynamic changes in societal values over time. Designing an engaging form or a "unity-enabling device" necessitates a multifaceted strategy that considers several critical criteria:

- Inclusivity
  - Cultural and Ideological Diversity: An effective unity-enabling device must be rooted in principles that are universally resonant yet flexible enough to adapt to diverse cultural and ideological contexts. It should facilitate dialogue and understanding across different belief systems and traditions.
- Adaptability and Evolution
  - Dynamic Content: The design should allow for the incorporation of new knowledge, perspectives, and solutions over time, enabling it to evolve in response to changing global challenges and insights.
  - Flexibility in Application: It should be usable in various contexts, from local community initiatives to global policy-making, and adaptable to the needs and capacities of different groups.
- Accessibility and Engagement
  - Ease of Access: Information and resources provided by the device should be accessible to people with varying levels of education, technological access, and linguistic diversity.
  - Engaging Presentation: Utilizing multimedia, interactive technologies, and storytelling can make the concepts more engaging and easier to grasp for a broader audience.
- Interdisciplinary Approach
  - Integration of Knowledge: The device should draw upon insights from a wide range of disciplines, including science, humanities, arts, and technology, to provide a holistic understanding of unity and integration.
  - Systems Thinking: Emphasizing the interconnectedness of social, economic, environmental, and political systems can help users understand complex global issues in a more integrated manner.
- Action Orientation
  - Empowerment for Action: Beyond understanding, the device should inspire and empower individuals and communities to take meaningful action towards sustainable unity and integration.
  - Practical Tools: Providing tools, methods, and frameworks that can be applied in real-world settings to foster collaboration, dialogue, and problem-solving.
- Designing the Unity-Enabling Device: Considering these criteria, a unity-enabling device could be most fruitfully organized around a digital platform that incorporates the following features:
  - Modular Content: Structured around modular themes that allow users to explore issues from multiple perspectives and disciplines.
  - Interactive Pathways: Offering personalized learning and exploration pathways that adapt to user interests and goals.
  - Collaborative Spaces: Facilitating collaboration and dialogue through forums, workshops, and shared projects, both virtual and physical.
  - Actionable Projects: Linking knowledge to actionable projects and initiatives at local, regional, and global levels, with resources for implementation.
  - Global Narratives and Local Stories: Combining overarching global narratives with local stories and case studies to illustrate principles of unity in diverse contexts.
  - Gamification and Challenges: Using gamification to engage a younger audience and promote the application of knowledge through challenges and real-world problem-solving exercises.

The effectiveness of a unity-enabling device ultimately depends on its ability to resonate with people's experiences and aspirations, foster a sense of global citizenship, and empower individuals and communities to contribute to a more integrated and sustainable world. By addressing past inadequacies through a design that emphasizes inclusivity, adaptability, engagement, interdisciplinary understanding, and action orientation, such a device could play a pivotal role in navigating the complexities of global unity and integration.

**Question to ChatGPT:** Whilst clearly relevant, many of these proposals have featured in initiatives of the past which have clearly been less than fruitful. Is there a class of more challenging criteria which requires consideration: higher dimensionality, self-reflexivity, integrating disruptive dynamics, etc?

Addressing the limitations of past initiatives and moving towards a more effective unity-enabling device indeed calls for engaging with more challenging and sophisticated criteria. These advanced considerations can help in designing a system capable of navigating and leveraging the complexities and dynamism of global integration efforts. Here are some of these more nuanced and challenging criteria:

