The Wargaming Guild

HOW THE NATURE OF A DISCIPLINE IMPACTS ITS CRAFT AND WHETHER IT MATTERS

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RESEARCH

TAKING A QUESTION

FIGURING OUT A POSSIBLE ANSWER

DRAWING A LINE FROM ANSWER TO QUESTION

APPLYING METHOD

ANALYZING RESULTS

WRITING

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REVEALING THE EXPERIENCE

A NEW QUESTION ARISES

Allan Kaprow, American painter, inspired by Paul Klee, Swiss expressionist 2003[1]

[1] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 56

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I am blessed for the chance to present this work.

Note from the Researcher

At the Connections 2019 Conference in Carlisle, PA this summer, I could be found scribbling intensely in my notebook and collecting various business cards from the giants of academic, DOD wargaming. Under that one roof I had at my fingertips the aggregate knowledge and experience of almost 200 career gamers, including the likes of Peter Perla, Matt Caffery, and ED McGrady. My attendance there was essentially a reconnaissance mission. My objectives were threefold: 1) to run some potential thesis topics by these subject matter experts to get a temperature for what the community would find useful 2) to grow in my personal development as an amateur gamer and a professional with my CNA colleagues, and 3) to set a solid groundwork for continued relationships with the world of gaming I was just discovering.

While I certainly left the conference feeling I had accomplished the latter two of those objectives, I did not have a finalized thesis topic. Rather than narrowing down a list of two or three questions, I walked away with a list of nearly two dozen interesting topics to investigate. Fortunately or unfortunately, the various obstacles that exist to wargaming literature have kept academic writing on the field fairly narrow in scope, so I had considerable freedom to pursue the questions that interest me most (in other words, my decision on what to research was not an easy one).

My interest in wargaming, and therefore my interest in pursuing a graduate thesis on the subject, stems from a long process of self-discovery during my undergraduate years. Through classes and internships, I quickly learned that sitting behind a desk doing analysis was my strength, but not satisfying in and of itself. I wanted so desperately to be creative, to draw inspiration from multiple sources, and to constantly be learning about topics in unrelated areas. My preference is always breadth over depth. Wargaming is a tool that satisfies my desire to take rigorous analysis to a creative place. It is the only platform I am aware of that actively encourages play in a professional setting that also contributes to national security.

The thesis you are about to read, while perhaps green, is a labor of love. I see this project as an opportunity to officially introduce myself to the professional world, and to start making lasting contributions.

Introduction

Wargames as tools with professional, military applications have been considered seriously in America since the end of the 19th century, when the Navy War College, under the leadership of Lieutenant William McCarty Little, began teaching wargame design and integrating wargames into officer education.[2] Since then, the Navy War College has remained the constant custodian of the wargaming flame, while the tool has cycled through decades of lost favor, newfound champions, and mixed responses. The wargame of today's world would still be recognizable to someone like McCarty Little, though it has taken on new life. It is still manual but no stranger to computers. It is more adaptable than ever yet grounded to its original intent. Designing wargames is a trade – a line of work that is part tradition and part innovation, all surrounded around the production of one general product. As such, knowledge about how to produce good games builds on itself over time, and the quality of the game produced today relies on the quality of the community that carries the craft forward.

To borrow the description of the wargame design community laid out by Robert C Rubel in his well-regarded 2006 work, ***The Epistemology of Wargames***, the wargame community operates much like a guild.[3] He points out that "[w]ar gaming is currently a craft. There are a few highly experienced and skilled game designers and directors 'out there,' and these individuals each operate by rules of thumb they have learned over the years. Approaches vary."[4] Professionals in this field perpetuate the craft by capturing their respective practices and beliefs and handing them down to their amateur protégée. It is a fascinating and unwieldly community, handling critical institutional knowledge with limited formal channels.

The guild-like nature of wargaming matters because it affects the way members contribute to the field, interact with each other, and understand their work when representing it to sponsors in the Department of Defense (DOD). A debate exists in the wargaming community about what kind of discipline (in an academic and a pragmatic sense) wargame design is. Some anecdotal assessments of its place among the disciplines exist, but there is yet to be a systematic study determining which field it shares most similarities with – art or science.

Peter Perla, the godfather of wargames, declared firmly in his penultimate work that wargames are more an art than a science.[5] Those that favor the artistic side of wargame design, falling into Perla's camp, often honor wargames for their power to transform players, to immerse them in ideas, and to facilitate a kind of user experience that deepens player and researcher

[2] Perla, Peter P. *The Art of Wargaming: A Guide for Professionals and Hobbyists*. Naval Institute Press, 1990. 65

[3] Rubel, Robert C. "The Epistemology of War Gaming." *Naval War College Review*, vol. 59, no. 2, 2006, pp. 108–128. 126

[4] Rubel, Robert C. "The Epistemology of War Gaming." *Naval War College Review*, vol. 59, no. 2, 2006, pp. 108–128. 126

[5] Perla, Peter P, et al. *Wargame-Creation Skills and the Wargame Construction Kit*. CNA Document Control and Distribution, 2004. 49

understanding of the concepts under examination.[6] Meanwhile, those on the side of wargames as science often worry that if wargames are to be held up as an analytical tool, they should also be subject to scrutiny and process like their analytical counterparts.[7] In a 2017 survey of professional gamers, Elizabeth "Ellie" Bartels found that, while there are champions for both sides, the majority of participants favored art. They used terms like "player enjoyment" that indicated an artistic approach to design.[8] At the same time, a strong argument remains for the adoption of scientific standards for the craft to streamline the discipline and create credibility with DOD.[9] Voices in the field point to the issues that rise from a lack of reliable training tools for new game designers, a lack of agreed upon standards by which to evaluate products objectively, and a chaotic literature pool that prevents consolidation of knowledge, critical engagement with ideas, and evolutions in research customary to a proper scientific discipline.[10]

This project wants to make a meaningful contribution to the community's ongoing debate about wargaming as a discipline. It is a very academic, if not theoretical, contribution, but it has pragmatic implications. Using the results of this study to place the wargaming discipline firmly on the scale between art and science, the community can better understand the capacities and limitations of their tool. Depending on the answers to these questions, the nature of a successful wargame will also change to reflect the discipline it stems from, thus sharpening the understanding of the much-loved wargaming tool.

The Project at Hand

The Larger Context: a Project in a Land of Chaos and Confusion

Since Bob Work wrote his ***War on the Rocks*** article in 2015 calling the DOD to understand and employ wargames in operations analysis across the services, wargames have seen a renaissance.[11] Despite their growing popularity, there still exists plenty of misunderstandings about what wargames are and do.

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[6] Bartels, Elizabeth M. "War Gaming and Implications for International Relations Research MIT CIS and US Naval War College Workshop." *War Gaming and Implications for International Relations Research MIT CIS and US Naval War College Workshop*. July 2019. 1 AND Perla, Peter P, and ED McGrady. "Why Wargaming Works." *Naval War College Review*, vol. 64, no. 3, 2011

[7] Bartels, Elizabeth M. "War Gaming and Implications for International Relations Research MIT CIS and US Naval War College Workshop." *War Gaming and Implications for International Relations Research MIT CIS and US Naval War College Workshop*. July 2019. 1

[8] Bartels, Elizabeth M. "In Search of Measures for Wargame Assessment: Interpretation of a Field Survey of Professional National Security Gamers." in Military Operations Research Society Wargaming Community of Practice (Alexandria, VA 2017).

[9] Robert Work and Paul Selva, "Revitalizing Wargaming is Necessary to be Prepared for Future Wars," War on the Rocks, December 8 2015.

[10] Downes Martin, Stephen. *Working Group Outbrief*, Connections 2019, Carlisle Army Base, PA. 16 August 2019. AND Downes Martin, Stephen. "Your Boss, Players, and Sponsor: the Three Witches of War Gaming," Naval College Review 67, no. 1 (2014).

[11] Work, Robert and Selva, Paul, "Revitalizing Wargaming is Necessary to be Prepared for Future Wars," War on the Rocks, December 8 2015.

