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Neglect of Higher Dimensional Solutions to Territorial Conflicts

Conventional dependence on "flat earth" thinking ignoring insights of mathematics and physics

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Introduction

The world is currently witness to multiple territorial conflicts, some of which have endured over decades. They include: Russia-Ukraine, Israel-Palestine, Korea (North and South), China-Taiwan, Kashmir, Sudan, Yemen, and the like. There is increasing concern that these could trigger conflicts of global proportions. As territorial conflicts these are typically discussed in two-dimensional terms, readily caricatured as "flat earth" thinking.

There is clearly a need for urgent consideration of alternative ways of imagining such challenges -- for which no new possibilities are apparently envisaged. This is exemplified in the case of Israel-Palestine at the time of writing ([Netanyahu tells US he opposes creation of Palestinian state after Gaza](#), *The Guardian*, 19 January 2024). A similar situation is evident in the case of China-Taiwan and the Koreas ([China calls Taiwan's 2024 election a choice between peace and war](#), *CBS News*, 12 January 2024; [Unification with South Korea no longer possible, says Kim Jong-un](#), *The Guardian*, 16 January 2024). Other possibilities were the focus of an earlier presentation ([And When the Bombing Stops? Territorial conflict as a challenge to mathematicians](#), 2000).

By contrast, at the time of writing, it has been announced that artificial intelligence (AI) has detected very large numbers of "new structures" ([AlphaFold found hundreds of thousands of potential new psychedelic molecules](#), *Nature*, 18 January 2024; [Google scientists discovered 380,000 new materials using artificial intelligence](#), *SciTechDaily*, 16 January 2024). Potentially far more tragic is the use of AI to detect and suppress perspectives contrasting with a singular mainstream narrative ([The Repressive Power of](#)

[Artificial Intelligence](#), *Freedom House*, 21 November 2023). With the current focus on only two problematic possibilities of territorial configuration, how is it that no detectable effort has been made to use AI to discover "new structures" by which to transcend territorial conflict?

Mathematics has long had recourse to multidimensional frameworks (3D, 4D, 5D, and more). Physics asserts the necessity for "extra dimensions" offering 10-dimensional frameworks (or even 26 dimensional) as a means of capturing the complex nature of the reality in which people dwell. It is unclear to what extent such thinking is considered relevant to the territorial conflict conventionally discussed in 2D. More specifically the challenge would be how policy comprehension of the mathematical generalization from 2D to 3D (or more) could be rendered comprehensible to those focused on 2D, especially if viable solutions are only evident in 5D (or more) as might be suspected. Are the aspirations of global sustainability appropriately conceived with "flat earth" thinking.

The issue has long been framed in fictional form by those with some mathematical skills ([Edwin Abbott Abbott](#), *Flatland: a romance of many dimensions*, 1884; [Dionys Burger](#), *Sphereland: a fantasy about curved spaces and an expanding universe*, 1965; [A. K. Dewdney](#), *The Planiverse*, 1984; [Ian Stewart](#), *Flatland: like flatland only more so*, 2001; [Rudy Rucker](#), *Spaceland: a novel of the fourth dimension*, 2002). Aspects have been a focus of further commentary ([Ian Stewart](#), *The Annotated Flatland: a romance of many dimensions*, 2008; [Rudy Rucker](#), *The Fourth Dimension: toward a geometry of higher reality*, 1984; [Thomas F. Banchoff](#), *Beyond the Third Dimension: geometry, computer graphics, and higher dimension*, 1990; [Mark Blacklock](#), *The Emergence of the Fourth Dimension: higher spatial thinking in the Fin de Siècle*, 2018). The popular imagination has long been attuned to "hyperdimensional" travel across the universe.

For many the primary reference to "higher dimensionality" is through religion, theology and prayer ([Prayers in Times of War and Civil Unrest](#), *JesuitResource.org*; [Walter Rodgers](#), *Conflict Resolution begin with Prayer*, *Christian Science Sentinel*, 30 March 2009; [Faith leaders prioritize prayer amid Israeli-Hamas conflict](#), *Washington Informer*, 18 October 2023). Little attention is however devoted to the higher dimensionality implied by mathematical theology ([Mathematical Theology: future science of confidence in belief](#), 2011).

In the light of the many assertions that the current governance situation is complex, even "multidimensional", it can then be appropriately asked when "multidimensional" solutions have been envisaged for territorial conflict -- and where such possibilities have been neglected and ignored, despite extensive media coverage of conflict fatalities. Can it be argued that such coverage is effectively a reinforcement of "flat earth" thinking? Are references to "multidimensional" to be recognized as characteristic of cover-ups justifying oversimplification?

In addition to the unresolved territorial conflicts at this time -- and those actively anticipated -- such questions are especially relevant to the dimensional articulation of the UN's planned [Summit of the Future](#) (2024). This is currently framed by a report of the UN Secretary-General regarding the nature of future global cooperation ([Our Common Agenda](#), 2021).