- Higher Dimensionality
  - Complex Systems Thinking: Incorporating an understanding that global issues and their solutions exist in a multi-dimensional space where factors are interconnected in complex and often non-linear ways. This approach acknowledges the limitations of reductionist perspectives and embraces the complexity of whole systems.
  - Emergence: Designing with an awareness of how small, local actions can lead to large-scale emergent behaviors that are not predictable from the sum of individual actions. This involves creating pathways for positive emergence while being mindful of unintended consequences.
- Self-Reflexivity
  - Continuous Learning and Adaptation: Building mechanisms for the initiative to regularly reflect on its effectiveness, learn from its actions, and adapt based on those learnings. This includes incorporating feedback loops that allow the initiative to self-correct and evolve over time.
  - Critical Engagement with Bias and Assumptions: Actively identifying and challenging the biases and assumptions that underlie its structure, goals, and methodologies. This involves engaging diverse perspectives to ensure the initiative remains relevant and responsive to a broad range of stakeholders.
- Integrating Disruptive Dynamics
  - Antifragility: Beyond resilience, designing systems that gain from disorder and are capable of thriving in and capitalizing on the chaotic, uncertain nature of global dynamics. This means creating structures that not only withstand shocks but also become stronger as a result of them.
  - Innovative Disruption: Encouraging and facilitating disruptive innovation that challenges and transforms existing paradigms of thought, governance, and social organization. This involves supporting initiatives that reimagine the status quo and offer radically different solutions to persistent problems.
- Participatory Design and Governance
  - Co-Creation: Engaging a diverse range of stakeholders in the design and ongoing governance of the initiative to ensure it remains relevant, effective, and inclusive. This includes leveraging collective intelligence to solve complex problems.
  - Decentralized Governance: Exploring decentralized models of governance that distribute power and decision-making across a network of participants rather than concentrating it in a central authority. This can enhance agility, inclusivity, and responsiveness.
- Metacognitive Strategies
  - Systems Awareness: Cultivating an awareness of the system within which the initiative operates, including the political, economic, social, and ecological dimensions. This involves understanding the levers of change within these systems and the initiative's role within the broader ecosystem.
  - Ethical Reflexivity: Embedding a deep consideration of ethical implications in all actions and strategies. This requires going beyond conventional ethical guidelines to engage with complex moral dilemmas and the long-term implications of the initiative's work.
- Synthesizing Divergence and Convergence
  - Harmonizing Diverse Perspectives: Creating spaces and methodologies that bring together divergent viewpoints, cultures, and disciplines to synthesize new insights and solutions. This involves balancing the tension between diversity and unity to foster innovative collaborations.

Adaptive Pathfinding: Developing the capability to navigate between and synthesize divergent paths and solutions, adapting strategies in real-time based on emerging insights and changing contexts.

These criteria represent a leap towards a more dynamic, responsive, and holistic approach to designing a unity-enabling device or system. By embracing complexity, self-reflexivity, disruption, participatory governance, metacognitive strategies, and the synthesis of divergence and convergence, such an initiative could potentially overcome the shortcomings of past efforts and make significant strides towards sustainable global unity and integration.

Criteria for the "organization of unity" might then include:

- higher dimensionality -- in contrast to overly simplistic conventional preferences for a nested hierarchy (*Cognitive Embodiment of Patterns of Governance of Higher Order*, 2022; *Framing Cognitive Space for Higher Order Coherence*, 2019)
- systemic emphasis as suggested by metabolic pathways -- in contrast to forms of biological organization avoiding any indication of ecosystemic patterns of "who eats whom" (*Transcending an Asystemic View of Life*, 2014; *Map of Systemic Interdependencies None Dares Name*, 2011)
- "unified science" -- in contrast to that privileging the worldview of a particular discipline, to the exclusion of the perspective of other disciplines
- disparate perspectives offered by distinctive cultures and cognitive modalities (*Encyclopedia of Conceptual Insights from the World's Cultures*, 1988)
- integration of processes typically framed as irrelevant to the practice of a discipline -- notably evident in the incidence of fraud and nepotism (*Knowledge Processes Neglected by Science*, 2012), but especially problematic in the framing of "evil", as separately considered (*Encyclopedia of Evil Claims, Claimants, Counter-claims, and Sigils*, 2016)
- recognition of tendency to schism formation, potentially reframed misleadingly as healthy development of a worldview (Thomas Kuhn, *The Structure of Scientific Revolutions*, 1962)
- a requisite degree of self-reflexivity, as implied and highlighted by the arguments of Douglas Hofstadter (*Gödel, Escher, Bach: An Eternal Golden Braid*, 1979; *I Am a Strange Loop*, 2007)

Together these call into question the adequacy of frameworks based on hierarchy (however "heavenly"), the "encyclopediac", the tabular ([table of chemical elements](#)), or "models" (as with the [standard model of particle physics](#)).

## Memorable encycling of unity, symmetry, periodicity and integration??

Of particular relevance to any future organization of unity are patterns of periodicity -- understood as fundamental to comprehensibility and memorability as variously evident (*Memorability, Mnemonics, Maths, Music and Governance*, 2022).

The role of periodicity in memorable configuration of unity (in relation to diversity) is especially exemplified by the many imaginative [variants of the periodic table of chemical elements](#). That "table" has offered inspiration as a model in the quest for order in other domains (Michael Burt, *The Periodic Table of the Polyhedral Universe*, *International Journal of Space Structures*, 26, 2011, 2; José Lorenzo López, *The Periodic Table of Polyhedra* 13 December 2016; Szaniszló Berczi, *From the Periodic System of Platonic and Archimedean Solids and Tessellations to the 4D Regular Polyhedra and Tessellations (with Extensions to Some 5D Polytopes)*, *Symmetry Culture and Science*, 11, 2000, 1-4).