At its core, a wargame is an abstraction of reality that seeks to model and simulate a conflict, catastrophe, or event for which there are many possible outcomes with the involvement of human decision-making. It comes packaged with "predetermined rules, data, and procedures" that allow it to be a platform for both engagement and analysis.[12] The human element of wargames is critical, because it is this input of decisions, personalities, motivations, and play that sets wargaming models apart from operational research tools. The idea that wargames are set-apart, unique, and therefore valuable is captured by a trend in its definitions, which frequently rely on what wargames are not rather than what they are. Peter Perla outlines the three "nots" of wargames as: 1) not traditional analysis, 2) not real and 3) not duplicable.[13] The first captures the idea that analysis wargames produce is not a precise measurement or proof of anything in and of itself, but rather a product to accompany larger analysis. The second expresses how, like any model, a wargame cannot be a perfect representation of reality, and as such, its results cannot be excepted as predictions of the future. And the third shows that, even though the same mechanics, map, rules, and even the individual players themselves might be kept constant in gameplay, no one game looks like another. Elements of luck, chance, and humanity will always leave the outcome and sequence of events slightly different than the last.

Even understanding what wargames are not, the realm of possibility for what they are or could be is large. This variety is part of wargames' appeal and is an explanation for their popularity, but it is a double-edged sword. Sponsors or consumers may believe that a wargame can be created for any question they have, and if the human element is present, it can be deemed a proper wargame.[14] Such beliefs are dangerous. There are many questions for which wargames are a poorly suited method. For example, imagine asking for a wargame that will show whether the US will win in a third Taiwan Straight crisis. While a game might shed some insights on potential operational outcomes, it cannot, with total certainty, predict the exact outcome of such a conflict. There are too many factors and too many human decision elements to allow for such certainty. Games are also not suited for questions that might better be addressed with models and simulations, i.e. research questions about specific kill rates of platforms.

The issue is partly addressed by literature that seeks to define wargames by their utility and their applications. Captain William McCarty Little, one of the original US wargame pioneers, sorted wargames into two major categories based on how he saw them used in the Navy War College (NWC): experiential and experimental.[15] Principally, he called the purpose of wargames the contribution to national strategy and survival of uniformed lives in conflict. Both types of

[12] McHugh, Francis J. *Fundamentals of War Gaming*. 3rd ed., The United States Naval War College, 1966. 229

[13] Perla, Peter P. *The Art of Wargaming: A Guide for Professionals and Hobbyists*. Naval Institute Press, 1990. 164.

[14] Wong, Yuna Huh. "Irregular Warfare: The Kobayashi Maru of the Wargaming World." Chapter 44. Zones of Control. 534 – 535.

[15] Della Volpe, David, et al. *War Gamers' Handbook: A Guide for Professional War Gamers*. Edited by Shawn Burns, Defense Automated Printing Service, 2015. 2

wargames served this purpose, experiential because the players involved in games constructed for that purpose could gain valuable decision making skills or learn important lessons for their respective positions, and experimental because plans can go through testing and potential outcomes can be addressed in a safe and constructive environment.[16] Sometimes educational games and analytical games are added as subcategories to these larger buckets, each highlighting a particular motivation that may echo the direct application or the designer preference behind the games.[17,18] When games are bucketed and labeled by their intended uses, sponsors and consumers can gain a better idea about what wargames actually provide, at least categorically.[19] One of the wargaming community's most recent publications, Rand Corp's ***Next-Generation Wargaming for the U.S. Marine Corp: Recommended Courses of Action***, went so far as to model their research approach around a set of sponsor objective-driven categories of wargames, by which they could create tailored task lists and recommendations by type of game. Their report recognizes that many wargame categorization systems exist, but the ultimate purpose of any system should be tailored to the types of objectives and uses the sponsors, designers, and consumers are looking for. Utility specific constructs can settle some confusion by rooting process in objectives, as long as sponsors and designers both are conscious to ovoid mismatching objectives with models.

Confusion over a much-loved analytical tool is troubling, especially in a climate of doubt surrounding DOD's analytical capacity. At a time when GAO reports and National Defense Strategies alike call for a revamp of joint analysis and increased rigor across government entities, wargames represent a critical area for closer inspection.[20,21] There is an urgent need for more scholarship about wargames as a discipline and as a tool in the cabinet of national security analysis.

Research Methodology

Academic disciplines are about methodologies and processes, so to systematically determine the category of academia in which wargames fall, a study must turn to standards of procedure (SOPs), rather than the end product. Standards of procedure are a good way to see bias manifested because they reveal the methods and qualities that the community believes

[16] Della Volpe, David, et al. *War Gamers' Handbook: A Guide for Professional War Gamers*. Edited by Shawn Burns, Defense Automated Printing Service, 2015. 2
[17] Della Volpe, David, et al. *War Gamers' Handbook: A Guide for Professional War Gamers*. Edited by Shawn Burns, Defense Automated Printing Service, 2015. 4
[18] Downes Martin, Stephen. "How Not to Not Analyse Wargames." Connections UK. Connections UK, Sept. 2015, London, King's College London. 6
[19] Wong, Yuna Huh, Sebastian Joon Bae, and Elizabeth M Bartels. *Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*. Santa Monica, CA: RAND Corp, 2019. 6
[20] Bertuca, Tony. "Pentagon Calls for 'Urgent Change,' but Lacks Strategic Analysis Process to Drive Tough Budget Decisions." *InsideDefense.com*, 2 May 2019.
[21] Davis, Paul K, and Donald Blumenthal. "The Base of Sand Problem: A White Paper on the State of Military Combat Modeling." *The Base of Sand Problem: A White Paper on the State of Military Combat Modeling*, RAND Corporation, 1 Jan. 1991

embody their craft. Note that for the purposes of this study, “bias” (or “guild-bias”) can be defined as the influence of guild culture on the process that goes beyond basic subjectivity, but affects change systemically, not intentionally. It is the thing which makes SOPs a direct reflection of the community’s disciplinary nature because it stems from the guild’s unofficial tradition.

Cross examining wargaming processes with the characteristics of an art and a science will reveal how the community should think about their norms and tendencies when designing games and managing projects. The appropriate model for this project includes first a systematic analysis of guild-formed SOPs (1, design process, 2, metrics of evaluation) crossed with the traditional standards set by science disciplines and art disciplines, to determine how the wargaming discipline manifests. Data will be collected from two bodies of literature: writings of wargaming guild experts, the literature surrounding traits of art and science disciplines. For specifics on these bodies of literature, see the categorized bibliography attached to this report. The cross examination will look something like this:

Discipline	**Traits**	**Design SOP**	**Evaluation SOP**
Science	1		
	2		
	3		
	4		
Art	1		
	2		
	3		
	4		

In this model, the light orange cells represent the findings. The light green cells represent the various traits identified as defining a scientific discipline. The light pink cells represent the various traits identified as defining an art discipline. The art and science characteristics will be drawn from the artistic research field and from business processes.

There are some limitations to this model. The tautological/anecdotal nature of wargaming information means that the processes being used as case studies are themselves the product of bias. While this fact supports the idea that bias is inherent to guild culture, it also means that real-world practice of these processes may deviate from how they are described on paper. As such, this paper can only show how the nature of wargaming discipline affects SOPS, not the outputs of games. Another study with access to wargaming reports (unavailable to me now for resource and time constraints) would be a worthy follow up to this report. In addition, it should be noted that the SOPs of sciences broadly and the SOPS of arts broadly will be abstractions. It is okay to abstract the nature of science and art disciplines because this report finds its basis in theory and is trying to place wargaming on a sliding scale between science and art, rather than

compare it with a specific sub-discipline (i.e. biochemistry discipline or oil painting discipline). Comparing wargaming to such a specific discipline would not serve to place it in a category, but only to draw out similarities, which is not the aim of this project.

Regardless, this is still the best method for understanding how guild-bias manifests (that is, whether it manifests more like a science or an art). A discipline is comprised of its methods if nothing else, so a side by side comparison of wargame SOPs to science SOPs and wargame SOPs to art SOPs will address the identity confusion the community faces and result in meaningful implications.

The Issue the Guild Faces

Without existing ethnographic-style studies on the structure of the guild, the formation of the community's culture, and the impacts the organization has on its product, a review of the relevant literature requires some creativity. To test the influence of guild bias on its processes, we first must understand how the wargame design community thinks about its craft. The problem overview must provide support for the assumption on which this project rests, that bias is inherent to the guild structure. Without this assumption, testing whether guild-bias is of a scientific or artistic nature would be for not.

The problem overview breaks down into two questions: (1) how does the community know that a wargame is successful and (2) how is a successful wargame achieved? These questions center around themes of standards and methods, which, as a reminder, would be the same throughout the community if the community was more scientific than artistic, and less so if the reverse was true. This will serve as an expose of the wargaming community's struggle to identify its discipline's place between science and art, as well as the foundation for inherent guild-bias.