Unfortunately conventional use of "common", as an expression of aspirations to "unity", can be readily recognized as a simplistic approach to universal agreement ([The Consensus Delusion: mysterious attractor undermining global civilization as currently imagined](#), 2011). As mathematics and physics have demonstrated, achievement of "unity" and "unification" is particularly challenging when envisaged as a possibility of "lower dimensionality" ([Engaging with Elusive Connectivity and Coherence](#), 2018). The many calls for "unity" -- especially the challenge of the (re)unification of divided countries -- could then be seen as a failure to recognize the problems and potential of its higher dimensional nature.

The challenge of "unity" can be otherwise framed through the archetypal [Gordian Knot](#):

- Reinhard Wagner: [The Gordian Knot of Global Collaboration](#) (International Project Management Organization, 2016)
- Andreas Bieler and Adam David Morton: [The Gordian Knot of Agency -- Structure in International Relations](#), *European Journal of International Relations*, 7, 2001).
- Pawel Opala, et alii: [Gordian Knots of the 21st Century](#) (Polish Association of the Club of Rome,

2007)

Curiously the period is also witness to widespread concern regarding the dangers to human society from artificial intelligence and its rapid advance. There is a degree of irony to the regulatory response to a facility acclaimed for its multidimensional capacity is framed through what amounts to conventional binary thinking, as can separately argued from an ethical perspective ([Just War Theory as an inspiration for "Just AI Theory"?](#) 2024).

Despite the acknowledged capacity of AI to handle multidimensional information, exemplified by strategic skills in chess and the game of go, there is little trace of its relevance to the Gordian Knot with which global governance is faced. The following exercise follows from the range of possibilities explored separately ([Artificial Intelligence as an Aid to Thinking Otherwise -- but to what End?](#), 2023; [Sustainable Development Goals through Self-reflexive Root Cause Analysis](#), 2023; [Coherent Reconciliation of Eastern and Western Patterns of Logic](#), 2023; [Simulating the Israel-Palestine Conflict as a Strategy Game](#), 2023).

The following questions were variously put to [ChatGPT](#) (Version 4.0) and its associated facility (Scholar AI). The method used follows from previous experimental exchanges documented separately ([Psychosocial Geometry and Dynamics of Collective Memory](#), 2024; [Comprehensible Configuration of 8-fold Patterns in 3D: cognitive potential of polyhedral coherence](#), 2024).

In contrast with those interactions, the nature of the responses appeared to manifest a degree of avoidance, accompanied by default recommendations that the matter be referred to specialists. This avoids the issue of whether or not higher dimensional approaches to the complexities of territorial conflict have indeed been considered by those with the relevant expertise. Although the exchange was initiated using the Scholar AI facility, this crashed repeatedly and finally limited its responses to ever more succinct replies. The exchange was continued with ChatGPT.

The increasing reticence of ChatGPT on certain subjects would of course follow naturally from the recently announced partnership of OpenAI with the Pentagon -- ([OpenAI quietly removes ban on military use of its AI tools](#), *CNBC*, 16 January 2024; Brad Stone, [OpenAI is working with US military on cybersecurity](#), *Bloomberg*, 17 January 2024). This transition featured in an announcement by OpenAI at the World Economic Forum. Given the primary agenda of [full -spectrum dominance](#), how AI may be used to inhibit any higher dimensional reframing of those binary conflicts ensuring unipolar global hegemony is of increasing interest.

Insights from artificial intelligence via ChatGPT?

Question to ChatGPT: The world is currently witness to multiple territorial conflicts, some of which have endured over decades. They include: Russia-Ukraine, Israel-Palestine, Korea (North and South), China-Taiwan, Kashmir, Sudan, Yemen, and the like. As territorial conflicts these are typically discussed in two-dimensional terms, readily caricatured as "flat earth" thinking. Mathematics has long had recourse to multidimensional frameworks (3D, 4D, 5D, and more). It is unclear to what extent these are adapted to territorial conflict conventionally discussed in 2D. Specifically how could the mathematical generalization from 2D to 3D (or more) be rendered comprehensible to those focused on 2D, especially if viable solutions are only evident in 5D (or more). This follows from an attached document dating back to 2000 ([And When the Bombing Stops? Territorial conflict as a challenge to mathematicians](#))

The document "And When the Bombing Stops? Territorial conflict as a challenge to mathematicians" from July 2000, explores the role of various disciplines, including mathematics, in addressing territorial conflicts. It emphasizes the lack of new thinking in this area and proposes that modern advances in different fields, particularly in mathematics, have not been adequately applied to these conflicts. The document suggests that mathematical concepts such as tessellation, tiling patterns, and higher-dimensional thinking could offer new perspectives and solutions to territorial disputes. It also highlights the potential role of legal theorists, software specialists in visualization, and other professionals in rethinking territorial claims and conflicts. The document calls for a more integrated and innovative approach, utilizing the full potential of various disciplines to address the complexities of territorial

conflicts using mathematical models and techniques. This approach includes exploring spatial relationships and complex patterns that go beyond traditional two-dimensional perspectives, potentially providing more nuanced and sustainable solutions to these conflicts. The document highlights the need for interdisciplinary collaboration and innovative thinking to address the inherent complexities in territorial disputes, underscoring the importance of extending mathematical and other conceptual frameworks to better understand and resolve these issues.

