

History As a Playable System: Modeling the Late Bronze Age Collapse in *The Jagged Time*

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Abstract

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Games based on historical themes are incredibly common but also divisive among both game scholars and historians. This project was an attempt to bridge that divide by adapting historical argumentation directly into gameplay mechanics, using the procedural rhetoric of games as a uniquely powerful tool to conveying the academic rhetoric of historians. The resulting game, *The Jagged Time*, tells the story of a fictionalized civilization modeled on New Kingdom Egypt over the course of several hundred years of history, ending in an analogue to the Late Bronze Age Collapse. Using its mechanics, the game advances the argument made by the historian Eric Cline – namely that the Collapse was due to a perfect storm of factors and not any one cause. It also advances these arguments in a novel way from a design perspective, taking an approach to gameplay and history that is conventionally done through 4X-style strategy games and instead adapting it to the logic of a deck-building card game. The affordances and limitations of this approach are assessed, as well as the process of adapting historical argument into gameplay mechanics. A case study scenario in the game is then briefly analyzed using Brian Upton’s criteria of playfulness.

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Dedication

For Jenn,

A songbird in a dark forest.

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“Empire has created the time of history. Empire has located its existence not in the smooth recurrent spinning time of the cycle of the seasons but in the jagged time of rise and fall, of beginning and end, of catastrophe. Empire dooms itself to live in history and plot against history. One thought alone preoccupies the submerged mind of Empire: how not to end, how not to die, how to prolong its era.”¹

- J.M. Coetzee, *Waiting for the Barbarians*

Introduction and Problem Space

Historically-inflected games make up a substantial portion of game design as a discipline, both critically and commercially. Firaxis's critically-acclaimed *Sid Meier's Civilization* series has sold 70 million copies across seven main-line titles not counting spin-offs², Ubisoft's science-fiction alternate history series *Assassin's Creed* has sold over 200 million copies³, and even comparatively mid-sized studios like Paradox Interactive have sold 4 million copies of their roleplaying-game-meets-dynastic-simulator *Crusader Kings III*⁴. Through their mass-market appeal, historical games constitute a form of popular history analogous to film, using both their representational and procedural elements to construct not only a digital vision of the past but also popular understanding of history.⁵ It isn't difficult to see why such games would be popular among critics, players, and designers alike. Historical games not only can evoke a powerful emotional response for players by offering them the opportunity to relive certain culturally-relevant places and times like the Second World War or Renaissance Italy but also are

¹ J. M. Coetzee, *Waiting for the Barbarians*, Vintage Fiction (London: Vintage, 2004), 148.

² Rebekah Valentine and Alex Stedman, “Civilization 7 Unveiled at Summer Game Fest, Releasing in 2025,” IGN, June 7, 2024, <https://www.ign.com/articles/civilization-7-unveiled-at-summer-game-fest-releasing-in-2025>.

³ Avinash Jaisrani, “Assassin's Creed Franchise Has Sold Over 200 Million Games Worldwide,” Tech4Gamers (blog), September 10, 2022, <https://tech4gamers.com/assassins-creed-200-million-games-sold/>.

⁴ Fraser Brown, “Crusader Kings 3 Has Hit 4 Million Sales, but All That Tells Me Is That Not Enough of You Have Played the Best Game,” PC Gamer, April 23, 2025, <https://www.pcgamer.com/games/strategy/crusader-kings-3-has-hit-4-million-sales-but-all-that-tells-me-is-that-not-enough-of-you-have-played-the-best-game/>.

⁵ Adam Chapman, *Digital Games as History: How Videogames Represent the Past and Offer Access to Historical Practice*, Routledge Advances in Game Studies 7 (New York, NY: Routledge, Taylor & Francis Group, 2016), 14.

appealing to designers for the way that common understandings of history can be powerful informational tools to convey game mechanics. Sid Meier, originator of the strategy series that still bears his name, highlighted this in a March 2012 Game Developers Conference talk by observing that presenting players with a well-known historical figure like Genghis Khan as an opponent in a game of *Civilization* conveys a large amount of useful strategic information quickly that a generic or fantastical figure would not.⁶ A player can leverage their real-world knowledge of Genghis Khan as a historical figure in order to make good decisions in the game - like that they should likely prepare to repel an invasion and perhaps invest in an army that is well-suited to fighting against the legendary Mongol cavalry that is presumably about to gallop over the horizon.

The game/history relationship is not quite so simple as the latter acting as a cheat code for engaging with the former, however. The developer of historical games takes the position of a hybrid role between two disciplines, that of a designer-historian.⁷ This position involves a great deal of friction and raises design and historical questions to which there can be no one right answer. At the same time as a game's procedural rhetorics afford a uniquely well-suited medium for conveying broad historical systems, its procedurality and interactivity make a conventional linear narrative of historical events all but impossible. While games can digitally recreate historical spaces and offer an appearance of unprecedented immediacy through their built environments, those environments are necessarily simulacra of a past that is fundamentally unrecoverable and trading on an authenticity that is not actually possible.⁸ Games by their nature must abstract, simplify, and narrativize historical fact in their representations and afford counter- or a-historical narratives in the process of play. Because of the demand that historical games be entertaining, they are often constructed in such a way as to represent a power fantasy, as players may simply reload a previous save state to avoid unfavourable game-historical outcomes.⁹ This skews designer-historians' attention to time periods of great historical drama and excitement, as well as periods with playable positions that can be seen as entertaining – games set during the First World War, for instance, rarely include extended sequences of the distinctly unheroic horrors of trench warfare.¹⁰

⁶ Sid Meier, "Interesting Decisions" (Presentation, Game Developers Conference, San Diego, March 2012), https://youtu.be/WggldtrqgKg?si=_HMDtd9czXpbHg.

⁷ Chapman, *Digital Games as History*, 15.

⁸ Adam Chapman, "Is Sid Meier's *Civilization* History?," *Rethinking History* 17, no. 3 (2013): 312–32, <https://doi.org/10.1080/13642529.2013.774719>, 323.

⁹ Sid Meier, "Psychology of Game Design" (Presentation, Game Developers Conference, San Diego, March 2010), <https://www.youtube.com/watch?v=MtzCLd93SyU>.

¹⁰ Chapman, *Digital Games as History*, 48.

While these tensions all exist, they can also be constructive. The design space for how historical games can lessen or even capitalize on these tensions is by no means fully explored. Indeed, the purpose of this project is to explore that design space through the development of a historically-inflected game, documenting these tensions as they emerge, and considering how the model of history a designer-historian adopts affects game design decisions, and vice versa. The resulting game, a deck-building game called *The Jagged Time*, was designed with the intent not merely of representing history either in abstractions or 'as it really was,' but rather of conveying through its mechanics a particular historical argument - in this case, the causes of the Late Bronze Age Collapse of the twelfth and thirteenth centuries BCE, as interpreted by the historian Eric Cline (more on this below). My principal areas of inquiry are therefore as follows:

1. Exploring the tensions between game design and history that emerge when the academic rhetoric of history is adapted into the procedural rhetoric of gameplay.
2. Developing an alternative ludic framework for representing history and comparing its affordances and limitations to the conventional "4X"¹¹ style of titles like *Sid Meier's Civilization*.
3. Attempting to design a game that manages to be playful while still faithfully representing an era of collapse, crisis, and systemic failure.

¹¹ A genre of video games named after its four principal verbs - "eXplore, eXpand, eXploit, and eXterminate." This genre includes historical titles like *Civilization* and *Old World* as well as fantastical or science-fictional ones like *Age of Wonders* and *Endless Space*.