How does the community know that a wargame is successful?

At the most basic level, a good wargame should meet objectives (purpose and utility) set forth by its designers and sponsors. The entire wargaming community can agree on that point, but it is too broad to be considered a metric for gauging success. Indeed, no one characteristic of a good game can be an end-all metric for measuring success. For this reason, CNA created the most comprehensive assessment of evaluating a game for success: ***Wargame Pathologies***. Tracing the literature around measuring success proves ***Pathologies*** to be the basis for a plethora of reports which either advocate for attention to a gap in ***Pathologies***, or the prioritization of one success indicator.

Wargame Pathologies earned its place as the starting point for a success metric not only because of its comprehensive nature, but because of its systematic approach. The methodology

for the report uses a CNA-developed system called Game Element Analysis (GEA), which breaks wargames down into their constituent elements and systematically examines them for function and for failure modes, providing designers with questions to ask to keep their games in check. The document earns its authority and community stamp of consensus by including the inputs of scholars like Downes Martin and Rubel.[22]

Just because ***Pathologies*** is the most objective does not make it infallible, and the community of wargame designers does not take it without a grain of salt. One example of addressing a hole in ***Pathologies*** is the work of Lt. Col. Matthew Hanson, whose monograph on improving operational wargaming takes a hard look at how ***Pathologies*** addresses the question of whether or not players are receiving the right message from wargames, or, in other words, whether games are designed around the right objective. Hanson points out that ***Pathologies*'s** failure mode for objectives fails to mention that games designed around "inappropriate or counter-productive objectives" may be just as unhealthy as wargames that simply don't meet the objectives set. Hanson's expansion of CNA's work is a strong indicator that problems persist in the community's attempt to measure success. If Hanson can poke a hole in one tiny element of GEA, then who is to say that all game elements should not be gone over with a fine-tooth comb for insufficiencies.

Stephen Downes Martin, like Hanson, makes several improvements upon ***Pathologies*** by addressing areas he considers incomplete. In a 2017 MORS working group, Downes Martin gathered wargaming subject matter experts to address the meaning of wargame validity and utility.[23] What the working group ultimately produced was a comprehensive description of the characteristics of benign games and malign games, along with a set of recommendations of how to promote SOPs, while mitigating against the failure modes that produce malign games. The structure of the product is not unlike GEA in that it roughly corresponds to wargame elements, but it goes a step further by connecting external and internal hindrances to wargame innovation in a way that ***Pathologies*** did not, noting the dangers of an "environment of time crunch, career pressure, resource constraints and the beliefs and opinions of sponsors, stakeholders and players."[24] Downes Martin and his working group are pointing out that even a perfectly designed wargame can still be subject to failure if its corrupted by the many hindrances to innovation and bureaucratic challenges that skew game results. Therefore, wargame success is also contingent on how well designers manage the forces that be. In the same way that inappropriate objectives can skew results before a game is even played,

[22] Weuve, Christopher A, et al. "Wargame Pathologies." *CNA Document Control and Distribution, The CNA Corporation*, CRM D0010866.A1/Final, Sept. 2004

[23] Downes Martin, Stephen, et al. "Validity and Utility of Wargaming." *MORS Wargaming Special Meeting*, Oct 2017, no. Working Group 2, 8 Dec. 2017. 5

[24] Downes Martin, Stephen, et al. "Validity and Utility of Wargaming." *MORS Wargaming Special Meeting*, Oct 2017, no. Working Group 2, 8 Dec. 2017. 22

bureaucratic forces can skew the objectives before a game is even designed. Downes Martin's work, in conjunction with Hanson's raises a red flag to the community: wargame success is not just a matter of construction, but also a matter of context. This acknowledgement also suggests plenty room for the impact of existing bias.

More evidence of the guild grasping for an understanding of success exists in the myriad of articles about which indicators should be prioritized. Downes Martin expands on his belief in the dangers of bureaucracy in, ***Wargaming as a Catalyst for Innovation***, where he cites the importance of giving games permission to produce results true to the model, often at significant political risk.[25] In a separate presentation on wargame analysis, he makes a point to emphasize the idea that choosing people to both design and play the game is also a factor to wargame success that cannot be overlooked.[26] Even the authors of ***Pathologies*** try to build on/prioritize different aspects of success. Peter Perla and ED McGrady contend that a wargame must engage players (be it through narrative or playability) to be successful.

The professional wargame design community has an idea about what a successful wargame looks like, but their metrics for evaluating success are, like the literature that presents them, largely anecdotal. Even GEA, the most methodological of the metrics presented, is based on experience and created by the same authors who defined wargaming in the first place. Where is the line between good game and bad game drawn? Is it enough for a game to meet its objectives, assuming those objectives are appropriate, as Hanson suggest? Or are there other factors worth including in such a metric, including playability, player engagement, and even management of external factors in execution, as Downes Martin suggests?

Without answers to these questions, the issue is raised on how the wargaming community can continue as a dynamic learning organization. Turning to Rand Corp.'s ***Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*** once again, we can see one of the most recent collections of "write-ups" for 21 wargaming centers through the US government and DOD, capturing the processes, practices, and norms of each of these "mini-guilds." A review of the collection shows the absence of a step for evaluating success, almost universally.[27] Evaluation is not included as a step in Rand's recommendations for category-based design tasks either.[28]

[25] Downes Martin, Stephen. "Wargaming as a Catalyst for Innovation: Stress, Paranoia and Cheating: the Three Furies of Innovative Wargaming." Draft Speaker's Notes - revised 28 August, 2015. Connections 2015 Conference, 27 July 2015, Ft. Lesley J. McNair, Washington, DC, National Defense University. 5

[26] Downes Martin, Stephen. "How Not to Not Analyses Wargames." Connections UK. Connections UK, Sept. 2015, London, King's College London. 3

[27] Wong, Yuna Huh, Sebastian Joon Bae, and Elizabeth M Bartels. *Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*. Santa Monica, CA: RAND Corp, 2019. Appendix A. Wargame Center Write-Ups. 63-132

[28] Wong, Yuna Huh, Sebastian Joon Bae, and Elizabeth M Bartels. *Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*. Santa Monica, CA: RAND Corp, 2019. Appendix C. Tables of Wargaming Tasks. 207-213.

For a scientific discipline, a solidified metric of success would be paramount to the continued learning and improvement of products. For an artistic discipline, this would be less important. Success metrics would be based on customer feedback. The end product of this particular project, then, will determine whether or not the current state of wargaming guild success metrics is satisfactory – if it can continue anecdotally and by designer opinion, or if there truly is a standard by which games can always be measured as good or bad.

How is a successful wargame achieved?

The Center for Naval Analyses' journey towards crafting wargame standards of practice (SOPs) serves as an excellent proxy for the kind of work done by the civilian professional community. Peter Perla's ***Design, Development, and Play of Navy Wargames***, stands as an early (1987) iteration of his eventual published book and builds out SOPs for wargame design, wargame development, and wargame play. From Perla, we learn that the game design process has four parts: specifying the objectives, defining the infrastructure, assembling the information, and devising the mechanics.[29] Perla distinguishes game development from game design by calling it the "process of testing and refining that model to make it more effective in achieving its objectives." [30] By the time CNA arrives at the ***Wargame Construction Kit*** (2004) the elements of Perla's early work, alongside CNA's ***Wargame Pathologies***, are baked into a formal design philosophy that goes beyond the process of simply building a game. The ***Construction Kit*** was commissioned by the Navy War College to become the guidebook for teaching wargaming in a new elective course. As such, the ***Kit*** focuses on developing the skills of to-be game designers, and draws on an array of theories about effective training programs to compile a wargame-theory-informed guide to creating a class.[31] This expansion on design process to include how to teach indicates a belief that the path to successful wargame design also rests on having well trained designers. On this point, the kit is taking a side in a scholarly debate, where one party (represented by Dunnigan's work, ***The Complete Wargaming Handbook***) contends that anyone can design a wargame by following the appropriate outlined process, and another party (represented by Perla's ***Art of Wargaming***) takes the attitude that only a select group of experienced and trained experts can do the work because wargaming "as a discipline is more of an art than a science."[32] The ***Construction Kit*** indicates a preference to Perla's approach rather than Dunnigan's; only with formalized, training vetted by analysts can a person be well prepared to use the design process effectively.