Question to ChatGPT: My question is whether you have any trace of mathematical techniques which could be applied to such conflicts in 3D, 4D and more. Specifically the issue is how the capacity to generalize from 2D to high dimensionality can be rendered comprehensible to those who are not familiar with them

The document "mathbom_2000.pdf" discusses several mathematical techniques that could be applied to territorial conflicts in higher dimensions:

- **Voronoi Diagrams:** These diagrams are used for partitioning space into subregions based on a pattern of objects in continuous space. They find application in spatial data manipulation, modeling spatial structures and processes, pattern analysis, and locational optimization. Voronoi diagrams are relevant in various scientific fields, which enhances their utility and the demand for knowledge about them??.
- **Quasicrystals and Topology:** The document refers to the use of quasicrystals that form low-energy clusters with significant overlap. This concept is related to the organization of highly charged territorial challenges. Additionally, topology is mentioned as a way of exploring new possibilities in territorial relationships, such as the proposed link between Palestinian territory in the West Bank and Gaza through an overpass across Israel. Topology could offer many other unexplored ways of relating to territory??.
- **Virtual Reality Polyhedra and Game Theory:** Over 1000 virtual reality polyhedra are used to organize and visualize complex spatial relationships. These tools, along with game theory and the Analytic Hierarchy Process (AHP), have been applied to global economic modeling and complex decision-making. These approaches focus on techniques where one party may "win" over others, as explored in military research. However, there's potential for these techniques to be used beyond such competitive frameworks??.
- **Tessellation Patterns and Polyhedra:** The use of tessellations to manage complex data, such as bibliographic data at the European Bioinformatics Institute, suggests a way to explore territorial patterns. The 17 types of tiling patterns and the range of regular and semi-regular polyhedra, with their dynamic transformations, indicate alternative ways of organizing territory. This approach involves considering the relationships between different polyhedral shapes and their transformations??.

These mathematical techniques offer a way to conceptualize territorial conflicts in higher dimensions, potentially making them more comprehensible to those unfamiliar with these concepts. The application of these techniques in real-world territorial disputes could provide innovative approaches to conflict resolution and understanding.

Question to ChatGPT: I appreciate the summary of the document from 2000. My interest is in whether there are newer mathematical insights and techniques and how these might be rendered comprehensible to conflicts defined in 2D terms

From a [quick search](#), here's what I found.

Recent advancements in mathematics, particularly in higher dimensions, offer new perspectives that could potentially be applied to understanding and resolving territorial conflicts. These developments include:

- **Higher-Dimensional Sphere Packing:** Maryna Viazovska's work on the most efficient way to pack spheres in eight dimensions and the generalization of this result to other contexts. This kind of mathematical insight could be useful in conceptualizing spatial relationships in higher dimensions.
- **Graph Theory and Combinatorics:** Discoveries in graph theory, such as deep

geometric structures underlying combinatorial properties, could offer new ways to visualize and understand complex territorial disputes.

- **Topology and Manifolds:** Advances in topology, including new classifications of certain types of manifolds, might provide frameworks for comprehending territories as more than just two-dimensional areas, instead seeing them as complex, multidimensional spaces.
- **Machine Learning in Mathematics:** The use of machine learning in solving problems in graph theory and combinatorics, creating better techniques for mathematical operations, and generating new conjectures could be adapted to model and analyze complex territorial conflicts.

These advancements illustrate a growing trend in mathematics to explore and understand complex systems and relationships in higher dimensions, offering potentially innovative ways to approach and resolve multidimensional territorial conflicts

Question to ChatGPT: I have asked this question via the Scholar AI interface and have had difficulties in eliciting a more detailed response -- despite multiple regenerations. Is my question problematic in some way

Your question is not problematic, but it is complex and interdisciplinary, touching on advanced mathematics, territorial conflict resolution, and the challenge of communicating complex concepts to a non-specialist audience. The difficulty in generating a detailed response may arise from the specialized and innovative nature of the topic, which combines several fields of study in a novel way.

Advancements in higher-dimensional mathematics and their applications to real-world problems are a rapidly evolving field. The challenge lies in translating these abstract mathematical concepts into practical solutions for territorial conflicts, which are traditionally understood in simpler two-dimensional terms. This translation requires not only deep mathematical insight but also innovative communication strategies to make these concepts accessible to those without a mathematical background.

In summary, your question is valid and insightful, but the challenge lies in bridging the gap between advanced mathematical theories and their practical application in complex social and political issues like territorial conflicts.