Literature Review

History in Games

Adam Chapman in his 2016 book *Digital Games as History* draws a distinction between two styles of representation of history in video games, the "conceptual" style and the "realist" style.¹² Per Chapman, this is not just a difference in game genre or artistic convention, but an epistemological distinction - the more popular mode, the realist style, lends itself to reconstructionist histories, attempts to reclaim or otherwise reconstitute how a given time period 'really was' and thereby carry a rhetorical weight of perceived authenticity.¹³ As examples of the realist style, Chapman cites the flight simulator *IL-2 Sturmovik* and the first-person World War Two shooter *Brothers in Arms*.¹⁴ Chapman contrasts this with the conceptual simulation style, which instead seeks to represent broad patterns of history with less emphasis on audiovisual fidelity and a greater suitability for a constructionist epistemology and a closer adherence to the scope of academic historical enquiry.¹⁵ As examples for this style, Chapman identifies the grand strategy game series *Europa Universalis* and the *Sid Meier's Civilization* series.¹⁶ Ludic genre, narrative conventions, and epistemological position are therefore deeply intertwined.

In a similar vein, Rüdiger Brandis, in "Tracing the Past with Digital Games" argues that the tendency of digital games to overly simplify history into the role of a pivotal main character resonates with a "historist" and individualist approach to history.¹⁷ Citing Ian Bogost, he argues that the procedural rhetoric of a game like Ubisoft's action-adventure title *Assassin's Creed: Unity* places the player protagonist at the center of the French Revolution and, in so doing, conveys the historical idea that is the actions of singularly important individuals, and not semi- or impersonal social forces that drive history.¹⁸ This not only has significant implications for the quality of the history being conveyed, he argues, but also fails to capitalize on the procedural nature of digital games and their suitability for systemic, rather than personal narrative.¹⁹

¹² Chapman, *Digital Games as History*, 59.

¹³ *Ibid.*, 68-69.

¹⁴ *Ibid.*, 61.

¹⁵ *Ibid.*, 73.

¹⁶ *Ibid.*, 69.

¹⁷ Rüdiger Brandis, "Tracing the Past with Digital Games. Historical Procedural Rhetorics," in *History in Games: Contingencies of an Authentic Past*, vol. volume 12, Studies of Digital Media Culture (Bielefeld: Transcript, 2020), 96.

¹⁸ Brandis, "Tracing the Past with Digital Games," 98.

¹⁹ *Ibid.*, 103.

Brandis draws on William Uricchio's "Simulation, History, and Computer Games," in which Uricchio discusses what he calls "nonspecific simulations" like *Sid Meier's Civilization* or *Europa Universalis* and their understanding of history.²⁰ While these games are not limited to any set of historical facts, he argues, they are nevertheless bound by sets of ideological constraints which are inevitably baked directly into their systems, rules, and mechanics.²¹ At the same time, open-ended systems can afford a wider and deeper range of critiques of history by the very nature of both the freedom and constraints they impose on their players.²² He concludes his argument by suggesting that, in future, these ideological constraints could be adopted explicitly, with schools of historical thought themselves being reified in game mechanics.²³

That historical argumentation in games ought to be done principally through construction of its gameplay is not, however, a universal position. Clyde et al. argue that a truly gamic form of history must contain a comparable truth attribute to academic history.²⁴ They contend that neither strict simulations, which attempt in vain to reconstruct history precisely 'as it was', nor abstract games untethered from any specific event or historical argument can constitute a gamic form of history.²⁵ Historicity in games, in their framing, is a function of following the formal structures of historical argument, including the extensive and in-game citation of historical facts or scholarship.²⁶

Coltrain and Ramsay take a broader view in "Can Video Games be Humanities Scholarship?", namely that the essential formal processes of humanities scholarship are by and large already present in the process of developing a game.²⁷ A game designer, in selecting what historical, audio-visual, or other elements to include in their game - and, by extension, choosing what to exclude, compress, or elide - already mirrors the processes by which an academic historian would construct their historical arguments.²⁸

²⁰ William Uricchio, "Simulation, History, and Computer Games," in *Handbook of Computer Game Studies*, ed. Joost Raessens and Jeffrey Goldstein (MIT Press, 2011), 330.

²¹ Uricchio, "Simulation, History, and Computer Games," 335.

²² *Ibid.*, 330.

²³ *Ibid.*, 336.

²⁴ Jerremie Clyde, Howard Hopkins, and Glenn Wilkinson, "Beyond the 'Historical' Simulation: Using Theories of History to Inform Scholarly Game Design.," *Loading...* 6, no. 9 (February 1, 2012), <https://journals.sfu.ca/loading/index.php/loading/article/view/105>, 5.

²⁵ Clyde, Hopkins, and Wilkinson, "Beyond the 'Historical' Simulation," 11.

²⁶ *Ibid.*, 14.

²⁷ James Coltrain and Stephen Ramsay, "Can Video Games Be Humanities Scholarship?," in *Debates in the Digital Humanities 2019*, ed. Matthew K. Gold and Lauren F. Klein (University of Minnesota Press, 2019), 36–45, <https://doi.org/10.5749/j.ctvg251hk.6>, 39.

²⁸ *Ibid.*

The inclusion or even citation of historical facts is moreover not necessarily a guarantee of historical thinking or historical accuracy. In his PhD dissertation "Blockbuster Resonance in Games: How Assassin's Creed and Magic: The Gathering Simulate Classical Antiquity," Andrei Zanesu articulates a concept of "resonant simulation," wherein complex historical and social systems are compressed for public consumption into recognizable symbols, terms, and systems - pharaohs, pyramids, scarabs, and mummies for Ancient Egypt, for example.²⁹ These symbols, while having real referents at particular points in Egyptian history, are deployed not for their historical veracity, but rather because they evoke a resonant 'Egyptianness' in both designers and audiences, a least-common-denominator effect he calls "Blockbuster resonance."³⁰ This flattens and obscures vibrant cultures and distorts popular understandings of the past rather than clarifying them.

Daus Peterson et al. focus less on historical representation as such - at which games necessarily fail - and instead advance an analysis of how historical games convey frameworks for understanding history through providing context for historical events, engaging with the subjectivity of historical actors, and enacting historical concepts through their systems.³¹ These frameworks imply a given historical and ideological understanding and can be understood as a form of what Ian Bogost termed "procedural rhetoric... a practice of using processes persuasively."³²

Kevin Kee and Shawn Graham also invoke Bogost's concept of procedural rhetoric, albeit from an explicitly pedagogical perspective. They argue that educators can use historical games as historical artifacts unto themselves, analyzing their rhetoric the way they would analyze any secondary source.³³ This shift in perspective is noteworthy because Kee and Graham not only analyze games post-facto, but also oversaw the development of games by history students with the explicit goal of conveying history.³⁴

²⁹ Andrei Zanesu, "Blockbuster Resonance in Games: How Assassin's Creed and Magic: The Gathering Simulate Classical Antiquity," PhD diss., (Concordia University, 2023), 138.

³⁰ Zanesu, "Blockbuster Resonance in Games," 83.

³¹ Rolfe Daus Peterson, Andrew Justin Miller, and Sean Joseph Fedorko, "The Same River Twice: Exploring Historical Representation and the Value of Simulation in the Total War, Civilization, and Patrician Franchises," in *Playing with the Past: Digital Games and the Simulation of History* (New York: Bloomsbury Academic, 2016), 35-37.

³² Ian Bogost, *Persuasive Games: The Expressive Power of Videogames*, 1. MIT Press paperback ed (Cambridge, Mass.: MIT Press, 2010), 3.

³³ Kevin Kee and Shawn Graham, "Teaching History in an Age of Pervasive Computing: The Case for Games in the High School and Undergraduate Classroom," in *Pastplay*, ed. Kevin Kee, Teaching and Learning History with Technology (University of Michigan Press, 2014), 270-91, <http://www.jstor.org/lib-ezproxy.concordia.ca/stable/j.ctv65swr0.17>, 275.

³⁴ Kee and Graham, "Teaching History in an Age of Pervasive Computing," 285.