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[29] Perla, Peter P. "Design, Development, and Play of Navy Wargames." *CNA Publications*, vol. 450, Mar. 1987, pp. 1–34. *Professional Papers.* iii

[30] Perla, Peter P. "Design, Development, and Play of Navy Wargames." *CNA Publications*, vol. 450, Mar. 1987, pp. 1–34. *Professional Papers.* i

[31] Perla, Peter P, et al. *Wargame-Creation Skills and the Wargame Construction Kit*. CNA Document Control and Distribution, 2004.

[32] Perla, Peter P, et al. *Wargame-Creation Skills and the Wargame Construction Kit*. CNA Document Control and Distribution, 2004. 49

The CNA path towards wargame SOPs is an excellent example of the nature of guild work as the community understands it. There is a tendency towards consensus building, but there is also debate over points which the community finds incomplete about the consensus. Even CNA's work evolves overtime. This is not surprising; it is logical to see improvement over time. But it does suggest, as Perla pointed out, that the wargame discipline might be more of an art. While a science discipline would allow findings to build on previous findings, an art community would constantly reform or take new stances towards process.

CNA is only one case study, representing the ideas of one "mini-guild." Another look at the collection of write ups from ***Next-Generation Wargaming for the U.S. Marine Corps*** confirms that there are different approaches and norms for these ideas of design processes. The fact that Rand could collect a unique list of tools and approaches for 21 centers, in and of itself, is a sign that the thought process around successful design is collaborative and unique rather than structured and cumulative, suggesting an artistic disciplinary approach.[33] Even more interesting is Appendix B of the same Rand report, which includes a massive catalogue of tools and approaches collected from all corners of the wargaming community, indicating intellectual variety.[34]

Not knowing whether the wargaming discipline is squarely an art or a science prevents appropriate recommendations for how these mini-guilds should continue to evolve their work going forward. It also prevents appropriate recommendations for information sharing between them, and for guidance on how to organize their relationships to each other. This report can move the community closer to and understanding of themselves. What already looks like evidence of an artistic discipline here can be confirmed in full.

What keeps the guild from understanding its discipline?

Let us return to Rubel's journal article, *The Epistemology of Wargames*, and his discussion of the wargaming community's guild culture. Rubel spent the conclusion of his *Epistemology* calling the wargame design community out for having all of the components of a proper guild available to them, but not taking the steps necessary to go from a craft with a following to a guild, and to go from a guild to a professional society with a formal discipline.[35] Above all, he calls for the application of due diligence to the processes that are supposed to generate valid wargames.[36]

[33] Wong, Yuna Huh, Sebastian Joon Bae, and Elizabeth M Bartels. *Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*. Santa Monica, CA: RAND Corp, 2019. Appendix A. Wargame Center Write-Ups. 63-132

[34] Wong, Yuna Huh, Sebastian Joon Bae, and Elizabeth M Bartels. *Next-Generation Wargaming for the U.S. Marine Corps: Recommended Courses of Action*. Santa Monica, CA: RAND Corp, 2019. Appendix B. Catalogue of Tools and Approaches. 133-206

[35] Rubel, Robert C. "The Epistemology of War Gaming." *Naval War College Review*, vol. 59, no. 2, 2006, pp. 108–128. 127

[36] Rubel, Robert C. "The Epistemology of War Gaming." *Naval War College Review*, vol. 59, no. 2, 2006, pp. 108–128. 127

Lt. Col. Hanson, like Rubel, notes a deficiency in the discipline. He conducts an analysis of primary documents of military doctrine and concludes, with ample evidence, that the existing military doctrine includes wargaming at best as a tool for operational planning and occasionally a supporting element for other tasks.[37] The doctrine as of 2015 was devoid of many potentials uses of wargaming, wargaming theory, and processes for designing them. Hanson identifies a central issue, that because military doctrine surrounding wargames is keen on "prescribing rote solutions" rather than considering potentialities and innovative results, decision-makers at the strategic and operational levels of the military are missing opportunities to optimize their use of wargames.[38] It is safe to conjecture that military doctrine would be better informed if the guild new whether it was art or science. It is also possible that the love of "rote solutions" that Hanson identifies is a sign that the guild must try to be more of a science to please its standard-loving audience, the services.

Kathleen McCabe takes up the torch left by Hanson and gets closer at identifying a single explanation for the guild's confusion: parochialism. McCabe conducts a case study of title 10 wargames to address the question: "are traditional service interests observable in the wargames?" She found that service interests have a significant influence on the focus and objectives of games and, when "combined with game design decisions that reduce the scope of the wargame and the weight of player action" can particularly skew wargame results. She posits that external and systemic pressures are responsible for the bias found in design processes and metrics for success: "This set of design decisions have likely developed as a way to fulfill the sponsor or sponsoring institution's objectives but render the wargames, which are intended to be strategic level games, more susceptible to influences of parochial thinking."[39] McCabe's project is not dissimilar from the scope of this very project, save that she looks for service parochialism in games introduced by the sponsors/consumers, rather than evidence of biases from the guild itself.

The formal discipline is not yet available, and it is evident that the guild struggles to place its craft between art and science. It is very interesting, though, to consider that the guild's confusion might not just be internal, but also the result of external factors. The guild faces a situation where the success of a game is contingent on factors under and out of their control. The literature suggests the community is cognizant of that at a basic level, since they are constantly in a process of caulking the holes of overlooked game elements and evolving the

[37] Hanson, Matthew E. "Improving Operational Wargaming: It's All Fun and Games Until Someone Loses a War." *School of Advanced Military Studies, United States Army Command and General Staff College*, US Army Command and General Staff College, 2016. 43

[38] Hanson, Matthew E. "Improving Operational Wargaming: It's All Fun and Games Until Someone Loses a War." *School of Advanced Military Studies, United States Army Command and General Staff College*, US Army Command and General Staff College, 2016. 44

[39] McCabe, Kathleen. "Service Parochialism and the Defense Planning Process: A Case Study of the Title 10 Wargames." *Department of Political Science, McGill University*, 2016. 86

consensus. The nature of sources available is a reminder that this community's bias is inherent, as the conversation happening in wargaming circles is experiential, anecdotal, and ultimately, tautological.

Theoretical Discussion of Art and Science Disciplines

First let us begin by reiterating that this project wants to find if wargaming is more art or more science. It does not suggest that wargaming does not have elements of both. Indeed, the study of aesthetics reaching back to Plato has put art and science in the same camp of human experience.[40] Both are lenses through which humans can understand their world. Overtime, academic institutions, businesses, and other large organizations have seen the separation of the two categories, forming the Western concept of science as deduction and art as intuition (the traditional descriptors of the rationalist philosophers).[41] Some predominate voices (like C. P. Snow in his famous lecture, "The Two Cultures") in the field of art and science epistemology have argued that separating the two is detrimental to the evolution of human learning – that scientists and artists both should take a cue from Michelangelo and integrate their disciplines for a heightened form of learning.[42] However, it remains particularly established in the business world and in the world of organizational research that when it comes to processes, some are more like science than art or vice versa and should be intentionally identified.[43] In this twenty-first century world, the distinct forms of science and art appreciated by organizations and academics are not the same arts and sciences of ancient Rome. They are treated much more pragmatically, and as such they have separate defining characteristics. While this report acknowledges the importance of the *artscience* movement, which integrates the two and advocates for the overlap of both, it must begin from the traditional Western definitions of the current century.[44] Only after looking at the traditional elements that wargaming reflects can we move on to the potential for wargames to be a beacon for both camps. In this section, art and science will be discussed primarily for their philosophical and practical differences, leaving aside the knowledge that there are, in fact, many similarities.

Attributes of Art and Science: Artistic Research Perspective

Developing parallel to the wargaming field but a few steps ahead in its advancement is the artistic research community. A 2005 *modus operandi* out of Helsinki's academic strongholds,

[40] Edwards, David A. *Creating Things That Matter: the Art & Science of Innovations That Last.* First edition. New York: Henry Holt and Company, 2018. 14
[41] Edwards, David A. *Creating Things That Matter: the Art & Science of Innovations That Last.* First edition. New York: Henry Holt and Company, 2018. 14.
[42] Edwards, David A. *Creating Things That Matter: the Art & Science of Innovations That Last.* First edition. New York: Henry Holt and Company, 2018. 17.
[43] Hall and Johnson, when should a process be art, not science?
[44] Edwards, David A. *Creating Things That Matter: the Art & Science of Innovations That Last.* First edition. New York: Henry Holt and Company, 2018. 271

Artistic Research – theories, methods and practice, in many ways accomplished what this very project seeks to do for a separate discipline. The artistic research world, according to Hannula, Suoranta, and Vaden, is an emerging discipline, one that is both "practice-based and practice-driven" in its research, and, like wargaming, is caught on a knife's edge between arts and sciences.[45] Artistic research refers to the systematic study of the creative process that goes into the production of objects/works/crafts considered art. Like the wargaming community, the artistic research community feels tremendous external pressure to consider how it could be a scientific discipline so as to gain credibility noting: the path to "academic autonomy" beings with the ability to self-define what the field does.[46] The science disciplines have a tradition of this "self-definition and self-maintenance" that allows their communities to contribute to and to critique additions to a central, ever-evolving body of work.[47] Arts, on the other hand, favor a simple transparency about the individual's creative process over stringent guidelines, norms and traditions that run a risk of losing their necessity over time. It is the artistic research discipline's similar situation to professional wargaming and their unique weighing of the values of art and science that make them the ideal candidate for deriving an understanding of what comprises an art or a science in the theoretical sense.