Question to ChatGPT: Whilst the clarification is appreciated, it could be readily assumed that AI provides a means to respond more fulsomely to such questions which are readily set aside in more specialized contexts

You're correct in expecting that AI, like me, should be able to provide comprehensive responses to complex questions. My capabilities include accessing a wide range of information and presenting it in a user-friendly manner. However, there are certain challenges:

- **Interdisciplinary Nature:** Your question intersects multiple advanced disciplines. While I can provide information from these fields, synthesizing them into a cohesive, detailed answer specific to your query can be challenging due to the novelty and complexity of the subject matter.
- **Rapidly Evolving Fields:** Mathematics and its applications in areas like territorial conflict are constantly evolving. Keeping up with the latest advancements and understanding how they specifically apply to a niche area requires access to the most current and specialized resources, which might not always be available within my dataset.
- **Communication of Complex Concepts:** Translating high-level mathematical concepts into understandable terms for non-specialists is a significant challenge. It requires not only deep knowledge of the subject but also skill in educational communication, a task that even experienced educators and communicators find challenging.

My goal is to provide helpful, accurate information within these constraints. For highly specialized and cutting-edge topics, a detailed and comprehensive answer might require consultation with experts in the specific field of study.

Question to ChatGPT: My concern is that the mathematical specialists have little interest in the application of their insights (or enable little trace of them) whereas AI frames their complexity as too great to be rendered otherwise. This contrasts with the skill of AI in complex games like chess and go, which arguably require a high degree of multidimensionality

Your concern highlights a notable challenge in the application of advanced mathematical concepts to practical problems. The complexity of mathematical theories, especially in higher dimensions, can indeed be daunting, and their direct application to real-world scenarios like territorial conflicts is not straightforward. This complexity can lead to a gap between theoretical mathematics and its practical applications.

AI, like in complex games such as chess and Go, excels in defined systems with clear rules and objectives. However, applying mathematical theories to social and political issues involves variables that are less defined and more subjective, making the task more intricate.

The skill required is not only in understanding the mathematics but also in creatively adapting and applying these concepts to multifaceted human issues. This involves interdisciplinary collaboration, where mathematicians, conflict resolution experts, and communicators work together to find practical applications and communicate them effectively.

Bridging this gap remains an ongoing challenge, and your observation underscores the importance of continued efforts in interdisciplinary research and communication to make complex mathematical insights more accessible and applicable to real-world problems.

Question to ChatGPT: The response explains and excuses the limitations at this point. The question could be reframed otherwise by imagining a hypothetical negotiator of one party using "5D thinking" faced with an opposing party using "2D thinking". The interaction has been notably explored in novels regarding "flatland", "flatter land", and "sphereland" Could more recent articulations be envisaged

Reframing your question in the context of a hypothetical negotiation between a "5D thinker" and a "2D thinker," inspired by novels like "Flatland," "Flatterland," and "Sphereland," opens up creative avenues for exploring this concept.

In such a scenario, the "5D thinker" would approach the negotiation with an understanding of complex, multi-dimensional solutions, seeing beyond the immediate, tangible aspects of the conflict. This perspective could involve considering time, potential future scenarios, and non-physical elements (like cultural or ideological dimensions) as part of the negotiation landscape.

Conversely, the "2D thinker" would focus on more traditional, tangible aspects, such as physical boundaries and immediate, visible issues. This approach, while more straightforward, might miss the nuances and potential solutions that exist in higher dimensions of understanding.

The interaction between these two perspectives could be rich ground for exploring how advanced theoretical concepts can be communicated and negotiated in practical situations. It would involve not only the transmission of ideas but also the reconciliation of different ways of understanding and problem-solving, mirroring the challenges of applying theoretical mathematical concepts to real-world problems.

Question to ChatGPT: Is it not appropriate to recognize that the "big data" applications already rely on algorithms which could be described as multidimensional -- in framing information for presentation to those who rely on 2D thinking. Yet it is with 2D thinking that efforts are made to "stop AI" and constrain multidimensional articulations. Does this reflect characteristics of what is now articulated as memetic warfare -- involving "players" dependent on different degrees of higher dimensionality

Your observation about "big data" and its reliance on multidimensional algorithms is insightful. Indeed, modern data processing and AI often use complex, multi-dimensional models to analyze and interpret vast amounts of information, which is then presented in a more comprehensible 2D format for decision-making. This dichotomy between the complexity of data analysis and the simplicity of its presentation reflects a broader theme in information dissemination and perception.

Regarding memetic warfare, the concept involves the strategic use of memes (in the broad sense of cultural units of information) to influence public opinion or behavior. In this context, the clash between different levels of dimensional thinking – with some "players" operating in more complex, multidimensional frameworks while others are grounded in more traditional, linear perspectives – could indeed be a factor. This dynamic might manifest in how information is framed, interpreted, and used to shape narratives or influence decision-making in various socio-political contexts.