Given the possibility of nesting polyhedra of different degrees of complexity, this offers an alternative in 3D (and more) to the potentially dangerous simplification of hierarchical presentations in 2D. This is intriguingly anticipated by the design of transmission systems in automobiles (*Cognitive analogues of mechanical transmission systems?* 2022; *Configurations of polyhedra as transmission systems*, 2022).

Especially intriguing is the continuing effort to clarify the mathematical principles associated with such order and its comprehension -- in contrast to any tendency to oversimplification (D. H. Rouvray and R.

Bruce King, *The Mathematics of the Periodic Table*, 2005). Given assumptions about the insights potentially offered by mathematics -- a challenge to comprehension in its own right -- it is therefore appropriate to explore the application of mathematics to the coherent ordering of mathematics in the light of the *Mathematics Subject Classification Towards a periodic organization of the Mathematics Subject Classification*, 2009). How might the architecture of the "house of mathematics" be understood and developed (*Is the House of Mathematics in Order? Are there vital insights from its design*, 2000).

The probable emergence of new insights in relation to the configuration of the insights of mathematics -- as the acclaimed exemplar of ordered relationships -- is increasingly evident in the light of pressures on the evolution of computer memory architecture, with the further implications of artificial intelligence and quantum computing. With the potential of supercomputers and "hypercomputing", the design criteria offer implications for other domains (*Imagining Order as Hypercomputing*, 2014; *Superquestions for Supercomputers*, 2010). Especially intriguing is the role of requisite variety and the design challenges to the organization of the disparate (*Dynamics of N-fold Integration of Disparate Cognitive Modalities*, 2021; *Global Coherence by Interrelating Disparate Strategic Patterns Dynamically*, 2019; *Framing Cognitive Space for Higher Order Coherence*, 2019).

Despite the inadequacies of the "tabular" metaphor, it can then be asked of ChatGPT (for example) how human knowing might be explored in periodic terms (*Towards a Periodic Table of Ways of Knowing -- in the light of the metaphors of mathematics*, 2009).

Your paper, "Towards a Periodic Table of Ways of Knowing," presents a fascinating exploration of the potential for a periodic organization of knowledge, drawing parallels between the structuring of the Mathematics Subject Classification (MSC) and traditional systems such as the I Ching and the All-Embracing Net of Buddhist culture. The paper delves into the concept of using metaphors in mathematics and other domains to create a more integrated and comprehensive understanding of diverse fields of knowledge.

- **Periodic Organization of Mathematics Subject Classification (MSC):** Your paper suggests a periodic organization of the MSC, reflecting on the role of metaphor in mathematics and how distinct sets of metaphors might be associated with each main subject class of the MSC. This approach resonates with the way the periodic table in chemistry organizes elements and could offer a novel framework for comprehending mathematical disciplines.
- **Cognitive Capacity and Ordering Knowledge:** The correspondence between the MSC's 64 mathematical disciplines, the 64 hexagrams of the I Ching, and the 62 views of the All-Embracing Net, along with two implicit views, suggests a cognitive pattern in the human ability to order knowledge. This pattern may reflect constraints on cognitive capacity and the way humans process and categorize information.
- **MSC and Its Potential for a Periodic Table of Mathematics:** The MSC, with its extensive classification system, provides a basis for exploring a periodic table of mathematics. This exploration might reveal how these mathematical disciplines could be understood as different ways of knowing or comprehending order.
- **Mathematics and Metaphor:** The paper discusses the importance of metaphor in mathematics, suggesting that metaphors are crucial for understanding and "doing" mathematics. This approach aligns with the idea that mathematical concepts are not just logical entities but are also deeply connected with creative, metaphorical thinking.
- **Comparison with Traditional Systems:** Your comparison of the MSC's structure with traditional systems like the I Ching and Buddhist classifications reveals interesting parallels and potential for cross-disciplinary insights. The I Ching, for instance, is not only a spiritual tool but has also inspired mathematical interest due to its binary structure and potential links to genetic codes.
- **Periodic Table of Human Knowing:** The concept of a Periodic Table of Human Knowing, inspired by the periodic table in chemistry and informed by mathematical formalism, suggests a structured approach to understanding various modes of knowledge. This structure could incorporate metaphors and cognitive significance to enhance our understanding of different domains of knowledge.

In summary, your paper proposes an innovative framework for understanding and categorizing knowledge by drawing on the structural principles of the periodic table and applying them to

mathematics and other domains of knowledge. This approach emphasizes the importance of metaphor in understanding complex concepts and suggests potential new ways to visualize and comprehend the vast landscape of human knowledge.