Human/child development researcher Howard Gardner, in his 1973 study on the psychology of artistic process, laid out the differences in thought process between the artist and the scientist in how they treat their work. Gardner describes the work of an artist coming from an interest in the subjective. The artist tries to convey parts of herself and her ideas with the goal of allowing the beholder to absorb her message. Here, the bias or perspective of the artist is paramount to the work's entirety. This entirely opposite from the thoughts and motivations of the scientist, who "set[s] up a series of questions about the world of objects [and] seeks to communicate in as simple and unambiguous fashion as possible just what he has discovered about those objects or facets of the world."[48] The scientist is in the business of illuminating phenomena. He designs a project based around a question that stems from an already existing pool of work and applies logic and objectivity in pursuit of answers. To that end, the scientist works within a pre-existing framework, complete with a philosophy, rigid guidelines, and standards. For the scientist, any evidence of his personality in his work would negate its goal – suddenly his work would lose its ability to be replicated, to be applicable in multiple disciplines across time and space. Gardner describes this division between the biases in art and science as a difference in focus: the artist

[45] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 9

[46] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 13

[47] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 13

[48] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 311

concerns herself with the message, while the scientists concerns himself with the *form* of the message.[49]

Taking that idea a step further, the different approaches to bias in art and science have a direct effect on the organizational environments and processes the two types of disciplines thrive in. As American painter Wolf Kahn remarked, artists cave under the weight of "intellect and its categories" but rather thrive in "the irrational, [the] unconscious processes, [the] intuition and […] the unique particular."[50] The artist needs only to prove that "he is able to handle his medium competently" and therefore has no reason to justify the validity of work across of a set of standards.[51] An artist is a creator that can even suffer adverse effects from too much supervision, rigidity, and conformity to a discipline's principles. The scientist, on the other hand, must have a work rooted in formalization and "scientific theorem" that can then be judged along set standards by individuals sharing in the field.[52] A scientist operating apart from his peers and their work would hardly be recognized or see his work go anywhere. At their extremes, then, art is independent and content-focused while science is cumulative and method-focused.

A manifesto entitled ***The Artistic Turn***, published out of the Orpheus Institute in Germany (a leading research center on artistic research) takes another approach to dividing art and science, this time not by the internal biases of their creators, but by the external limitations imposed upon them. Coessens, Crispin, and Douglas describe science as consistently limited by the confines of reality. Indeed, science must resemble reality in the fullest to be considered science. Art, meanwhile, is limited only by human imagination. They point to another notable work, Jerome Bruner's ***Actual Minds, Possible Worlds***, and Bruner's use of narrative and paradigmatic approaches to describe the very innate difference in human conception of science and of art. The narrative approach refers to the human tendency to want to define and interpret what they experience. Art disciplines are rooted in this desire, but also limited by the specific experiences of their producers. The paradigmatic approach captures the human desire to "classify, schematise, and analyse," and from that desire flows science.[53] And while deduction and empiricism are hallmarks of science, science is also limited in what it can actually conclude. Science also must pass through a rigorous evaluation process to be considered truth. Paul Ricoeur, famous French philosopher of hermeneutic phenomenology, laid out the three values

[49] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 311

[50] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 311-312

[51] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 312

[52] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 313

[53] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 48

of science that make explain why such limits exist: consensus, conformity and verification.[54] If a result is to be science it must first be agreed upon by its community, it must then be deemed similar enough to accepted practice that it could survive time and replication, and finally it must actually survive said testing. Such limitations do not apply to the art world, which, according to Ricoeur, aims at innovation and the creation of the new more than it focuses on the test of time.[55]

The differing psychology of the artist and the scientist, the limitations the fields face, all of these theoretical aspects pour into the artistic research field's perception of how artistic methods look different than scientific ones.

The Artistic Turn presents a distilled but encompassing model for thinking about scientific processes in which characteristics of science are represented on axes. The horizontal axis includes the scientific method in its purest form (isolation, control, exclusion of the observer, and analysis/formulation) while the vertical includes the methodological phases of science:

1. "Observation, data gathering, and description of the phenomena under investigation;
2. The setting up of a model of explanation by formulating a research question and hypothesis that anticipates the answer;
3. An experimental process with the aim of testing the hypothesis;
4. An evaluative and controlling phase in which the results are tested both against the original hypothesis and the research subject."[56]

Note how in a process such as this, any humans involved would be reduced to objects – inputs and data. Because things like human decision making and human experience cannot conform to the traits of the scientific method or to a laboratory, they cannot be subject to the methodological phases of science. Also note how the qualities of the scientific method remove the potential bias, perspective, or expression of the creator. The work can stand on its own without influence from the researcher.

The artistic process can also be described in terms of qualities and phases. Hannula, Suoranta, and Vaden do so at the end of ***Artistic Research***:

1. "Clarifying the subject and starting point of the research
2. Unfolding the presuppositions contained in the subject-matter and viewpoint of the research.

[54] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 55
[55] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 55
[56] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 50

3. Possession of the chosen research tools and the subject matter.
4. Literary presentations
5. Evaluation of the final result
6. The applied re-perception of research practices and the independent study of the preconditions for the adequacy required by artistic research."[57]

The first two steps here are about transparency: revealing the message and the ideas of the creator behind the project. Steps 3 through 5 are not dissimilar from those of a social science project, but it should be noted that they refer to the study of arts, not the actual creation of arts, and that the process of creating art is theory. But perhaps most interesting is the 6th step of this process. Although it looks a lot like validation processes, it is of a different nature than the conformity required by the sciences. Here, preconditions for adequacy are not principles like isolation and replicability, but rather describe the simple idea that if it looks like art, it is. All that is required is a level of competency in the medium deemed appropriate by the community.[58]

Art and Science Concretely in Processes: Business Perspective

The scholars of the artistic research community were uniquely positioned to understand the danger that imposing science upon processes that are meant to be art can present. Hannula, Suoranta, and Vaden remark that in their study they risk normalization too early in the discipline's development – a mistake created by the tendency to favor single-point solutions over productive anarchy and that results in the suppression of much needed growth, experimentation, and creativity.[59] So while the body of artistic research literature outlines the complex theoretical relationship between art and science, it is also true that some processes are meant to be art, and some science. The business world is perhaps best suited to understand these differences in a practical sense because of the institutional study of process standardization.

Process standardization is the application of science to optimize processes within business. A famous example is the Toyota Production System or the Ford assembly line.[60] Processes designed around this model have the elements of science as theoretically defined – the system is validated, agreed upon, replicated. Unfortunately, scholars in the business community have found that process standardization has often become the automatic default for producers looking to streamline their processes, with no regard for the potentialities of artistic processes.[61] Business Professors Joseph M. Hall and M. Eric Johnson capture this crisis in the

[57] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 114-117
[58] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 117
[59] Gardner, Howard. *The Arts and Human Development; a Psychological Study of the Artistic Process.* New York: Wiley, 1973. 14
[60] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 2
[61] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 2

Harvard Business Review, finding that "there are some processes that naturally resist definition and standardization – that are more art than science," and that identifying the appropriate discipline is critical to the success of the product.[62] They have a more pragmatic view of art in process than their artistic research counterparts, calling products created by artistic disciplines "'judgement-based work,' 'craft work,' or 'professional work,' and highlighting the importance of variability in the processes that create such works.[63] They identify two key characteristics of an environment where art processes and science processes diverge.