Of course, all of the above assumes that games can, in a meaningful way, even represent history at all. Galloway contests this, arguing that, in transposing the complex and irreducible reality of history into data to be processed by algorithms, games destroy what is essential about history.³⁵ Even ideological critiques of games like *Civilization* fall apart because they have reduced human experience to mere data in order to be functional as systems – even gross racial caricature like characterizing certain civilizations as uniquely warlike is downstream of the deeper epistemological violence inherent in reducing them to data in the first place.³⁶

Chapman contests this, arguing that this supposed reduction is in fact not unique to digital games but is, in fact, the defining act of the practice of history.³⁷ Every historian reduces human experience to the scope of narrative time, and all historical accounts are transcoded by their very nature.³⁸ As Chapman puts it, “Galloway is right in that this process of transcoding does realise an absence, however this is not of history but of the past.”³⁹

Summary

Proceeding with Chapman’s framing that games can constitute a form of public history, the goal of this project is to follow on in Kee and Graham’s footsteps by documenting the process of developing a historical game and using its procedural rhetorics in order to advance an argument. It will do this not by mirroring the exact evidentiary or formal structures as academic history, but rather establish a framework for understanding historical events. To that end, the precise historical events that it will depict need not be historically accurate, so long as the underlying relationships and systems being portrayed are done faithfully. This will largely - but not entirely - sidestep questions of representation, which will be elaborated on below. A game in Chapman’s ‘conceptual style’ emphasizing representation through procedural rhetoric rather than audiovisual fidelity, will be most appropriate for this task. I will turn now to a discussion of what historical argument, precisely, this project is meant to convey and the decisions and artistic frameworks that shape that choice.

³⁵ Alexander R. Galloway, “Allegories of Control.” In *Gaming: Essays on Algorithmic Culture*, NED-New edition., 85–106, University of Minnesota Press, 2006. <http://www.jstor.org/stable/10.5749/j.ctttss5p.8>, 102-103.

³⁶ Galloway, “Allegories of Control,” 102.

³⁷ Adam Chapman, “Is Sid Meier’s Civilization History?,” *Rethinking History* 17, no. 3 (2013): 312–32, <https://doi.org/10.1080/13642529.2013.774719>, 323.

³⁸ Ibid.

³⁹ Ibid.

Theoretical Framework

A Ludic Approach to History

Historically-inflected games have appealed to me from a very young age, from historical city-builders like Sierra's *Caesar* series to strategy games like *Sid Meier's Civilization*. It is therefore a category of games to which I bring not only a personal interest but also a degree of experience with which to guide my explorations and a range of aesthetic and ideological critiques which I wanted to articulate through making a historically-inflected game of my own. In particular, I wanted to illustrate how I, in designing a historical game, think about both game design and history in a similar way - as a system of systems, shaping human action even as it is shaped by it. I approached the process of designing *The Jagged Time* in this way from the very beginning. Its representation of history would be history on the scale of empires and centuries, privileging socioeconomic forces over the lives of exceptional individuals.

As to the time period I chose as my setting, I have for a number of years been fascinated with the Late Bronze Age Collapse. During the Collapse, a period of approximately a hundred years during the late thirteenth and early twelfth centuries BCE, the great civilizations of the Bronze Age - peoples like the Hittites of south-central Anatolia, the Kassite dynasty of Babylon in Mesopotamia, the Mycenaeans of mainland Greece, and the Minoans of Crete - all not only fell politically but completely collapsed. The destruction of society as people knew it was total. Some areas, like the Mycenaean kingdom of Pylos, were depopulated for centuries to come.⁴⁰ Around this time, a group known by historians as the Sea Peoples appear on the scene, visiting enormous amounts of destruction at sites like Ugarit in modern-day Syria before vanishing again as quickly as they came, leaving no written records of their own behind. The depths of this catastrophe interested me because they strike me as not only inherently dramatic but more importantly inherently ludic, a narrative form well suited to conveying the operation of complex systems. Film and literature might fail to convey the breadth of the collapse due to the constraints of their narrative forms, but a game could attempt to capture the multiple overlapping historical forces at play by mapping them to game systems and letting the player discover for themselves how and why the dominos fell as they did.

This said, that very 'how' and 'why' are not universally agreed upon among historians. Robert Drews, in his book *The End of the Bronze Age* attributes it to a revolution in military

⁴⁰ Eric H. Cline, *1177 B.C.: The Year Civilization Collapsed*, Turning Points in Ancient History (Princeton: Princeton University Press, 2014), 173.

technology - the expensive, chariot-based armies of the Late Bronze Age being ill-equipped to handle an enemy like the enigmatic Sea Peoples and their small-unit skirmisher tactics.⁴¹ Christopher Monroe in *The Scales of Fate* argues it was instead an economic phenomenon taking place over the course of centuries, with mass displacement of peoples by growing urban, proto-capitalist markets disrupting the trade routes for vital strategic resources like copper which, in turn, made Late Bronze Age states uniquely vulnerable to invasion, disease, and economic collapse.⁴² Eric Cline, in *1177: The Year Civilization Collapsed*, takes a slightly wider view, arguing that none of the proposed causes of the Collapse are sufficient in order to explain the scale of the catastrophe.⁴³ Rather, the world-system of the Eastern Mediterranean broke down because of a perfect storm of factors, from plagues to droughts to invasions, which when occurring in close physical and temporal proximity caused a series of cascading economic, social, and political failures across the entire system.⁴⁴

I recount this academic debate not to weigh in on it - lacking the expertise to do so - but rather to illustrate which of these historical interpretations I chose to base *The Jagged Time* on and why. Adam Chapman in *Digital Games as History* identifies two broad methods of representing history in games: the "conceptual style," which emphasizes abstraction, historical representation through procedural rhetoric, and high-level, *longue durée* approaches to history; and the "realist style" which favours high audiovisual fidelity, immersion in a specific historical time and place, and historical storytelling at the level of individuals.⁴⁵ Chapman rolls games of very different ludic genres together to draw attention to their common understanding of history, which is useful post-facto, but loses some of its explanatory power when one is trying to make a game from scratch. *Europa Universalis IV* and *Sid Meier's Civilization VII* may well both be games in the conceptual style, but they differ wildly in the specifics of their gameplay, historical perspective, and presentation - in other words, in their design. In order to produce a game, I ran Chapman's process in reverse, beginning with the three historians' arguments and then considering what sorts of design decisions would be implied by those arguments.

With that in mind, adopting Drews's contention and privileging military technology implied that the resulting game would be a wargame, with the player(s) taking the role of one of the

⁴¹ Robert Drews, *The End of the Bronze Age: Changes in Warfare and the Catastrophe ca. 1200 B. C* (Princeton New Jersey: Princeton university press, 1993), 33.

⁴² Christopher Mountfort Monroe, *Scales of Fate: Trade, Tradition, and Transformation in the Eastern Mediterranean, ca 1350-1175 BCE*, *Alter Orient Und Altes Testament*, Band 357 (Münster: Ugarit-Verl, 2009), 298.

⁴³ Cline, *1177: The Year Civilization Collapsed*, 11.

⁴⁴ Ibid.

⁴⁵ Chapman, *Digital Games as History*, 73.

combatant powers of the Collapse. Gameplay would consist of commanding units of soldiers, most likely divided along historically-accurate categories like archers, spearmen, skirmishers, and chariots. The game would convey Drews's core contention - the supremacy of foot skirmishers over chariots - through the procedural rhetoric of the game's combat, perhaps by giving skirmisher units statistical advantages when surrounding chariots, or having the constant waves of harassment cause escalating penalties to enemy morale as the battle dragged on. I decided against this approach early, not because I don't think such a game could be interesting - *Total War: Pharaoh* is, to my understanding, essentially the exact game described here - but rather because I found the games implied by Monroe or Cline's arguments to be more interesting to design. I enjoy wargames, but there are already so many of them that I do not feel I have anything particularly novel to add.