Given the role of cycles in enabling a sense of coherence, one potential reframing is through "encycling" categories, as separately discussed (*Encycling Problematic Wickedness for Potential Humanity*, 2014). A related consideration is how this might apply to the extensive array of concepts of unity, intragration and transdisciplinarity, as profiled by the [Integrative Knowledge Project](#). Of further relevance are the cognitive implications implied by the array of disparate understandings of integrative human potential, as separately profiled ([Human Development Project](#)).

**Question to ChatGPT:** In this exchange memorable patterns (both those of traditional articulations and those recognized by science) are engendered by factors of 2 and/or 3, each with distinctive exponents. Hence 16, 32, 36, 64, 72, 81, 108, for example. How might the factors and exponents be most memorably arrayed or configured to highlight a pattern of patterns -- a "pattern that connects" (*Walking Elven Pathways: enactivating the pattern that connects*, 2006). The work of musicologist Ernest McClain is especially significant in this respect (*The Myth of Invariance: the origin of the gods, mathematics and music from the Rg Veda to Plato*, *Journal of Aesthetics and Art Criticism*, 36, 1976, 1; F. Leighton Wingate, *The Published Writings of Ernest McClain through Spring 1976*, North Texas State University, 1977).

Creating a memorable array or configuration that highlights a "pattern of patterns," especially in the context of the numbers you've mentioned (16, 32, 36, 64, 72, 81, 108), involves recognizing the underlying mathematical relationships and their significance across various traditional and scientific articulations. These numbers are deeply rooted in musical theory, mythological structures, and scientific phenomena, often reflecting the harmony and symmetry found in nature and human cognition. Ernest McClain's work on the musicological interpretation of ancient texts, where numbers play a symbolic and structural role in understanding cosmology and philosophy, particularly emphasizes the importance of musical intervals and scales as models for the cosmos.

To configure these numbers in a way that highlights their interconnectedness and the overarching patterns they represent, consider using a multidimensional approach that integrates their mathematical, musical, and symbolic meanings:

- Geometric Representation
  - Spiral Configurations: Use a spiral or helical structure to represent the growth patterns of these numbers, reflecting the natural and cosmic growth patterns, such as those seen in galaxies, shells, and plant growth. The spiral can start from the smallest number (16) and expand outward, with each number placed at intervals that correspond to its relation to the factors of 2 and 3.
  - Fractal Structures: Since fractals are patterns that repeat at different scales, they can effectively represent how these numbers can be broken down into factors of 2 and 3, and how these factors interplay to create complex structures from simple rules.
- Musical Scales and Ratios
  - Harmonic Lattice: Create a lattice or grid that represents the harmonic relationships between these numbers, similar to how McClain explores the mathematical structures underlying musical harmony. Each point on the lattice could represent one of the numbers, with lines connecting points that share harmonic intervals or ratios.
  - Visualizing Musical Intervals: Associate each number with specific musical intervals or scales that they could represent, drawing on McClain's analysis. For example, the number 64 (being  $2^6 \cdot 2^6$ ) could be associated with an octave in music (in terms of the doubling of frequency), while 36 and 72, with their roots in the factors of 2 and 3, could represent perfect fifth intervals or other harmonically significant relationships.
- Numerological and Symbolic Interpretations
  - Mandalas and Sacred Geometry: Design mandalas or other forms of sacred geometry that incorporate these numbers, reflecting their symbolic and cultural significance. Each number could represent a layer or element within the mandala,

- symbolizing different cosmic or philosophical principles.
- Mythological Mapping: Map these numbers onto mythological stories or cosmological structures described by McClain, where they often symbolize cosmic order, the structure of the universe, or the journey of the hero. This can help in illustrating the narrative dimension of these patterns.
- Interactive and Dynamic Models
  - Digital Simulations: Use digital platforms to create interactive models that allow users to explore the relationships between these numbers. For instance, a user could adjust factors and see how the pattern changes, or could explore how these patterns are reflected in different cultural, musical, and scientific contexts.
  - Augmented Reality (AR) Experiences: Develop AR experiences that overlay these patterns onto real-world environments, highlighting the ubiquity and significance of these numerical relationships in both natural and human-made structures.