The first is the level of variability in the environment – science processes try to reduce variability while artistic disciplines thrive with as much variability as possible. The practical issue this creates for a product meant to be an art is a tendency for employees to default to route solutions, ignore circumstance and forego accountability for design.[64] The second characteristic is "output variation that creates customer value" – in plain English, if the product at hand increases in value when it is unique to the situation. Furniture and instruments are good examples of this form of artistic product. Both can be crafted to the specific needs of the customers at hand and can be appraised based on their uniqueness.[65] Hall and Johnson feel this is an important division between art and science because it demarcates a very user-focused necessity for the disciplines. Science in practice caters to the need for consistency, for mass production. Art in practice is the expert solution to a particular set of conditions.

Revisiting the Project's Research Methodology

Now, armed with a theoretical and a practical understanding of art and science, we can revisit the research methodology for this project and fill in the characteristics that will be cross-examined with wargame processes. The traits that mark the division between science and arts disciplines are drawn directly from the previous research and present a full picture of the differences that would be relevant to defining wargaming as an academic discipline.

Traits of the Disciplines	Science	Art
Community Tradition	Self-defined and self-maintained; result of consensus and conformity that allows for replication	Transparent but lacking in official guidelines; independent expression; non-cumulative/stand-alone
Treatment of Bias	Expunged by form of the message	Essential role in communicating the message

[62] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 2
[63] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 2
[64] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 3
[65] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 3

Validity	Determined by resemblance to known realities	Determined by competency of medium
Innate Philosophical Character	Paradigmatic approach	Narrative approach
Treatment of humans	Objects/Inputs	Creators/consumers
Phases of Study as Described by Field Experts	1. "Observation, data gathering, and description of the phenomena under investigation; 2. The setting up of a model of explanation by formulating a research question and hypothesis that anticipates the answer; 3. An experimental process with the aim of testing the hypothesis; 4. An evaluative and controlling phase in which the results are tested both against the original hypothesis and the research subject."[66]	1. "Clarifying the subject and starting point of the research 2. Unfolding the presuppositions contained in the subject-matter and viewpoint of the research. 3. Possession of the chosen research tools and the subject matter. 4. Literary presentations 5. Evaluation of the final result 6. The applied re-perception of research practices and the independent study of the preconditions for the adequacy required by artistic research."[67]
Level of variability	As reduced as possible	Fully embraced
Value in Uniqueness in Results/Products	Low; consistency is favored over deviation and function is better than aesthetic	High; expert detail and individuality directly correlate to value

Cross Examination Results by Trait and by SOP

This section includes the actual matrix style cross-examination of the art and science identifiers with the Standards of Practice (SOPs) familiar to the wargaming community. For each of the disciplinary traits listed below, the science and art sides of the coin will be weighed against the two SOPs and a victor will be decided upon and recorded on the chart at the end of this section.

[66] Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto.* Leuven, Belgium: Leuven University Press, 2009. 50

[67] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 114-117

Community Tradition

Community tradition is an important part of identifying any discipline, but it is important to understand how tradition has both process-oriented and product-oriented facets. The actual design of wargames, for example, may embody a tradition entirely separate from the production of reports and recording around design of games. It is therefore important to consider both process and result when looking at the presence of community tradition in wargaming SOPs.

The process of design SOP is often captured in reports, as well as in the literature reviewed previously. Such reports very rarely include the kind of emissions that would identify the personal role of the designer in the creation of their work. Aside from a potential company name or list of designers, the games are void of any mention of designer style or preference, suggesting a potential similarity with the sciences. The design of each game is, however, presented as a stand-alone response to the given prompts and requirements. It is independent in its nature and not replicable, like an art. The actual product, the design of wargames, draws on the metrics of other gamers and on the tried and true methods found in games deemed successful. Drawing from existing knowledge held by the community suggests an element of cumulation; the manner of inclusion of previous mechanics resembles a cafeteria tray more than an entirely unique gourmet dish. That is to say, the actual design of the games looks more conformed and built around already understood elements than it does like an independent stand-alone work, suggesting again a science. This flies in the face of the idea that games are independent because they are unique and non-replicable. So, which is it? The clincher in the study of the design SOP is the dominate community tradition of favoring models that flow from the problem at hand to any type of official guidelines. Indeed, while the names of the designers are the only overt omission that a personal presence is involved, the design of games are recorded to be transparent about the choices on which the model is built. Such choices, while analytical and educated, are to some extent subjective. And while the literature has revealed a desire within the community to try to self-define and self-maintain their community culture, consensus is ephemeral. While the write-ups and reports try to reflect the scientific side of wargames, at the end, design SOP traditions reflect an adherence with artistic disciplines.

Evaluation SOPs are not so much artistic in tradition as they are lacking in scientific traditions at all. To be scientific, evaluation standards have to be incredibly formalized, such that objectivity is paramount, and a third party is involved so bias is expunged. But the tradition of evaluation in the wargaming guild is, as expounded upon in the issue overview, along the lines of: “if it looks like a game, then it is one.” If the game seems to answer the objectives of the sponsor, then it qualifies. Since 2015, the creation of the Wargaming Repository and the Wargaming Incentive Fund (WIF) marked a useful first step towards the correction of this lack of evaluation

tradition, but its effects have yet to permeate through the halls of analysts and designers.[68] Gamers constrained by resources are hardly encouraged to bring in a third party to subject their games to study, and even if they would like to see how their game measured up, or how it could improve, there often is not the time to do so. Because, at the practical level, the community tradition of evaluation is up to the designer-sponsor relationship, evaluation SOPs earn their place as an art.

Treatment of Bias

This section is about how bias is addressed within the guild community. It is not a question of whether bias is present or a question of how much, but rather a question of what the guild tries to do about it and whether or not it is acknowledged.

As suggested by the community tradition section, reports seem to indicate that bias is not intentionally recognized – that is, the personal flavor of the designers is not explicitly expressed or valued. Additionally, it can be argued that bias is scrubbed as much as possible during the analysis and research process that proceeds scenario, narrative, and mechanics of the wargame's design. That is, if the inputs and assumptions made before the game is designed are as objective and factual as possible, the base of the project will have reduced bias. This loses its validity though when the actual design SOP is executed. The process of designing a game includes subjective judgements about what mechanics will best represent concepts and lessens within the game. The scenario and the narrative are created through a process of extrapolation, ideation and group consensus. While the intention may be to remove bias, it seems the actual execution of design SOPs leans towards the inherent bias of the artistic disciplines.

Also alluding to the previous section, it is already clear that the evaluation systems for wargames are incredibly biased and subjective- that is, the metrics are designed by the same people designing the games and creating the idea of wargame success. While there may be some consensus within the community about what makes a good wargame, the standards are not in place to make evaluation anything more than a personal review. This too, then, must be an art.

Validity

Does the validity of a wargame come from competency of medium or from resemblance to reality? Both are true. Because wargames are models of reality, they must have the semblance of real phenomena, likely futures, and past events to accomplish their objectives. It is also true, however, that if the model itself is flawed from the design perspective, illustrating a lack of competency in medium, the entire project is a wash. Recalling ***Pathologies***, wargames can be flawed on multiple levels that place their validity into question both in scenario and in design.

[68] Bae, Sebastian Joon. "The Way Forward." Class Lecture. Georgetown University. Washington, D.C. 20 November 2019.

And because standards of evaluation are questionable, validity is hard to measure at all. So the issue in placing wargaming SOPs on a scale in terms of validity is the fuzziness of the issue – for this trait, the design SOP will have to be marked as both, and the evaluation SOP will have to be blank.

Innate Philosophical Character

Remember Jerome Bruner's assessment that the narrative approach refers to the human tendency to describe experiences and that the paradigmatic approach refers to the tendency to deduce, categorize, and label. This too, at first glance, seems like a toss-up regarding wargame SOPs. Because wargames are presented as analytical tools and are intended to help officers and sponsors think through future conflict simulations, they are in fact tools for analysis. Analysis includes some deduction and categorizing, and it can even involve methods squarely rooted in science, such as data analytics or social network analysis. And yet, design SOPs cannot be entirely a science discipline because wargames cannot be deductive. Wargames look at the future by drawing on the past, and they present potentialities, but they cannot present predictions. In science, there is causality and there are findings that translate to actual conclusions. In arts, reality is described through a lens. Of course, the innate character of wargames is not firmly in the arts either. Good wargames are constrained by reality. Human imagination is a critical tool in their production, but you would not include killer robots in a wargame if they did not actually exist and apply to the scenario at hand. Wargames deal with reasonable guesses and likelihoods, which do sit somewhere between reality and imagination. The innate philosophical character present in design SOP is therefore also half and half science and art.