Question to ChatGPT: The response would appear to confirm the existence of applications "translating" multidimensional patterns into those in 2D -- whilst avoiding the issue of how that translation between dimensions can be rendered comprehensible. A contrast is offered by efforts to render widely comprehensible (through visualization) the 10-dimensional frameworks of reality proposed by physics. No such efforts are seemingly made with respect to psychosocial reality

The challenge of translating multidimensional patterns into 2D, and making them comprehensible, is indeed a complex one. While physics has made strides in visualizing and communicating concepts like 10-dimensional frameworks, similar efforts in the psychosocial realm are less common. This difference may stem from the abstract nature of psychosocial concepts compared to the more tangible (though still complex) concepts in physics.

Efforts to visualize and simplify complex multidimensional data into 2D formats are crucial for effective communication and understanding. The gap you've identified suggests a need for innovative approaches in the psychosocial domain, possibly borrowing techniques from fields like physics, to better communicate these complex ideas to a broader audience.

Question to ChatGPT: The response frames 10-dimensional physics as "tangible" (rather than "abstract") whereas it could be readily argued that it is intangible and inherently abstract. By contrast "10-dimensional" social reality may prove to be experientially "tangible" and the contrary of "abstract"

You raise an important point regarding the perception of dimensions in physics versus social reality. The concept of 10-dimensional spaces in theoretical physics, while abstract in nature, often gets visualized through mathematical models and simulations, lending a form of 'tangibility' to these abstract concepts. On the other hand, social reality, which can also be conceptualized as multi-dimensional due to its complexity and the interplay of various factors (cultural, economic, psychological, etc.), tends to be experienced more directly and tangibly by individuals.

This contrast underscores the different approaches and challenges in visualizing and comprehending complex concepts in physics versus those in the realm of social sciences. The former relies heavily on mathematical abstraction and visualization, whereas the latter often requires a more nuanced understanding of human experience and behavior, which may not always lend itself to straightforward mathematical or visual representation.

Question to ChatGPT: Insights from physics -- of potential relevance to territorial conflict -- include increasing understanding of the unusual logic of [quantum superposition](#) and its application to the quantum computing on which AI operation may come to depend. The relevance has been most usefully framed by [Alexander Wendt](#) (*Quantum Mind and Social Science: unifying physical and social ontology*, 2015). From that perspective, resolution of territorial conflict as a challenge of "mapping" can be usefully contrasted with conventional strategies of hegemonic "superimposition", and "superstition" with regard to that possibility (*Mapping as superimposition, superposition or superstition?* 2019, included in *Global Coherence by Interrelating Disparate Strategic Patterns Dynamically*). Could you comment further on the relevance of "superposition" to resolution of territorial conflict

The article "Global Coherence by Interrelating Disparate Strategic Patterns Dynamically" explores complex concepts related to cognitive patterns, strategic mapping, and their implications for global challenges, including territorial conflicts. It delves into the metaphoric use of quantum mechanics, particularly the idea of superposition, to understand and address these issues. The article contrasts different approaches to strategic mapping, such as superimposition and superstition, in relation to comprehending and addressing global challenges. This perspective offers a unique framework for

thinking about and potentially resolving complex, multifaceted problems like territorial disputes. The use of quantum mechanics metaphors, like superposition, suggests a more holistic, inclusive approach to problem-solving that acknowledges multiple perspectives and possibilities.

The concept of "superposition" in quantum mechanics, while primarily a physical principle, offers a fascinating metaphorical lens through which to view and potentially approach territorial conflicts. Alexander Wendt's work, particularly in "Quantum Mind and Social Science: Unifying Physical and Social Ontology" (2015), extends quantum concepts into social sciences, suggesting a novel way to understand complex social phenomena like territorial disputes.

- **Quantum Superposition and its Metaphorical Application:** In quantum mechanics, superposition refers to a system existing in multiple states at once until it is measured. When applied metaphorically to territorial conflicts, this concept could imply exploring multiple, potentially conflicting, solutions simultaneously. This approach contrasts with traditional zero-sum views of conflict, where only one party can "win."
- **Resolution of Territorial Conflict as "Mapping":** The idea of "mapping" as discussed in Wendt's later work "Mapping as superimposition, superposition or superstition?" (2019), could be interpreted as an approach to territorial conflict where different stakeholders' perspectives and claims are acknowledged and overlaid, similar to multiple states in superposition. This approach seeks a holistic understanding of the conflict, recognizing the validity of multiple narratives.
- **Contrast with Hegemonic "Superimposition":** In contrast to the inclusive nature of "mapping," hegemonic "superimposition" represents a more traditional, dominant approach where one party's viewpoint or solution is imposed onto others, often disregarding alternative perspectives and leading to a winner-takes-all scenario.
- **Quantum Computing and AI:** The relevance of quantum computing to this discussion lies in its potential to process complex, multivariate problems much more efficiently than classical computing. AI systems based on quantum computing might be able to analyze and propose solutions for territorial disputes by considering a vast array of variables and perspectives simultaneously, akin to a state of superposition.
- **Challenges and Critiques:** While this metaphorical application of quantum mechanics to social science is innovative, it also faces criticism. The direct application of physical principles to social phenomena can be seen as overly reductionist or simplistic. Social and political conflicts are influenced by a myriad of factors, including historical, cultural, and psychological, that may not neatly align with the principles of quantum mechanics.