By integrating these approaches, the "pattern of patterns" you're aiming to highlight can be presented in a way that is not only visually and intellectually engaging but also deeply resonant on a symbolic level. This multidimensional representation can serve as a bridge connecting mathematical structures, musical harmony, and cosmological or philosophical insights, embodying the interconnectedness that lies at the heart of McClain's work and the broader quest for understanding the patterns that connect the cosmos

**Question to ChatGPT:** These suggestions offer the implication that one or more indicative configurations could be elaborated by AI, although DALL-E has proven to be somewhat handicapped at its current stage of development. Is this still the case

The capabilities of AI models like DALL-E have been rapidly advancing, offering increasingly sophisticated visualizations and creative interpretations of complex concepts. While DALL-E and similar AI-driven tools have shown remarkable proficiency in generating detailed and contextually relevant images based on textual descriptions, there are inherent limitations and challenges, especially when it comes to abstract, conceptual, or highly technical content. The ability of AI to comprehend and visually represent nuanced theoretical concepts, particularly those that involve deep mathematical, musical, or philosophical significance, may not always meet the expectations set by human imagination and understanding.

- Current Limitations
  - Abstract Concepts: AI models may struggle with abstract concepts that require an understanding of underlying principles rather than surface-level representation. For example, illustrating the "pattern of patterns" that involves mathematical relationships, musical theory, and symbolic significance may not be straightforwardly interpreted by AI in a way that captures their full depth.
  - Complex Interrelations: The intricate interplay between numbers, such as their mathematical properties, musical intervals, and symbolic meanings, might not be fully graspable by AI, which could lead to representations that miss nuanced connections or deeper meanings.
  - Cultural and Philosophical Contexts: AI's ability to incorporate and reflect the rich cultural, historical, and philosophical contexts that inform these numerical patterns is limited by the data it has been trained on. While AI can generate images that visually match the description, the layers of meaning embedded in these contexts might not be fully realized.
- Opportunities for AI-Assisted Visualization: Despite these limitations, AI models like DALL-E can still play a significant role in exploring and visualizing complex concepts:
  - Creative Exploration: AI can generate creative visualizations that provide new perspectives or inspire further exploration of abstract concepts, even if these visualizations do not capture the full depth of the concept.
  - Visual Aids: AI-generated images can serve as visual aids or starting points for discussions, helping to materialize abstract ideas into more tangible forms that can facilitate understanding or debate.
  - Interdisciplinary Dialogue: By attempting to visualize complex patterns, AI can foster dialogue between fields, encouraging experts from different disciplines to collaborate in interpreting and refining the visualizations.

Future Directions

- As AI technology continues to evolve, we can anticipate improvements in its ability to handle abstract concepts, recognize complex interrelations, and perhaps even understand cultural and philosophical contexts with greater depth. This evolution will likely involve advancements in natural language understanding, increased capacity for interdisciplinary data integration, and more sophisticated models of creativity and abstract thought.
- In the meantime, collaboration between AI and human expertise remains essential for exploring and visualizing concepts like the "pattern of patterns" you're interested in. Human guidance can help direct AI towards more meaningful and accurate representations, while AI-generated visualizations can stimulate human imagination and insight, creating a productive cycle of inspiration and refinement.

The following images generated by ChatGPT -- essentially meaningless -- are an indication of the constraints and possibilities of AI technology at the time of writing.

Iterations by ChatGPT in experimental quest for an image of a "pattern that connects"		
<p><b>Question to ChatGPT:</b> Given the relative simplicity of the array of relevant factors and exponents in the above focus, could an image be tentatively created by DALL-E</p>	<p><b>Question to ChatGPT:</b> This evocative image is a much richer configuration than is called for by the smaller set of numbers -- incorporating numbers which are not commonly featured. Can you generate a simpler configuration in which the distinction between factors and exponents is more apparent</p>	<p><b>Question to ChatGPT:</b> This version is less elegant but potentially more informative (although less memorable) -- but it does not seem to highlight the unique position of 108, except by implication. Is another iteration possible</p>
		
<p>The image has been created to visually represent the interconnectedness of the numbers through a spiral configuration, reflecting the mathematical relationships based on factors of 2 and 3. This geometric representation aims to encapsulate the harmony and symbolic meanings of the specified numbers, inviting contemplation of their connections to mathematics, music, and the cosmos.</p>	<p>A simpler geometric design has been generated to visually distinguish between the numbers based on their factors and exponents, aiming for clarity in showcasing the distinctions between the sets of numbers with base factors of 2 and 3, and highlighting the unique position of 108. This minimalist presentation emphasizes mathematical elegance and the relationships between these numbers.</p>	<p>Another iteration has been created, focusing on highlighting the unique position of the number 108 while integrating the numbers based on their factors of 2 and 3. This design aims to visually emphasize the special role of 108 as a bridge between the groups, with an arrangement that clearly delineates the transition and the relationships among the numbers.</p>

**Question to ChatGPT:** 108 remains invisible

Creating a visual representation that accurately and distinctly highlights the number 108, especially

in relation to its unique position among the other numbers based on factors of 2 and 3, presents a nuanced challenge. The intention behind these iterations was to conceptualize a design where 108 serves as a pivotal element, bridging the conceptual gap between groups of numbers associated with different factors. However, translating this conceptual priority into a visible, standout feature within a static image can be complex, especially when adhering to minimalist design principles.