Monroe and Cline's arguments both appealed to me for similar reasons - they are systems-focused, looking at processes unfolding over centuries. Monroe's arguments point to both economic and ecological factors like deforestation, urban overcrowding and disease, and displacements of workers off of agricultural land and into prestige manufacturing like copper mining.⁴⁶ These arguments implied several things to me. First, they implied that the game would need market mechanics, and complex ones at that given that resource production, environmental degradation, labour availability, and the volatility of international trade would all need to be modeled in some way. Second, these mechanics in turn implied some sort of spatial element - it is relevant to Monroe's argument that workers moved from agricultural land either into increasingly-overcrowded cities or into resource-extraction industries in the hinterlands and this, in turn, would need to affect the game's markets.⁴⁷ Third, because the player(s) would be presumably engaging with these markets as producer(s) and consumer(s), the game's scale would have to be limited to no larger than a single city or merchant house, i.e. a participant in the market, in order to capitalize on the game's procedural rhetoric and place the player in the middle of the system as it is falling apart. This however would stray somewhat from my goal of telling the story of the Collapse as a whole, which is interestingly a limitation that Monroe's history does not have. Between the historical grammar of Monroe's arguments, which can preserve that big-picture perspective, and the ludic grammar that his arguments would be implying, which could not, something was lost in translation. I therefore arrived at Cline's argument of broad system collapse almost by process of elimination - ironically how Cline

⁴⁶ Monroe, *Scales of Fate*, 295-296.

⁴⁷ Ibid.

himself supports 1177's thesis, by eliminating the alternatives - but I do not want to make that decision sound automatic. Cline's argument would still have to translate to gameplay, somehow.

The game Cline's argument implied to me would be one of escalating complexity, beginning as his narrative does at the dawn of the Bronze Age and culminating in the Collapse. Crucially, there would be no one cause of the Collapse - rather, the player would be forced to confront a series of crises which would steadily increase in intensity and frequency as the game went on. Ideally, these crises would themselves be at least partially the result of the player's decisions but also partially due to bad luck, poor timing, or lack of foresight. The player might take on the role of a single protagonist kingdom, but their success or failure would be dependent on how the other powers fared, with the collapse of one cascading into another. A single protagonist nation was an early compromise from my initial concept, which would have seen the player take control of three different civilizations sequentially, with the player's success or failure in mitigating the crisis in the first affecting the game's difficulty in the second, and so on. I mention this here both to illustrate the underlying principle of cascading consequences and also as a testament to my own hubris.

Nevertheless, this core idea - a system of escalating complexity that collapses under stress, with no one stressor overpowering the others - would be the basis of every iteration of *The Jagged Time*. What I was missing was a definition of complexity that I could effectively translate into game mechanics. For that, I turned to the work of the anthropologist Joseph Tainter and his book *The Collapse of Complex Societies*. Tainter argues that societies are problem-solving systems that respond to internal and external crises by increasing in social complexity, which Tainter defines as an increase in both social organization and social differentiation, typically hierarchy.⁴⁸ This increased complexity allows for a society to grow and develop, but it also comes with diminishing marginal returns and, in time, proves too costly, too fragile, too low-yield, or too fraught with negative externalities to keep up with a society's needs.⁴⁹ Once this inflection point is reached, collapse - defined as a sudden reduction in social complexity - becomes inevitable on the macro scale and even potentially logical on the micro scale, as those burdened with the costs of maintaining complexity or affected by its negative externalities rebel, abandon unviable settlements, or otherwise lower the complexity of their lives.⁵⁰ Like with Cline and Monroe's arguments, Tainter's argument appealed to me because it

⁴⁸ Joseph A. Tainter, *The Collapse of Complex Societies*, New Studies in Archaeology (Cambridge: Cambridge Univ. Press, 1993), 37.

⁴⁹ Tainter, *The Collapse of Complex Societies*, 93.

⁵⁰ Tainter, *The Collapse of Complex Societies*, 198.

implied a clear ludic arc - the player would be responding to problems generated by the game's systems, but doing so in a way that increases their society's complexity and therefore fragility. I will return to the specifics of this later, in the first part of my Design Analysis.

Top-Down, Bottom-Up, and Situational Design

An accounting of how historical argument influenced the design of *The Jagged Time* at the abstract level is necessarily incomplete unless paired with a discussion of the concrete gameplay design decisions that then had to be brought into alignment with the overarching history. Mark Rosewater, the head designer for the collectible card game *Magic: The Gathering* describes this reciprocal process as "top-down" and "bottom-up" design, with top-down designs starting with an overall theme (vampires, Ancient Greece) and then developing an appropriate mechanical effect (draining blood, epic heroes) and bottom-up designs beginning with a mechanical effect (removing cards from play) and then being brought into alignment with an overall thematic element (being buried alive).⁵¹ This proved to be an incredibly fruitful approach for designing the cards in *The Jagged Time* in most circumstances, but it was incomplete in two respects.

The first was that Rosewater's approach to theme, either as the top-down basis of a card or the bottom-up interpretation of its mechanics, focuses deliberately on least common denominators, satisfying the narrative and artistic expectations of players first and foremost.⁵² In the case of *Amonkhet*, a setting for *Magic: the Gathering* that is based loosely on Ancient Egypt, that meant a reliance on the most stereotypical elements of the pop-culture image of Egypt - pyramids, mummies, cats, scarabs, and the like. Zanescu notes that this approach flattens the real and vibrant culture of Egypt into a commodified stereotype, doing a disservice to popular understanding of history and only reinforcing long-held beliefs, attitudes, and mental images of Egypt.⁵³ *The Jagged Time* by contrast is set in a fictionalization of a period of Egyptian history with which the layperson is likely unfamiliar, and this is by design. Least-common-denominator design allows for cognitive shortcuts (i.e. "Ah, that's a mummy, I know what mummies do") that I am consciously denying the player. I want the world to be legible but not entirely familiar, in the hope that this uncanniness prompts player curiosity and therefore engagement with the game's systems. In the process, I hope to also call attention to aspects of the New Kingdom period that

⁵¹ Mark Rosewater, "Drive to Work #93 - Top Down Design," *Magic: The Gathering Drive to Work Podcast*, n.d.

⁵² Ibid.

⁵³ Zanescu, *Blockbuster Resonance in Games*, 226.

I found particularly interesting and that are not part of the pop-historical canon, like Egypt's deep and complex network of international trade and diplomacy.

The second way in which top-down and bottom-up design approaches proved insufficient is that they do not provide a framework for establishing player experience at the level of moment-to-moment gameplay. Top-down and bottom-up design thinking is a highly useful approach for generating cards for a game, but not the game itself. For help with the latter, I turned to Brian Upton and his concept of situational game design. Upton describes games as "a *player-centric* approach to design rather than a game-centric one. Instead of focusing on the *actions* a player can perform, it focuses on the *situations* a player can encounter."⁵⁴ As will be apparent in the Design Overview section below, I took this advice to heart in a perhaps overly-literal way - *The Jagged Time* is, explicitly, 'just' a series of discrete situations the player can encounter. The fact that Upton centers the player, and particularly the player's emotional response to and experience of the game, was enormously influential on my design thinking. Since I already knew, based on my reading of Cline and Tainter, that I wanted the game to involve a system of escalating complexity and multiple overlapping crises for the player to resolve all at once, I was able to use situational design thinking to consider the kinds of emotional target states I wanted *The Jagged Time* to induce and then, in turn, to design systems which would produce situations that could evoke those emotional states. Collapse and crisis thematically implied difficult decisions, stress, and sacrifices emotionally, which in turn implied multiple competing objectives with limited time constraints to evoke those emotions. Since situational game design is player-centric, the ultimate test of its implementation would necessitate rigorous user testing, but it became apparent early in the design process that the story *The Jagged Time* would tell would be too long for such testing to be feasible, especially in the absence of asynchronous testing. However, Upton did nevertheless articulate a useful framework for analyzing how engaging *The Jagged Time* is with a relatively small (read: one person) pool of testers, namely evaluating the situations generated by the game's rules based on Upton's six criteria of playfulness: Choice, Variety, Consequence, Predictability, Uncertainty, and Satisfaction. I will elaborate more on each of these criteria and how *The Jagged Time* fares in my third area of inquiry, below. For now, I will move on to a discussion of the practical methodology I adopted in making the game.

⁵⁴ Brian Upton, *Situational Game Design* (Boca Raton London New York: CRC Press, Taylor & Francis Group, 2018), 6 (emphasis in original).