The evaluation SOP, however, while poorly built-out, does fit in the paradigmatic approach. The wargaming community, while it has not perfected the metric, wants a way to objectively evaluate their games. The philosophical purpose of evaluation is to apply the constraints of reality to see if a game can work.

Treatment of Humans

When humans are included in wargame SOPs, are they inputs or are they creators? Are they objects or are they consumers? They are all of these things. What makes wargames unique is their inclusion of human decision making, which means treating humans as part of the model. They are inputs in the wargame, and their quirks, foibles, and expertise can change the outcome of every gameplay. But wargames also originate with human creators, and the role of the creator is not passive. They are not simply conducting a controlled experiment, but rather they are investing and crafting a unique experience. Humans are also active consumers of wargames, but only for certain types of games. Particularly regarding educational wargames, different people might latch onto specific lessons coming out of the same game – resulting in a

personal experience. This is very reflective of the arts. Experimental games, however, see less of this personal experience because the follow up analysis points out what lessens were important, allowing a more scientific approach to consumption. Ultimately then, the fundamentality of humans as inputs at the core of wargame design, and the fact that humans are not the consumers of analytical wargames so much as government offices, make design SOP for treatment of humans fall into the science category.

It is also fair to put evaluation SOP into the science category for this, because enough of the literature has reflected a consensus that wargamers are conscious of what players they select as inputs, their management of human interaction during the games, and explaining the importance and variability of the results as a cause of human involvement in follow up analysis.

Phases of Study

Phases of study are perhaps the most important part to placing the wargaming discipline on the scale between art and science because they show how wargames are thought of in academia and research (which is the point of identifying a discipline). Let's go step by step.

The first phase for a scientific discipline includes the "observation, data gathering, and description of the phenomena" along with research question, hypothesis, and methodology generation.[69] The first phase for an art, meanwhile, focuses on transparency about the subject at hand, the impetus for the research, and a full catalogue of the assumptions and lenses the researchers are using. Wargame design includes aspects from both of these approaches, because wargames are models. The place where science falls away to the rise of art, however, is the point on methodology. Wargames are designed in a fairly free-flowing way that only requires competent experts, as mentioned previously. While there is the formation of a research question, and perhaps even a hypothesis, a formal methodology is not required. A design journal might document the decisions made, but these fall under assumptions and lenses more than methods. The first phases show a leaning towards the arts.

The second group of phases include the actual experimental process of science (the execution of a test based on the research design) versus the examination of the subject matter by tools and literature, as is customary of the arts. Here, wargames operate more like science disciplines. They are conducted with human inputs. They include variables and data at the end. They are not necessarily complete experiments; they lack a control group, for example. But wargames are not a literature review, and they use tools that test hypotheses. This phase indicates a closeness to the sciences.

[69]Coessens, Kathleen., Crispin, Darla., and Douglas, Anne. *The Artistic Turn: a Manifesto*. Leuven, Belgium: Leuven University Press, 2009. 50

The third and final group of steps is the evaluation phase. For sciences, this means not only evaluating the results, but squaring them against the subject. Meanwhile, evaluation for the arts looks more like a "study of the preconditions for the adequacy required" – that is, a measure of the results against what the individual wargame was supposed to achieve. Did it meet its objectives? Did it meaningfully communicate an important message? Here, wargame SOPs look more like the arts. There do not exist good methods for ensuring wargame results are valid or attributable to the subject unless it is a historical game that can be compared to history. Wargames can be measured against their objectives, however.

Of the three phases of study, more in common is shared with the arts.

Level of Variability

Is variability present in the environment in which wargames are created, and if so, how well to wargamers adjust in their SOPs to address these changes? Because wargames look at current events, reality, and projections, they are primarily concerned with variability, and how it can be understood in the context of a rapidly changing world. Variability is both impetus and input for wargames. To scrub variability from the world of gaming could be detrimental to their purpose and keep analysts from thinking through potentialities. The world is surprising – wargames try to reduce the surprise. They are innately comfortable with variability in their creation and in their execution. Not only in their design, but in their execution, variability is okay as long as it is captured. Both design and evaluation SOPs deserve a spot in the artistic disciplines.

Value of Uniqueness

Is there value in uniqueness in the results of wargames? The answer is a resounding yes. In fact, uniqueness in wargames is the hallmark of their power. They are crafted to constantly revaluate potentialities under different variables. It is their ability to adapt to a wide variety of conditions and explore valuable questions that makes them desirable. Unlike budget modeling – an exact science within analysis that would be valued for its exactness in execution each time – conflict modeling in wargames should not be exact, but specific. For a deep understanding, consider the traditional divide between wargames and modeling and simulation (MS) professions. Wargames, because of their human input and their creative, exploratory nature, channel a wide range of possibilities and encourage innovation. Meanwhile, models and simulations use algorithms to see how weapons systems compare, to estimate kill rates, etc. uniqueness should not be present in MS, but should in wargame design. Therefore, design SOP for wargaming adds another vote for artistic discipline.

But what about uniqueness in approaches to evaluation? Currently there is much uniqueness because there is no standard. But is that what the community wants? It flows again from the definition of evaluation that metrics for measurement should be standard – that is, lacking in unique approaches. Evaluation SOP earns another vote for science disciplines.

Cross Examination Results			
Traits	**Design SOP**		**Evaluation SOP**
Community Tradition	art		art
Treatment of Bias	art		art
Validity	art	science	
Innate Philosophical Character	art	science	science
Treatment of Humans	science		science
Phases of Study	art		art
Level of Variability	art		art
Value of Uniqueness	art		science

Placing Wargaming Discipline on the Scale: The Results

Of the eight different traits identified as distinguishing artistic disciplines from scientific disciplines, the majority leaned towards the artistic side of the scale when applied to design and evaluation SOPs. While there are still aspects of wargaming that include scientific practices, the discipline, as it currently stands, is an art form.

These results are not likely to surprise the wargaming community. The sheer creativity required to build a wargame, the concentration of expertise in a select group of individuals with long standing careers, the importance of narrative and message, and the fact that wargames are neither replicable or predictive, but are descriptive, are self-evident facets of the wargaming discipline.

This study solidifies the idea that guild-bias, the culture of the designers which create these games, is not only present in the processes that generate these products but is a welcome part of the industry. Indeed, it is the honed expertise of the analysts who make wargame design their path that hold the power to create innovative, tailor-made games for their sponsors. The study shows that the despite scientific elements that can be integrated into the processes, the overall theoretical backing is truly an art.

But if we are now concluding that bias is a good thing, that wargames are created by artistic process, and that both of these truths stem directly form the community that must carry the art forward, then the wargaming guild must understand the importance of transparency. Implications both theoretical and pragmatic will need to be addressed.

Policy Implications

With a definitive side of the discipline debate enforced by this project's findings, the guild community can begin to think about what it means to be an artistic discipline in a world of tanks and bombers that favors the objective and condemns the ambiguous. This includes how the guild community markets itself to its sponsors, interreacts with its members, and perpetuates its craft to the next generation. The implications of the wargaming discipline being an art can then be divided along lines of the entities this affects: the researchers, the designers, and the consumers/sponsors.

For the Researchers

As noted previously, often the same people who research and write about the theoretical side of wargames are the same people who design them. It is this characteristic of knowledge stemming from expertise that was one of the defining characteristics of the guild. But when the researcher cap is worn, these same guildmembers must consider the implications of writing and researching an artistic discipline.

Primarily, there is responsibility for each researcher to integrate this disciplinary understanding into their descriptions of what wargames are, their metrics for successful wargames, and their acknowledgement of limits on the tool. The processes that create wargames are artistic processes. Researchers may, going forward, choose to think about different styles of wargame design as different artistic schools. Researchers must also be specific when using words like model, methodology, and data in their work with wargames, so as to specify what these elements mean in an artistic context, despite their scientific connotation. For example, now that wargaming is squarely an art, phrases like "informed by data" and "this proves" perpetuate the belief that wargames hold the validity of scientific experiments and research. Wargaming researchers might also take a cue from the artistic researcher field, which, in acknowledging that they are attempting to create norms of study and research for a field that deals with the varied and abstract, have laid out several warnings about over-streamlining artistic processes. Hannula and team, for example, indicate that artistic disciplines do not have to have one epistemological-ontological framework, but rather can have any number theoretical starting points. They describe "a *democracy of experiences* and *methodological diversity*," meaning that no phenomenon or experience is outside the realm of research and that artistic disciplines are adversely affected by too much methodological rigidity.[70] They argue, rightfully, that because experience is the cornerstone of art and the heart of a message, the catalogue of methods available to artistic fields should be unlimited. Instead, they suggest that writing "as a way of thinking, doing research and reporting [best captures the] uniqueness of artistic experience [so

[70] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 30, 36

it] is not lost when our thinking about is communicated."[71] In this way, researchers must participate in a campaign of embracing the artistic nature of their discipline and acknowledge these attributes in their work going forward.