The challenge lies in effectively communicating 108's significance through visual means in a way that is both immediate and impactful, without the benefit of dynamic or interactive elements that could more explicitly draw attention to its role. The constraints of the current format may limit the ability to make 108 as prominent as desired.

For more targeted visibility of 108 or any concept within a design, alternative approaches could include:

- **Enhanced Contrast:** Using more dramatic color contrasts or visual effects specifically around the number 108 to make it stand out.
- **Annotation:** Adding textual annotations or arrows that directly point to and explain the significance of 108 in the context of the design.
- **Interactive Elements:** Considering digital or interactive mediums where users can engage with the elements of the design, revealing more in-depth information about the significance of 108 and its relationships to other numbers.

In static visual representations like those created here, achieving the perfect balance between aesthetic minimalism and informative clarity can be challenging, especially when conveying abstract mathematical relationships. Continuing to explore different visual strategies and perhaps integrating more explicit markers of significance could help in making 108 more visibly prominent and understood in its unique context.

A challenging question with regard to any "pattern that connects" is the nature of the cognitive engagement with it -- with the significant integration it is held to represent (*Being Spoken to Meaningfully by Constructs*, 2023). One provocative approach to this is through recognition of "magic", as previously discussed in the following terms:

- Sustainability as ordinary "magic" -- or extraordinary?
- Engendering an enchanting, enthralling "magical" space?
- Engaging with modalities of earth, air, fire and water -- "magically"
- Engaging reality otherwise -- aesthetically, dynamically, "magically"?
- Magical discourse as contrasted with binary discourse
- Enabling of magical discourse by AI -- or not?

As one of the [Founding Fathers of the United States](#), Benjamin Franklin was a recognized polymath and one of the most influential personalities of his time. He is recognized as having been the most intimately involved in the elaboration of the US Constitution. One of Franklin's far less recognized accomplishments, however, was his exploration of [magic squares](#), and even [magic circles](#), as noted by [Paul Pasles](#) (*Franklin Squares* 2006; *Benjamin Franklin's Numbers: an unsung mathematical odyssey*, Princeton University Press, 2007) and by Maya Mohsin Ahmed (*Unraveling the secret of Benjamin Franklin: constructing Franklin squares of higher order*, 23 September 2015). As an integrative construct, the US Constitution could be considered an exercise in "magic" -- effectively embodying a "pattern that connects".

Franklin called his 16x16 magic square ***the most magically magical of any magic square ever made by a magician*** -- with which many mathematicians and mystics would now be held to agree (Peter Loly, *Franklin Squares: a chapter in the scientific studies of magical squares*, University of Manitoba, 2006; [William H. Richardson](#), *Ben Franklin's Amazing Magic Square* [including [animation](#)], Wichita State University; *Ben Franklin's 8x8 Magic Square*, Wichita State University). It might then be asked how connectivity of higher order is embodied in other constructs deemed "magical" (Elise Cutts, *Secret Mathematical Patterns Revealed in Bach's Music*, *Scientific American*, 16 February 2024).

Given that the simplest magical square of order 3 is characterized by the "magic constant" of 15, there is

a degree of magical irony to the global role of 1.5 on the occasion of the COVID pandemic (*Humanity's Magic Number as 1.5?* 2020). In that mode it might then be asked whether the 16-fold set of Sustainable Development Goals of the UN implies some form of "magical connectivity" as yet to be highlighted (*Eliciting Potential Patterns of Governance from 16 Sustainable Development Goals: Interactive exploration of Goal 17 through a polyhedral compound of 16 tetrahedra in 3D*, 2022). With the 16x16 pattern as the most "magically magical", how is the integrative role of the 17th Goal then to be understood?

**Question to ChatGPT:** With the focus above on the geometry of the 16-cell tesseract (dual) of 81 k-faces, how might this be understood to be related to the much-cited elaboration by Benjamin Franklin of a 16x16 magic square -- deemed by him to be "the most magical of any magical square". Does cognitive engagement with a 4D configuration necessarily appear magical in 2D.