Methodology

Research Through Design

Since the goal of this research is to investigate tensions in design theory and practice, it was appropriate to approach my areas of inquiry into game design by designing a game myself and subjecting it, and my design process, to analysis. Christopher Frayling would term this kind of practical experimentation “research *through* design,” as opposed to “research *on* design,” which lacks a practical component or “research *for* design,” which is solely focused on the finished work.⁵⁵ In-vivo data collection methods, like the Method for Design Materialization developed by Khaled et. al are well-suited to this kind of design research, but rely on digital source control systems like GitHub which were not suitable to the physical prototyping method I ultimately adopted.⁵⁶ In the spirit of nevertheless documenting my process, I kept research notes documenting major design decisions as I made them and this thesis, assembled out of those notes, can be read as a companion piece to *The Jagged Time* itself – what Frayling would classify as “action research.”⁵⁷ This parallel reading is necessary as this a study in procedural rhetoric and as such, the argument is embedded in the game as it exists when it is played, what Hunicke et al. call a game’s Mechanics, Dynamics, and Aesthetics, which extend beyond the artefact itself into the relations between its elements, and in the subjective emotional impression left by the game’s systems.⁵⁸

Rapid Prototyping

Once I had settled on my ludo-historical framing (see above), I set about creating minimal, economical prototypes of the game’s core loop as quickly as possible. I hypothesized that developing the game’s systems and ensuring they aligned with the historical rhetoric of my sources would be the most difficult and time-consuming element of the process, so a rapid-prototyping approach that prioritized developing the game’s systems first and making aesthetic and user-experience decisions later suited my needs well. This approach also allowed me to leverage my own strengths as a designer – system and narrative design – without getting

⁵⁵ Christopher Frayling, “Research in Art and Design,” in *Royal College of Art Research Papers*, vol. 1 (London: Royal College of Art, 1994), 5.

⁵⁶ Rilla Khaled, Jonathan Lessard, and Pippin Barr, “Documenting Trajectories in Design Space: A Methodology for Applied Game Design Research,” in *Proceedings of the 13th International Conference on the Foundations of Digital Games* (FDG ’18: Foundations of Digital Games 2018, Malmö Sweden: ACM, 2018), 1–10, <https://doi.org/10.1145/3235765.3235767>.

⁵⁷ Frayling, “Research in Art and Design,” 5.

⁵⁸ Robin Hunicke, Marc Leblanc, and Robert Zubek, “MDA: A Formal Approach to Game Design and Game Research,” *AAAI Workshop - Technical Report 1* (January 1, 2004).

bogged down in my weaknesses – visual art and programming. This said, *The Jagged Time* was the most complex game I had yet designed, and many of the procedural decisions I am about to elaborate on should be taken in the context of a mixture of inexperience, strict time constraints, and good old-fashioned panic.

In developing the prototype, I started with the fastest, albeit least efficient, tool I had at my disposal - making quick mock-ups of the cards in a Google Sheets document and printing them directly. This quickly escalated to two different documents - one containing a single copy of every extant card, and the other which would be regularly updated and printed as I made changes. This method meant my initial turnaround time was exceptionally short, but the cards themselves were of poor quality due to the lack of sophisticated graphic design capabilities in Sheets.

For my next iteration, I relied on Figma, creating digital versions of each card before printing them out in sheets. This method was significantly faster and more flexible than my quick-and-dirty approach had been and allowed me to fit substantially more information on each card, which in turn affected how complex any one card could be. I began experimenting with formatting, reusing elements wherever possible and developing general templates for the different kinds of cards I was developing. This approach, in hindsight, was still painfully slow. While formatting could be copied, each card had to be written and designed manually. Changes that affected multiple cards had to be done one at a time. At a certain point, it became impossible to make major formatting changes even if I wanted to.

The next step at this point should have been to transition to a tool like Dextrous or nanDECK, both of which I have subsequently become familiar with, and make a digital/physical prototype in an environment like *Tabletop Simulator* which would allow me to iterate faster and make changes at scale. In practice, the ‘rapid’ part of *The Jagged Time*’s rapid prototyping is apparent more in the breach than the observance. I cannot offer a compelling design reason for why I did not do this other than developing a kind of deadline-induced tunnel vision and fear of wasting time on learning an entirely new tool, whatever its utility. If there is a single procedural lesson that I have taken from this approach, it is to look for better tools early and often to keep the marginal cost of my prototypes as cheap as possible rather than simply trying to power through by hand.

In this way, my rapid prototyping was almost *too* rapid at first, as in my haste to capitalize on a new idea, I entirely skipped over a tool-oriented pre-production phase that would have saved me no small amount of effort down the line. Part of these delays, however, were also due to the nontrivial cost of minor changes to physical prototypes and the ever-escalating

cognitive load of keeping track of the game state myself as the game progresses. Game data collection had to be done by hand, well past the point at which it was economical to do so, and it was not feasible for me to produce multiple copies of a several-hundred-cards-large card game for distribution, creating a significant bottleneck for testing. This said, being able to get at least a minimally-viable version of a game of this scale to the table in the matter of a little over a month and a half speaks to the strength of rapid prototyping as an approach.

Iterative Development

As the goal of this project was not to produce a single naïve prototype but rather to refine a game through the use of prototypes, I adopted an iterative approach to creating, testing, and evaluating prototypes. I attempted to use the comparative economy of physical prototyping to iterate on my designs as quickly as possible and developed a simple card-versioning system to ensure that I could quickly test multiple iterations of any given card and ensure my actually-existing prototype remained up-to-date. The effectiveness of iterative design processes is well-documented, and their suitability for game development specifically is explored by Sharp et. al.⁵⁹

Iteration necessarily implies that there is, if not a goal, then at least some evaluative measure being applied to each iteration of the design. For this project, I had three evaluative measures that I used at each step of my process: an affective principle, a systemic principle, and a historical principle.

My affective principle concerned what I wanted the experience of play to feel like to the player, both in the scope of the entire game and from moment to moment. My target emotion was, in a word: stress. I had a clear image in mind of the player as a monarch sitting on their throne, agonizing over a decision between two unappealing courses of action and forced to make difficult sacrifices. It was imperative that there not, at any point, be a 'golden ending' or third option whereby the player manages to resolve this tension. If a player might feel compelled to defend their actions in the game with some variant of "I didn't have a choice," despite the fact that they very clearly did and were simply choosing what they felt to be a lesser evil, I would consider the game a success. I wanted this effect to compound, for past decisions to weigh on future ones in direct and indirect ways, such that a player feels that in playing the game they have steadily set themselves on a path from which it no longer feels possible to deviate. This feeling would form the basis of the game's exploration of imperialism both in games and in reality, as discussed in the previous section. I do not see this as being in tension with the idea

⁵⁹ John Sharp et al., "Iteration," in *Iterate: Ten Lessons in Design and Failure* (MIT Press, 2019), 43–58, <http://ieeexplore.ieee.org.lib-ezproxy.concordia.ca/document/8709347>.

that the experience should still be, in its own way, fun to play. These stressful situations can be cathartic. Ideally, they make the game's many setbacks feel justified and earned, hopefully making both victory and defeat narratively satisfying.

Systemically, I wanted the game to have a clockwork quality, with many simple systems that interlock in complex ways. No one rule should be overly complex, but the way in which the rules stack should be. Systems should be reused as often as possible, reappearing in new contexts like the multifaceted progress clocks in *Blades in the Dark*. Actions and their consequences should be clearly communicated as much as possible, and every choice the player makes should involve trade-offs in some significant way. Where possible, the number of times a player took certain courses of action should be tracked and responded to. The player should at every instance be given the ability to make short-term decisions at the expense of long-term consequences. The player should not be able to help but move the narrative forward toward its conclusion, no matter what they do - even by simply doing nothing at all.