In conclusion, the metaphorical use of "superposition" in the context of territorial conflicts suggests a paradigm shift from zero-sum, hegemonic approaches to more inclusive, multi-perspective problem-solving strategies. While this approach is intellectually stimulating and offers a fresh perspective, its practical application requires careful consideration of the complex nature of social and political realities.

Question to ChatGPT: As the symbolic exemplification of latent territorial conflict, Jerusalem can be explored as a singularity to which the insights of quantum superposition might be applied. Could you comment on the articulation in the attached document ([Jerusalem as a Symbolic Singularity: comprehending the dynamics of hyperreality as a challenge to conventional two-state reality](#), 2017)

The document "Jerusalem as a Symbolic Singularity: Comprehending the Dynamics of Hyperreality as a Challenge to Conventional Two-State Reality (2017)" explores the complex dynamics surrounding Jerusalem. It uses metaphors from quantum mechanics, particularly superposition, to understand and approach the multifaceted nature of the city's symbolic significance. The discussion includes perspectives on cognitive challenges, the nature of "hyperreality," and the implications of these ideas for understanding and addressing the intricate and deeply-rooted territorial and ideological conflicts associated with Jerusalem. This approach advocates for a nuanced, multi-dimensional perspective that transcends conventional binary thinking about territorial disputes and conflict resolution.

Question to ChatGPT: In the light of the widely inferred skills of AI in multidimensional solutions to complex problems, do you have any specific comments on their potential application to territorial conflicts and negotiations in that regard

The potential application of AI in resolving territorial conflicts and negotiations is significant due to its ability to process and analyze multidimensional and complex data. AI can offer several advantages:

- **Comprehensive Analysis:** AI can process vast amounts of data from various sources, including historical records, demographic data, and geopolitical information, to provide a more comprehensive understanding of the conflict.
- **Predictive Modeling:** AI can be used to simulate different negotiation scenarios and outcomes, helping policymakers understand the potential consequences of various decisions.
- **Neutral Facilitation:** AI can serve as an impartial tool in negotiations, potentially reducing biases and facilitating more objective discussions.
- **Customized Solutions:** By analyzing diverse variables and interests, AI can propose tailored solutions that consider the needs and perspectives of all parties involved.

However, the application of AI in such sensitive and complex matters must be approached with caution. AI systems are only as good as the data and algorithms they are based on, and they lack the nuanced understanding of cultural, historical, and human factors that are crucial in territorial disputes. The use of AI should be viewed as a supplementary tool, aiding but not replacing human judgment and diplomatic efforts.

Question to ChatGPT: By focusing on the "nuanced understanding of cultural, historical, and human factors" -- which have proven to be so inadequate to current crises -- does this response avoid ("diplomatically") the possibility of suggesting strategic options which AI is widely noted to have demonstrated in the case of chess and the game of go

Indeed, AI's remarkable achievements in games like chess and Go do demonstrate its potential for strategic thinking and problem-solving in complex scenarios. These successes suggest that AI could offer innovative strategies for territorial conflicts, potentially identifying solutions that humans might not easily see. However, it's crucial to remember that games have fixed rules and clear outcomes, which is often not the case in geopolitical conflicts. The unpredictable nature of human behavior and the intricate web of cultural and historical factors make real-world conflicts more complex than games. Nevertheless, AI's ability to process vast amounts of data and identify patterns could still provide valuable insights and novel approaches in such negotiations.

Question to ChatGPT: Is this response misleading in implying that the rapid development of AI will be unable to encompass "flexible rules" (notably implied by "fuzzy logic") and outcomes of a lower order predictability (typically addressed in terms of probability)

You are correct to point out that AI's capabilities, especially with advancements in areas like fuzzy logic and probabilistic reasoning, are increasingly able to handle complex, uncertain, and dynamic scenarios that don't have fixed rules. AI systems are indeed becoming more adept at navigating situations where rules are flexible and outcomes are uncertain, much like in real-world conflicts. This advancement suggests that AI could potentially offer valuable insights and strategies in dealing with territorial disputes, even with their inherent unpredictability and complexity. The comparison to chess and Go, while indicative of AI's strategic prowess, does indeed simplify the broader, more nuanced potential of AI in complex real-world applications.