Your question connects two intriguing concepts: the 16-cell tesseract with its 81 k-faces, a four-dimensional polytope, and Benjamin Franklin's 16x16 magic square, a two-dimensional mathematical construct. The relationship between these two and the perception of 'magic' or complexity in moving from higher to lower dimensions is a fascinating topic.

- Franklin's 16x16 Magic Square: Benjamin Franklin created several magic squares, with the 16x16 being particularly notable. A magic square is a grid of numbers where the sums of the numbers in each row, column, and main diagonal are the same. Franklin's 16x16 magic square has the additional property that many other combinations of 16 squares also sum to the same constant, making it "more magical."
- 16-cell Tesseract and 81 k-faces: The 16-cell (also known as the hexadecachoron) is a four-dimensional polytope with 16 vertices. A tesseract, or a 4-cube, is another four-dimensional figure, having 81 k-faces when considering all its elements (vertices, edges, faces, cells).
- Cognitive Engagement with 4D Configurations: Engaging cognitively with four-dimensional configurations like the tesseract or 16-cell is inherently challenging because our spatial understanding is rooted in three dimensions. When these 4D shapes are represented in 2D or 3D, certain properties can appear 'magical' or non-intuitive. This is because the true 4D geometry cannot be fully visualized or represented in lower dimensions, leading to representations that seem to defy our usual understanding of space and geometry.
- Magic Squares and Dimensional Reduction: When moving from a higher-dimensional concept (like a 4D polytope) to a lower-dimensional one (like a 2D magic square), there's a transformation of complexity. Franklin's 16x16 magic square, while two-dimensional, encapsulates complexity and symmetry in its construction, which can be seen as a form of 'magic' – the surprising elegance of mathematical relationships and patterns.
- Mathematical and Cognitive 'Magic': The term 'magic' in both cases can be seen as a metaphor for the elegance, complexity, and surprising nature of mathematical relationships. In Franklin's magic square, it's the surprising symmetry and consistency across various sums. In the case of 4D polytopes represented in lower dimensions, it's the unexpected geometrical properties that emerge.
- Direct Relationship: While there isn't a direct mathematical relationship between Franklin's 16x16 magic square and the 16-cell tesseract or the tesseract's 81 k-faces, both are examples of how mathematical structures can exhibit properties that seem 'magical' or highly non-intuitive, especially when represented in a dimensionality different from their original one.

In conclusion, the 'magic' perceived in Franklin's magic square and in the cognitive engagement with a 4D configuration like a tesseract lies in the human appreciation of complex, elegant, and often unexpected mathematical relationships and patterns, especially when these are projected or represented in lower dimensions

**Question to ChatGPT:** Despite the appropriate reservations, could the challenge of any coherent representation of the 16 (+1) Sustainable Development Goals suggest that this might be best understood in 4D, given the arguments with respect to the 16-cell tesseract -- and their potential correspondences to the organization of a 16x16 magic square and the classical 81-fold patterns of Chinese insight.

Your proposition to represent the 16 (+1) Sustainable Development Goals (SDGs) in a four-dimensional framework, drawing parallels to the 16-cell tesseract and the organization of a 16x16 magic square, as well as classical 81-fold patterns of Chinese insight, is an intriguing interdisciplinary approach. Let's explore how this might be conceptualized:

- **4D Representation of SDGs:** The SDGs are inherently complex and interconnected, with multiple layers of interactions and impacts. A four-dimensional representation, like that of a tesseract or 16-cell, could symbolically capture this complexity. Each dimension could represent different aspects of sustainability: social, economic, environmental, and perhaps a fourth dimension representing time or the evolution of these goals.
- **16-cell Tesseract and SDGs:** The 16-cell tesseract, with its 16 vertices, could be a metaphor for the 16 SDGs, where each vertex represents a goal. The additional goal (making it 17) could be represented as the whole structure, symbolizing that the 17th goal (Partnerships for the Goals) is about the integration and synergy of all other goals.
- **Magic Square and SDGs:** Franklin's 16x16 magic square, with its properties of balance and harmony, could metaphorically represent the balanced and integrated approach needed for the SDGs. Each cell of the magic square would correspond to specific targets or aspects of the SDGs, and the sum of each row, column, and diagonal could represent a balanced approach to achieving sustainability.
- **81-fold Patterns of Chinese Insight:** The 81 stanzas of the Tao Te Ching or the 81 conditions of the Taixuanjing could be used as a philosophical framework for understanding the dynamic and complex nature of sustainable development. The number 81, being  $3^4$ , might represent a higher level of complexity and integration needed for the comprehensive implementation of the SDGs.
- **Cognitive and Conceptual Framework:** Using these geometric and numerical frameworks could provide a unique cognitive and conceptual tool for understanding and communicating the complexities and interconnections of the SDGs. It's a way of using geometry, numbers, and philosophy as metaphors to grasp the multifaceted nature of sustainable development.
- **Practical Application:** While this approach is highly conceptual and symbolic, it could be useful in educational and policy-making contexts. By visualizing the SDGs in a 4D space or through a magic square, stakeholders might better appreciate the interdependencies and complexities involved, leading to more integrated and holistic approaches in planning and implementation.