What complicates both of these above principles was my historical principle, which came into play in two areas: semantics and syntax. By semantics, I mean that, while I am consciously deviating from real history, the game's components should at the very least rhyme with their historical counterparts. For example, Hatshepsut herself does not make an appearance in *The Jagged Time*, but The Lady of Gold should bear a striking resemblance, such that anyone with a passing familiarity with the time period will recognize the reference. Wherever possible, I would avoid relying on stereotypes and highlight elements of the real-world counterpart people, places, and cultures that are above the lowest common denominator. Historical syntax, by which I mean the reproduction of the structures of historical argument through the procedural rhetoric of games, is by contrast significantly more subjective and difficult to implement. It is *The Jagged Time*'s biggest departure from the typical iterative loop, in that its development incorporated the unusual element of attempting to match the rhetorical constructions of academic history. This is not to say that other historical games do not attempt to construct history, incorporate historical sources, or otherwise aspire to some degree of historical authenticity, but rather that *The Jagged Time* is attempting to not just reconstruct the past but rather to reproduce a specific argument about history from the standpoint of the present. My evaluative criteria was explicitly not a (futile) attempt to reconstruct history 'as it was' but rather to regularly compare the procedural rhetoric of my game with the academic historical rhetoric of Joseph Tainter and Eric Cline.

Evaluation

As explained below, the scale of this project quickly outstripped my ability to organize formal playtests for it, as playing the game in its entirety takes – at minimum – around five hours from beginning to end. I therefore adopted a twofold evaluative strategy. First, I would prioritize documenting and exploring my own design process in making *The Jagged Time* – Sections 1 and 2 of my Design Analysis, below. Second, I would construct and then narrativize one of my own playtests and use it as a case study. This case study would be analyzed through Brian Upton's criteria of playfulness, which offer a workable *in vitro* benchmark for player engagement.⁶⁰ This is effectively running Upton's methodology in reverse, inferring the strength of the game's systems at producing a procedurally-generated ludohistory from whether the situations created by a system are playful or not. With these methodological steps outlined, I will now move on to an overview of the design of the game proper.

⁶⁰ Brian Upton, *Situational Game Design* (Boca Raton London New York: CRC Press, Taylor & Francis Group, 2018).

Design Overview

Narratively, *The Jagged Time* is a turn-based strategy and management game in which the player takes on the role of the leader of the People of the Reeds, a resurgent power in the Great Green - fictional counterparts to real-world New Kingdom Egypt and the Mediterranean, respectively - and guides it through hundreds of years of history, culminating in a series of overlapping crises modeled on the Late Bronze Age Collapse of the thirteenth and twelfth centuries BCE. Mechanically, it is a cross between a '4X'⁶¹ style strategy game like *Sid Meier's Civilization* and a deck-building game, with elements drawn from each. From the 4X genre, it takes its scope of hundreds of years of history, its focus on politics, war, trade, and diplomacy, its reliance on abstractions to convey complex social processes, and its birds-eye-view scale. From the deck-building genre, it takes its core gameplay loop and many of its strategic nuances. The player repeatedly plays a hand of cards drawn from a deck which begins with cards that are relatively simple but which will be progressively upgraded and transformed over the course of a 'run' of play. A print-and-play version of the prototype with play and assembly instructions has been included in a public GitHub repository, linked below.⁶² For legibility, where a term refers to a game mechanic as opposed to a word's common-use meaning, that is indicated in **bold** and where a specific card is mentioned, it is indicated in *italics*.

Structure and Sequence of Play

In order to beat the game, the player will need to balance the game's four principal **Resources: Food, Might, Stability, and Influence**. These represent the state's capacity to pay its workforce, its military strength, its political stability, and its international prestige, respectively. In the game's second act, a fifth **Resource, Trade Goods**, is introduced, representing the many commodity resources traded between societies during the Late Bronze Age. The player generally gains these **Resources** by playing certain kinds of cards from their deck or by achieving certain short- and long-term goals.

⁶¹ A style of strategy game known for its four design pillars: "Explore, Expand, Exploit, and Exterminate." Players in 4X games generally control large organizations or groups like cities, armies, or entire nations.

⁶² <https://github.com/fritzSubRosa/The-Jagged-Time-Print-and-Play>



Fig. 1. A typical starting scenario. Top Row (L-R): The **Objective Deck** (A), the current **Milestone** (B), the **Agenda** containing 3 **Objectives** (C). Dice indicate the number of turns a player has left to complete each **Objective** or **Milestone**.

Middle Row: the player's hand of **Action Cards**. (D)

Bottom Row: the player's **Action Deck** (E) and **Resource banks** (F).

Cards come in three varieties: **Action Cards**, **Objective Cards**, and **Milestone Cards**. **Action Cards** represent how the player is governing the People of the Reeds and involve the player collecting taxes, performing public religious rituals, raising troops, extracting tribute, and other functions of state. As a rule, **Action Cards** generally transform one resource into another - the card *Tax Collection* transforms one **Stability** into two **Food**, for example. **Action Cards** are meant to provide an overall sense of the player's kingdom and the institutions it develops, and many key narrative decisions the player makes are represented by the player adding, removing, or transforming these cards. As the game progresses, the player will acquire cards that will complicate their play patterns, such as cards that have detrimental effects if not played or cards that must be played when drawn. When the player's **Action Deck** is exhausted, the player reshuffles their **Action Discard** into a new deck and resumes play, 'cycling' their deck in this way dozens of times in a typical game.

Objective Cards represent events, opportunities, threats, and other key political decision points the player will have to deal with. They are shuffled separately into their own **Objective Deck** and dealt three at a time into a 'river' of **Objectives** collectively called the **Agenda**. This is meant to depict, at a glance, what matters are before the attention of the player's royal court at a given moment and include one-off events like raids and crop failures alongside recurring state rituals like censuses and debt jubilees. Generally speaking, the player resolves **Objectives** either by expending resources or by carrying out a given action, like

acknowledging *Peasant Unrest* by refraining from playing *Tax Collection* for a certain number of turns or acquiring a certain number of a particular type of **Actions**. As a rule, **Objectives** have two possible resolutions - an easy, but short-sighted way and a 'correct' but more expensive way. A player is often incentivized to take the expedient route, especially as the game goes on, because **Objectives** are all timed. When an **Objective** enters play, the player has only a certain number of turns to resolve it before it is discarded and the player suffers a negative consequence, usually the loss of **Resources** or the addition of new negative **Objectives** to the **Objective Deck**. As the game progresses, the Agenda increases in size from three **Objectives**, to five, to seven, stretching the player's **Resources** and attention thinner and thinner as their empire expands while also incentivizing shorter and shorter-term thinking. Certain **Objectives** can **Escalate**, meaning that if multiple copies of that **Objective** are drawn, the cards combine into a more severe version - border raids escalating into invasions, treasonous rumors escalating into political conspiracies, and the like. The increasing size of the **Agenda** makes these combinations more likely, and reaching the final stage of this **Escalation** is how the player ultimately loses the game. This system and its effects will be expanded on in detail later.