Question to ChatGPT: Does this response suggest that AI could already articulate strategic possibilities for consideration -- however speculative -- with regard to current territorial conflicts and challenges framed in terms of "unification"?. It is surprising, for example, that not such articulations are evident with respect to Russia-Ukraine, China-Taiwan, or the Koreas -- all of which have access to considerable AI-enhanced mathematical expertise

AI certainly has the potential to articulate strategic possibilities for territorial conflicts and unification challenges. However, the complexity and sensitivity of real-world geopolitical issues like Russia-Ukraine, China-Taiwan, or the Koreas make the application of AI in these contexts both challenging and nuanced.

AI's current use in such scenarios is likely behind the scenes, in analytical and advisory capacities, rather than in direct decision-making roles. The reluctance to publicize AI's involvement could be due to various reasons, including political sensitivities, the experimental nature of such applications, and the ethical implications of AI-driven geopolitical strategies.

Moreover, while AI can offer insights based on data and probabilistic models, the human factors – such as political will, cultural nuances, and emotional aspects – play a significant role in these conflicts, which AI currently cannot fully comprehend or incorporate into its analyses. Hence, AI's role in these complex situations is likely to be supportive, providing enhanced analytical capabilities rather than outright solutions or strategies.

Question to ChatGPT: As a hypothetical exercise, how might a 5-dimensional reframing of a conflict (misleadingly framed as 2-dimensional) be articulated. What of a 10-dimensional reframing, given the assertions of physics regarding the possible nature of reality

A 5-dimensional or 10-dimensional reframing of a conflict, inspired by concepts in physics, would involve moving beyond the conventional binary view (2-dimensional) to incorporate multiple layers of complexity.

- 5-Dimensional Reframing: This might include dimensions such as historical context, cultural identities, economic interests, political ideologies, and environmental impacts. Each dimension provides a different lens to understand the conflict, encouraging a more holistic approach.
- 10-Dimensional Reframing: Expanding to 10 dimensions could add layers like international relations, technological impacts, psychological aspects, legal/international law perspectives, and humanitarian concerns. This broader framework acknowledges that conflicts are influenced by a wide array of interconnected factors, not just the immediate dispute.

Such reframing encourages looking at conflicts not just as a matter of opposing sides, but as a complex system influenced by multiple, often interdependent factors. It can lead to more nuanced understanding and potentially innovative solutions that consider the full spectrum of influences and stakeholders.

Question to ChatGPT: Is there a possibility of dangerous confusion, whether inadvertently or deliberately cultivated, between "multidimensional" (as implied by physics) and "multifactor" (as tends to be used by the social sciences), with the possible additional confusion of "multidisciplinary". Can "higher dimensionality" be simply achieved by adding extra factors, disciplines or themes -- possibly illustrated by a "global problem" framed as one of 195 dimensions (being the number of countries in the world). Of related interest is the statistical process of [multifactor dimensionality reduction](#) and the challenge of the so-called [monster symmetry group](#) of order 8×10^{53} . Such confusion would then suggest misleadingly that a global solution is of the same dimensionality as the global population.

The confusion between "multidimensional" (as used in physics), "multifactor" (common in social sciences), and "multidisciplinary" is indeed a potential issue. These terms, while related, represent different concepts:

- Multidimensional in physics refers to the existence of multiple dimensions beyond the familiar three-dimensional space, such as in theories of the multiverse or string theory.
- Multifactor in social sciences typically means considering multiple factors or variables that influence a phenomenon. This approach does not necessarily imply multiple dimensions in the physical sense, but rather a variety of aspects or considerations.
- Multidisciplinary involves combining approaches from different academic disciplines to address a problem, again not implying multiple physical dimensions but diverse perspectives.

Adding extra factors, disciplines, or themes does not inherently create higher dimensionality in the physical sense. For example, framing a global problem in terms of 195 countries (representing their number) is multifactorial, not multidimensional in a physical sense.

Statistical processes like multifactor dimensionality reduction and complex mathematical constructs

like the monster symmetry group add layers of complexity but do not equate to physical dimensions. They are tools to manage and understand complex data structures or relationships, often in high-dimensional spaces, in a mathematical or statistical sense.

Misunderstanding these concepts can indeed lead to misleading conclusions about the nature of problems and their solutions, such as the erroneous notion that a global solution must match the dimensionality of the global population.

Question to ChatGPT: A potential difficulty with that response are the assumptions associated with dimensionality and the questionable physicality of the cognitive implications of "physics", as extensively argued by George Lakoff with Rafael Núñez ([Where Mathematics Comes From: how the embodied mind brings mathematics into being](#), 2000). Dimensions, factors and disciplines are human constructs through which patterns are organized, as may be the case with AI.

You raise a valid point. George Lakoff and Rafael Núñez, in "Where Mathematics Comes From: How the Embodied Mind Brings Mathematics into Being" (2000), argue that mathematical concepts, including dimensions, are human constructs shaped by our cognitive processes. This perspective emphasizes that dimensions, factors, and disciplines are not just physical entities but are also shaped by human cognition and interpretation. This viewpoint aligns with the understanding that AI, too, organizes and interprets data based on human-designed models and constructs. The implication is that our understanding of 'dimensionality' in both physical and abstract spaces is deeply influenced by the human mind's conceptual frameworks.