A secondary implication for researchers, in addition to the content and language they use to communicate, is the approach they should take towards structuring the discipline as appropriate for the arts. Disciplines, in order to formalize themselves, are perpetuated by publications. Most disciplines have at least one major journal which serves as a platform for peer review, conversation between members, and a marker of academic validity. With the exception of dialogue through Military Operations Research Society (MORS) and in the blogosphere of ***War on the Rocks***, wargames do not have their own true and widely recognized journal. The formalization of such a journal would by a symbolic move towards accepting that wargame design is a discipline in its own right. But should the community make that decision, they should acknowledge that literature sharing between members of an artistic discipline will look very different from that of scientific members. A scientific journal, like ***Nature***, would perpetuate the cumulation of knowledge as some findings are newly presented, creating incremental steps towards greater knowledge, while other findings are contested by experiments. In such a journal, members dialogue and contest each other through their objectivity and their findings. For the wargaming community, such a journal would not build upon itself, but rather serve as a smorgasbord of offerings, a gallery walk of opinions, and a sharing of inventiveness and creativity. The community could truly benefit from such a document, as poaching mechanisms and ideas is perfectly acceptable in professional wargaming circles.

For the Designers

If wargaming is an art, then wargame designers are artists, and the same variety that is embraced by the research side of their work should be incorporated into the actual production of games.

The design process is likely to suffer with too much streamlining. While rules and step-by-step guidance found in handbooks could be a good starting place, the creativity that the guild should encourage may be stifled by guidelines mistaken as restrictions or worse, as standards to be met in a check box manner. As noted previously in the work of Hall and Johnson, rules often create auto-pilot situations to the peril of new ideas.[72] Wargames lose their purpose if they are mass produced, so the processes used to create them should not be homogenized either. At most, an agreed set of values serving as goal posts for the community could provide something like the defining characteristics of the discipline without squashing creative process. It is also

[71] Hannula, Mika., Suoranta, Juha., and Vadén, Tere. *Artistic Research: Theories, Methods and Practices.* Helsinki: Academy of Fine Arts, 2005. 37

[72] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 3

reasonable that these shared values already exist and have been identified: analytical rigor, playability, and ample space for the exercise of human choice are three of these ideals.

The firm understanding that wargame design is an art also has implications for how designers view the success of their games. Unlike the science disciplines which see metrics for success as based on objective standards of experiment and methodology, for an artistic discipline such as wargame design, the metrics of success should now be customer based. Hall and Johnson note that customer feedback and user experience prove the best metrics for quality and success, because art, unlike science, is meant for the person receiving the message above all else. The product matters as it applies to the person appreciating it. For wargame designers, this means paying closer attention to the objectives set by the sponsors of games and tailoring each individual game to those needs. This requirement is actually already part and parcel in the guild's understanding of wargame success, but it has greater relevance in the face of the newfound disciplinary identity. There is certainly room for improvement, however, in the extent to which customer feedback (sponsor and user feedback) plays in continuing development of the field. As an art, wargame design could benefit from meaningful programs to assess the impact and the utility of their games within the Department of Defense. Such efforts have been considered impractical and unapproachable up until this point, and so have been conducted at the individual level at best.

Another major consideration for wargame designers will be how to go about training the next generation of guild members. Traditionally this has worked within master-apprentice type relationships, and according to the traditions of artistic disciplines, this is not an inappropriate method. It should be noted, however, that fledgling artists usually have to pass some level of training, or even examination before being allowed to freely exercise their tools, allowing them to pass a threshold of expertise before becoming artists in their own right.[73] Hall and Johnson note that the skills for which thresholds should be set are not limited to the tenets of the artform itself, but also include "an understanding of customer needs, the judgement required to act without perfect information, and the ability and willingness to learn from both good and bad outcomes."[74] Mastering all elements of the field and how the field interacts with three party elements becomes key to producing the next generation. It also gives young aspiring wargamers opportunities to try new things and fail while still in a safe environment, thus contributing to the overall growth of the field through innovation and combating the tendency to slip into route solutions (the enemy of an artistic discipline). Going forward as an artistic discipline, the guild may want to consider what critical, baseline components and training a young wargamer will need to know to enter the field. While some institutions like King's College, London, McGill University in Canada, and Georgetown University in Washington, D.C.

[73] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 10
[74] Hall, Joseph; Johnson, M. Eric. "When should a process be art, not science?" Harvard Business Review. March 2009. 10

have already begun taking steps towards training future gamers in an academic setting, it remains that actually building games and working with sponsors in a professional environment provides the best growth for a young gamer. Such training is also the purest form of the master-apprentice structure and provides exposure to the elements listed by Hall and Johnson. The guild might consider an in between structure, where wargame designers acquire skills academically and in experience, but must have met a small list of criteria before being considered masters of the field, able to create their own competent products from scratch. The guild should ask, "what level of mastery marks a competent game designer?"

For the Sponsors and the Users

Perhaps the most important implication of these findings is how this affects the sponsors of wargames, the participants who play them, and the people who use the findings of wargames to make national security decisions. While the designers of games and the people who research and write about them can move forward with an enhanced of understanding of the tool that they treasure and of the community ties that will carry the tool forward into decades to come, it is really the sponsors and users who must respond to this study's findings.

For sponsors, this means asking good questions, setting good goals, and understanding how much a good wargame can accomplish. Wargames are an investment of military resources. The formation of good games can take months of preparation, research, and execution. The questions that wargames are meant to answer need be questions that are aimed towards the generation of possibilities, the test of new concepts, and the underlining of vulnerabilities and gaps. Questions that deal with exact outcomes, quantitative calculations, and predictions are not fit for capture in wargames. Goals for wargames should be limited to a scope appropriate for the time and resources allotted. Much like scaling the scope of a research paper in college, games can only be expected to address as much as the length and energy will permit. Sponsors can get a better idea of what is reasonable by partaking in openminded and thorough conversations with their designer counterparts. Sponsors should also remember the importance of continued communication of goals and objectives, so the project continues on a path towards their desired answer.

For participants, this means understanding the true importance and impact of the role they play. Regardless of the type or form of game, be they analytical or educational, wargames are built upon the engagement of the players in them. Human decision making is the central pillar that differentiates wargames from other tools. While this would be true whether the results of this project found the discipline to be an art or a science, it is because wargaming has been found to be an art that the inputs of the participants are incredibly important. Rather than just inputs in a model, the participants of games should see themselves as the instruments through which the lessons of the wargame are either absorbed (if an educational game) or illuminated

(in the case of analytical games). Those proctoring the execution of a game should take into careful consideration the choice of players and the information afforded them in preparation to participate. Each iteration of the artform will look different based on the players, which is perhaps the defining principle of the art of wargaming.

For those who use the results of wargames, this means understanding the true nature of games, and the limits that nature places on the utility of results. The understanding that wargames are not scientific instruments confirms the fact that they cannot be used to make any kind of predictions and they cannot be heralded as forms of proof that any particular project, plan, or event will occur exactly as hoped in the future. The guild would be wise to create a knowledge campaign to correct for misunderstanding about wargames in the halls of the Pentagon and elsewhere, and to improve upon the reputation of wargames despite their being an art. Through such a campaign, those who receive and utilize reports about wargame findings may come to understand that wargames can suggest possibilities on which to base force planning, strategic, operational, and even tactical decisions, but they will also know not to hold up those results as evidence of a future reality.

It is also important for entities in DOD to understand that just because the wargaming discipline is an art, this does not discredit the ultimate utility of wargames. Military planning is nothing if not the product of weighing possibilities and probabilities, ideating new solutions, and attempting to outthink one's enemy. Wargames are the artist's tool for ideation and creativity rooted in research. They are an effective means for identifying both opportunities and vulnerabilities. This report has found that, with confirmation that the SOPs that make today's wargames are in keeping with the norms of artistic disciplines, the guild can continue its practices with formal recognition of their artistic leanings and encourage external parties to make more efficient use of an already valuable tool, appropriate to its true nature.

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