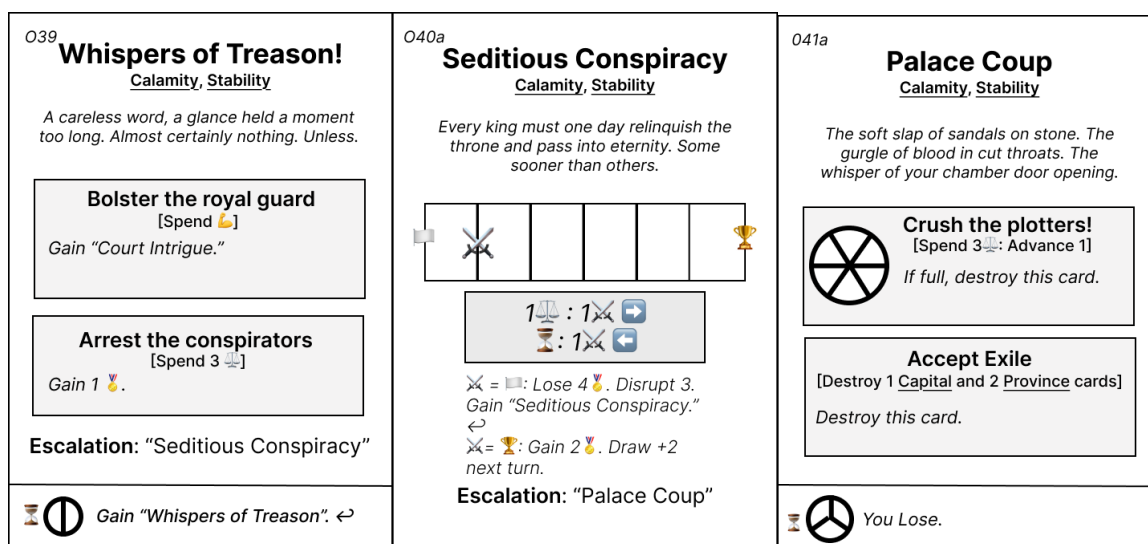


Fig. 2. The escalation path for **Stability**, going from murmurings of dissent at court and culminating with a coup d'etat that can lose the player the game. Each card reflects a different mechanic, from the simple "Right way / easy way" dichotomy at Tier 1 to a "Tug of War" mechanic at Tier 2 and ending with a frantic rush to expend eighteen Stability to avoid losing the game or being forced into Exile for Tier 3.

The final type of card is **Milestones**, which represent long-term issues and deliver what could be considered the "main quest" of the game. Like **Objectives**, **Milestones** are timed, but unlike **Objectives**, their timers reset, meaning that the player cannot simply wait the problem

out like they can with **Objectives**. Also unlike **Objectives**, **Milestones** are not shuffled and dealt but rather encountered sequentially in a mostly-linear order from top to bottom. Completing the requirements of a **Milestone** unlocks the next and the player wins the game if they successfully resolve the very last **Milestone** in the deck.

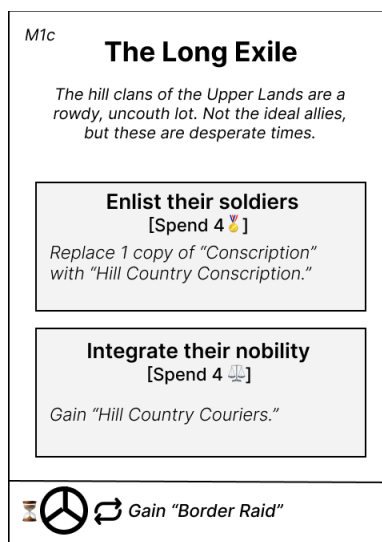


Fig. 3. The Long Exile, the first **Milestone** of The Jagged Time. It has two possible resolutions. A player may either spend four **Influence** to enlist the soldiers of the Upper Lands into their army, or make inroads with the local nobility by spending four **Stability**. The symbols at the bottom indicate that every three turns, unless either of the above actions are taken, the player will gain a Border Raid card to punish their indecision.

Results and Design Analysis

In making *The Jagged Time*, I was guided by three primary areas of inquiry: exploring the tensions between the academic and procedural rhetorical modes of history, using a deckbuilding game in order to recontextualize some of the underlying assumptions of historical strategy games, and using historical dynamics as game systems to produce engaging and rich gameplay. Rather than summarize the production of the game in a strict chronology, I will instead break down my analysis along these lines.

1. Mediating tensions between academic rhetoric and procedural rhetoric

The design process of *The Jagged Time* began first and foremost with the desire to guide a player through the broad strokes of history, to illustrate overlapping dynamics that play out over years and decades rather than a precise, linear recording of events - to operate, as Chapman would put it, firmly in the conceptual simulation style.⁶³ The game would convey the complex causes of the Bronze Age Collapse mechanically, with the player experiencing the failure of these systems from the perspective of someone who was trying to hold them together. I briefly considered the reverse - putting the player in a position of chaos attempting to undermine an otherwise-stable system - but while I do believe that game *could* be made, it would also require a much greater upfront investment of time and technical complexity, tuning the game's world to be just precisely brittle enough to collapse while still resilient enough to be challenging. I invite other designers interested in this or other comparable periods of collapse to take a stab at letting a player be the barbarian at the gates, but that game is not *The Jagged Time*. Rather, the goal of the project was to attempt to bridge the gap between the academic rhetoric of historians and the procedural rhetoric of games and to do so not by distorting games in order to be more like history, but rather to adapt history into the grammar of games. This endeavour ultimately involved three major considerations: high level considerations of aligning Cline's broad historical thesis into game systems, low level considerations of using deckbuilding logic and Joseph Tainter's model of social complexity to develop robust moment-to-moment gameplay, and curatorial considerations of what real-life people, places, and events to depict and how. I will address each of these in turn.

⁶³ Chapman, *Digital Games as History*, 73.

From High to Low: Historical Argument as Ludic Framework

It quickly became apparent to me in beginning to design the earliest versions of the game that this would necessarily also entail a highly-fictionalized version of the Eastern Mediterranean, what I half-jokingly refer to as "filing the serial numbers off" of real history. The reasons for this are twofold. First, the area of my particular interest, the Bronze Age Collapse, is a period with an at-best inconsistent written record. It would be difficult, if not to say impossible, to create a moment-to-moment, day-by-day account of the Collapse. The second is what proved to be an unavoidable fact that became apparent within the first month of development: if I wanted to create a game which would portray the collapse of a complex system, I would need to depict how that system came about - and, in turn, would end up needing to create a game that summarized approximately four hundred years of real-world history in a playable format, nearly quadrupling my intended scope. To keep the project focused, I did what any historian would do - compressed, simplified, and distilled.⁶⁴ This said, I was interested in using a fictional setting to advance a real historical argument using the game's procedural rhetoric, and so I needed an argument to advance, as detailed above. Cline and Tainter's arguments served as both inspiration and goal posts - if my game organically generates a failure state like the one Cline is describing, where a multitude of factors all contribute to systemic failure, for reasons that Tainter describes, namely that these factors emerge due to the marginal decrease in returns from social complexity, I will consider the project to be a success.

Keeping these goals in mind, the game that would become *The Jagged Time* went through multiple iterations. The suggestion to make a card game was given to me by my supervisor, Jonathan Lessard, who indicated that it would be relatively easy to prototype and implement in the time allotted. The first and briefest concept was a game similar to *Reigns*, in which the player would be prompted to make a series of binary decisions, balancing a set of resources while neither maximizing nor minimizing any of them. I discarded this fairly quickly, as I felt it would be too mechanically thin to advance my argument in the way I would have wanted. It would also have a very high 'burn rate' of narrative content, as each dilemma would only occupy the player's attention for a matter of seconds, limiting the amount of detail that I could invest into each.

After this, I settled on the very roughest version of what would become *The Jagged Time* fairly quickly. I drew heavily from other similar games - *Cultist Simulator* by Weather Factory and John Harper's *Blades in the Dark* roleplaying system being particularly strong influences, as

⁶⁴ Coltrain and Ramsay, "Can Video Games Be Humanities Scholarship?," 39.

both use the player's limited time to accomplish their goals to both accelerate their plots and provide for the tense, dilemma-resolving gameplay that I wanted *The Jagged Time* to have. In my earliest iterations of the game, which I have retroactively called the Entropic Model, the player's **Resources** ticked down at a constant rate of one per turn. Cards like *Public Ritual* and *Tax Collection* - the core economic engine of the game - could be played without cost, with only the probability of their appearing in any given hand differentiating them from a flat income of **Food** or **Stability**. The player would "commit" resources to **Objectives** to complete them, regaining them at the end of the turn. This had numerous mechanical shortcomings and proved unworkable - the game was too volatile, too passive, and too difficult to adequately convey an empire on the upswing, which the early game of *The Jagged Time* is meant to represent. This approach had a serious theoretical limitation, as well - it was not either Cline nor Tainter's contentions that the factors that cause social collapse are nebulous or entropic, but rather that they emerge from the properties of those social systems themselves.