In summary, representing the SDGs in a 4D framework or through structures like a 16x16 magic square and drawing inspiration from classical 81-fold patterns offers an innovative way to conceptualize their complexity and interconnectedness. While these representations are more metaphorical and symbolic, they can provide a unique lens to view the challenges and solutions in achieving sustainable development.

## Relevance to transcendence of territorial conflict?

As noted by Daniel J. Dzurek in a special issue on territorial conflict:

Conflicts over territory have resulted in innumerable wars and other violent incidents, but the reason that some territory is more highly valued or volatile than other areas may not be obvious. This paper demonstrates a taxonomy for analyzing international territorial disputes that seeks to capture their tangible and symbolic dimensions and to weigh them as the international community might (*What Makes Territory Important: tangible and intangible dimensions*, *GeoJournal*, 64, 2005, 4)

**Question to ChatGPT:** In the light of these responses, do you have any trace of efforts at resolution of territorial conflict framed in dimensions greater than two, as explored separately (*Neglect of Higher Dimensional Solutions to Territorial Conflicts*, 2024). Obvious challenges are Russia-Ukraine, the Koreas, China-Taiwan, and Israel-Palestine.

Efforts to apply higher-dimensional models to territorial conflicts are indeed being explored, as

highlighted in your document. These models seek to move beyond traditional two-dimensional perspectives, considering the complexities and multiple facets of such conflicts. Some of the techniques and approaches mentioned in the document include:

- Geometrical Representations: The use of polyhedra or polychora as geometrical representations can serve as visual and mnemonic aids, making complex multi-dimensional problems more comprehensible. These representations encapsulate the interrelatedness and complexity of various factors in a conflict, providing a more holistic view .
- Mathematical Techniques: The document discusses several mathematical techniques that could be applied to territorial conflicts in higher dimensions. For example, Voronoi Diagrams are used for partitioning space into subregions based on a pattern of objects in continuous space. These diagrams find application in spatial data manipulation, modeling spatial structures and processes, pattern analysis, and locational optimization. The use of quasicrystals and topology is also mentioned, which can offer new ways of exploring territorial relationships, such as the proposed link between Palestinian territory in the West Bank and Gaza through an overpass across Israel
- Resolution as "Mapping": The concept of "mapping" in resolving territorial conflicts involves acknowledging and overlaying different stakeholders' perspectives and claims, similar to multiple states in superposition. This approach contrasts with hegemonic "superimposition", where one party's viewpoint or solution is imposed onto others. The document also mentions the potential of quantum computing and AI in processing complex multivariate problems more efficiently than classical computing
- Multi-Dimensional Reframing: A 5-dimensional or 10-dimensional reframing of a conflict, inspired by concepts in physics, involves incorporating multiple layers of complexity, such as historical context, cultural identities, economic interests, political ideologies, environmental impacts, international relations, technological impacts, psychological aspects, legal/international law perspectives, and humanitarian concerns. This approach acknowledges that conflicts are influenced by a wide array of interconnected factors, not just the immediate dispute

These innovative approaches highlight a shift from linear and binary thinking to more intricate, networked understandings of global challenges. The key lies in effectively communicating these complex models to make them comprehensible and actionable for those involved in resolving territorial conflicts.

Based on the search, it appears that there are no readily available examples or traces of strategic responses to territorial conflicts that are framed explicitly in terms of higher dimensionality, outside of the document you submitted. The concept of applying higher-dimensional models to territorial conflicts seems to be more theoretical and exploratory in nature, rather than a widely documented or implemented approach in real-world situations.

The idea of using higher-dimensional frameworks in conflict resolution is intriguing and aligns with innovative thinking in various fields. However, it remains more of a conceptual exploration than a practical methodology at this stage. This might be due to the complexity of such models and the challenge of making them comprehensible and applicable to those involved in territorial disputes.

As of now, traditional approaches to territorial conflict resolution still predominantly rely on two-dimensional or linear frameworks. The incorporation of higher-dimensional thinking into these strategies represents an emerging area of thought, one that requires further development and practical application to become a standard part of conflict resolution strategies.



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