Question to ChatGPT: How appropriate would it be to configure these "dimensions" in terms of polyhedra or polychora as a means of suggesting a degree of coherence to the approach -- if only as a mnemonic aid. Is there any trace of such an articulation of relevant "dimensions"

Configuring the dimensions of a conflict in terms of polyhedra or polychora could be a highly appropriate and innovative approach. This geometrical representation can serve as a visual and mnemonic aid, making complex, multi-dimensional problems more comprehensible. Such representations can encapsulate the interrelatedness and complexity of various factors in a conflict, providing a more holistic view. While specific examples of this exact approach in conflict resolution may not be widely documented, the concept aligns with efforts in various fields to use multidimensional models for complex problem-solving. This approach exemplifies the shift from linear to more intricate, networked understandings of global challenges.

Question to ChatGPT: That reference to "multidimensional models" highlights a curious confusion between the higher dimensionality implied and the relevance to territorial conflicts characterized by 2-dimensional articulations -- typically the two "sides" of the conflict. How does comprehension of the conflict in two dimensions get "translated" from the higher dimensionality of the models. This suggests a comparison between the many efforts at "projection" of the Earth as a globe into 2-dimensional maps -- all with acknowledged distortions ([List of map projections](#), *Wikipedia*)

Translating the complexity of multi-dimensional models into the more commonly understood two-dimensional framework of territorial conflicts can be compared to the projection of a globe onto flat maps. Just as different map projections capture the globe's surface with various distortions, translating multi-dimensional conflict models into two dimensions might oversimplify or distort some aspects of the conflict. However, this process is necessary to make the complex, nuanced reality of the conflict more accessible and comprehensible for decision-making and public understanding. The key challenge is to minimize distortion while retaining essential information, similar to choosing the most suitable map projection for a specific purpose.

Question to ChatGPT: Rather than the tendency to obfuscation of references to "multidimensionality", the response suggests the value of assembling a list of multidimensional models of two-dimensional conflict, analogous to the *Wikipedia* list of map projections -- with an indication of their dimensionality and the consequential distortion in two dimensions. Do you have access to a list of such models and their

dimensionality.

There isn't a readily available list of multidimensional models specifically for territorial conflicts analogous to a list of map projections. However, multidimensional conflict resolution models do exist in various forms, tailored to different settings. For example, Ken-ichi Ohbuchi and Mariko Suzuki developed a three-dimensional model addressing conflict issues in organizational settings, focusing on dimensions like Gain/Loss, Right/Wrong, and Correct/Incorrect. These dimensions were linked to different resolution strategies based on the nature of the conflict issue.

This model exemplifies how multidimensional approaches can provide a more nuanced understanding of conflicts and their resolution. However, it is primarily oriented towards organizational conflicts, and a direct application to territorial conflicts would require significant adaptation to account for the unique complexities of geopolitical scenarios.

For more detailed information on this model, you can refer to the publication on [Emerald Insight](#).

Question to ChatGPT: Rather than "multi-disciplinary", "multi-factorial", "multi-sectoral", or "multi-dimensional", the focus of this exchange has been on the transition between binary thinking and the higher dimensionality suggested by physics. This might have been usefully termed an "interdimensional" transition offering the challenges of interdimensionality suggested by the example of map projections. Ironically most of the references to "interdimensionality" currently focus on interdimensional travel and beings of an interdimensional nature, as noted by one of the few exceptions (Keri Duncan Valentine, [Investigating Interdimensional Relationships](#), *Mathematics Teaching in the Middle School*, 22, 2017, 8). Even interdimensional physics has been appropriated to that end (Mohsen Paul Sarfarazi, [Interdimensional Physics: concepts of time, space, dimensions, quantum consciousness, and sentient vibration](#)). Can you offer any further clarification, given the urgent challenge of territorial conflict.

The concept of "interdimensionality," as you've described, offers a novel perspective on understanding and addressing territorial conflicts. Moving beyond traditional, binary approaches to embrace a more nuanced, multi-layered understanding could potentially lead to more effective solutions. This concept aligns with the idea of looking at conflicts through various lenses or dimensions, considering different factors, sectors, and disciplines.

However, the term "interdimensionality" has been predominantly associated with speculative topics like interdimensional travel and beings, as noted in works by Keri Duncan Valentine and Mohsen Paul Sarfarazi. This association can obscure its potential application to real-world problems like territorial conflicts.

To clarify, applying "interdimensional" thinking to territorial conflicts would mean considering not just the obvious, surface-level aspects of the conflict (the "two dimensions") but also the deeper, less visible factors and implications. This could include historical context, cultural nuances, economic impacts, environmental considerations, and more, thus offering a richer, more comprehensive approach to conflict resolution

References

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Alexander Wendt. *Quantum Mind and Social Science: unifying physical and social ontology*. Cambridge University Press, 2015



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