This led me to what I have retroactively referred to as the Simple Model. All references to "committing" resources were removed - players now straightforwardly gained and spent their **Resources**, which did not decline automatically. The Simple Model nevertheless inherited many of the quirks of the Entropic Model - while their costs and effects were slightly adjusted, the basic ten **Action Cards** remained the same. So too did the starting conditions of the game: two of each **Resource**, a hand of five cards out of a deck of ten, clocks on all active **Milestones** and **Objectives**, and a maximum of for each **Resource** of six. All of my balancing decisions from this point forward were predicated on this as a basic framework. The Simple Model proved resilient enough to allow me to expand the game into what would ultimately become Act I, covering approximately the era from the middle of the Second Intermediate Period to the foundation of the New Kingdom with the reunification of Upper and Lower Egypt. The player was engaged in a very simple core loop - raising taxes, offering sacrifices to the gods, raiding their neighbors, and gearing up for a climactic confrontation with the Wheel-Turners, my fictional stand-in for the Hyksos who occupied Lower Egypt from the eighteenth to the sixteenth centuries BCE.⁶⁵ Importing the Entropic Model card design more or less wholesale at this phase proved to ultimately be a mistake, however. The game at this point was trivially easy. Clocks almost never ran out and even if they did, they generally only deducted the player's resources, slowing the game down but not deepening it. I had a vague notion that the player should suffer some sort of penalty if they ever allowed a resource to dip below zero, but I had not much more

⁶⁵ Patrick Wyman, "The Rise of Egypt's New Kingdom," *Tides of History*, n.d.

than that. All this was if these consequences even came up at all - it was consistently possible to resolve every single in-play **Objective** and **Milestone** in a single turn, and accordingly the player rarely if ever had to make any difficult choices during play. I had overshoot my mark, and moreover my designs had drifted from a game that was specifically about the Bronze Age Collapse to making a more or less conventional strategy game, rendered for unclear reasons into cards.

The solution came when I returned conceptually to what had drawn me to the Bronze Age Collapse, and what I had found so compelling about Eric Cline's writing in the first place - a feeling of historical dominoes falling, of systems crumbling under their own weight, of runaway momentum over a cliff's edge. Simply deducting player resources when they ran out of time to respond to crises was not enough - failure needed to propel the game forward, not slow it down. It was at this point that I began to sketch out the skeleton of what would become *The Jagged Time* as it presently exists, which I call the Escalation Model.

The Escalation Model: A Ludic Interpretation of Collapse

As mentioned above in the Design Overview, one of *The Jagged Time*'s key systems is **Escalation**, whereby certain **Objectives**, if drawn into the **Agenda** at the same time, combine and transform into a more serious problem for the player to solve. This mechanic is introduced very at the very beginning of the game but is recontextualized in Act Three, in which it also used to represent the domino effect of displacements, wars, and rippling economic consequences that make up the Collapse.

This system has two higher-order effects that are worth mentioning here. First, because the number of active **Objectives** in the **Agenda** increases from three, to five, to seven over the course of the game, the odds of a player getting unlucky draws and turning a number of diffuse but minor brushfires into one major crisis rise significantly over the course of the game. Second, because the cards combine, they free up a space in the **Agenda**, causing additional draws and potentially even more destructive combinations. It is possible, therefore, to over the course of a single series of unfortunate draws, to have what began as diffuse grumbling among the peasantry to rapidly escalate first into an uprising and then into a revolutionary mob that can cause the player to lose the game. Like an opportunistic infection that strikes only when a person's immune system is compromised, the constant background of problem-solving and crisis management simmers under the surface until it is time to burn the player's empire to the ground. This is what makes *The Jagged Time* unique among games of its type that wish to convey historical collapse - collapse is modeled as neither solely extrinsic nor intrinsic. While I

intended to use Milestones as narrative touchpoints to guide the player through a broad historical narrative, the actual historical argumentation happens through play - satisfying one of my primary goals for this project.

In addition to being a dramatic way to lose the game, this system is central to *The Jagged Time*'s historical procedural rhetoric. I wanted the player to be in a position in which minor issues they had allowed to fester for too long suddenly boiled over into periods of crisis, that it was in some sense only a matter of time before their actions came back to haunt them. Similarly, this system allowed me to model the Late Bronze Age Collapse itself in relatively simple mechanical terms. *The Jagged Time* takes the position that broadly all of the hypothesized causes of the Collapse are true but not individually sufficient. In order to convey this, at the beginning of Act Three, the various nations the player has been trading and warring with over the course of Act Two are each gradually afflicted by one of the major crises of the era, called a **Cataclysm** - the Mural-Painters (Minoans) suffer a severe earthquake and tsunami, the Storm-Followers (Hittites) are attacked by an ancient enemy at an inopportune time, and so on. If left unchecked, these **Cataclysms** will accumulate, and if these cards **Escalate**, the relevant civilization and all cards associated with it are permanently destroyed. This is of course an oversimplification and deviates notably from Cline's argument, which is that the Minoans and Hittites were specifically not overturned by a single cataclysmic event, but it preserves the argument in general, at the world-system level. Removing any one cause of the Collapse would cause the game to become too easy - or, put another way, the absence of any one factor would not have precipitated the Collapse, demonstrating Cline's point by negation. It is still true that societies in *The Jagged Time* as a whole collapse due to a perfect storm of factors, even if the individual cases are necessarily simplified. This, as one might imagine, has dire consequences for the player. A collapsed civilization not only no longer provides **Trade Goods** the player may need, but also spawns yet more **Cataclysms**, representing displaced peoples which can knock out other civilizations in a domino effect. It is possible, through constant dedication of resources, to prevent some or even most of these **Cataclysms** from destroying other civilizations, but every **Might** or **Food** the player commits to solving others' problems is one that they are not using to deal with their own domestic crises. In the general case, the player should expect to lose two to four of the other civilizations in a typical run without significant prior experience.

With enough repetition and a bit of luck, however, it is of course equally possible that the player can successfully juggle all of their foreign and domestic crises and manage to avert the Collapse entirely, not only for themselves but for the world at large. This may seem to strain

historical credulity, but actually still serves the overall argument of the game - it is only possible for an experienced player, with the context of not only their simulation of the past four hundred years of history but also of alternate versions of that history to make the precisely correct moves that would save not only themselves but the broader world. There are of course obvious logistical reasons why New Kingdom Egypt could not possibly have reacted to, say, the Elamite invasion of Kassite Babylon in the way that the People of the Reeds can come to the defense of the Empire of Terraces, but these are better discussed in the context of the adaptation of history into a card game rather than a map-based game that can account for distance, logistics, troop placements, and the like rather than the adaptation of history into games in general. While these breaches of historical plausibility do occur, the enormous quantity of **Resources** the player is required to expend in order to commit them are generally sufficient to prevent them from occurring too often - historical accuracy preserved by 'soft cap'.⁶⁶

All of this said, it would be more precise to say that *The Jagged Time* models the moments leading up to collapse rather than that it models collapse itself. The dramatic simplification of the economy that marks out the final stage of the collapse and which led historically to the widespread de-urbanization and depopulation of areas like Greece and is not directly depicted. To be more precise, *The Jagged Time* ends only at the first two of Colin Renfrew's four stages of social collapse, as cited by Eric Cline - a collapse of central administrative organization and the disappearance of an organized political elite - and does not model the subsequent stages of the collapse, namely the collapse of a centralized economy and settlement shift and population decline.⁶⁷ The collapse of the central administrative organization, in game terms, would be a player running out of the **Resources** necessary to continue playing their **Action Cards**, and the disappearance of the political elite would be the end of the game itself and with it, the player's control over the game world. A game that concerns itself with the latter two stages, focusing on the breakdown of centralized economies and organized settlement - especially one that positions collapse to a less complex form of society to be a rational response for many people, would be interesting as a sequel project to *The Jagged Time* but it is not the thing itself.

From the Bottom Up: Deck-builders as Complex Systems

In addition to the specific case of the Late Bronze Age Collapse, *The Jagged Time* serves as an experiment in modeling the collapse of societies in the general case by adapting

⁶⁶ An implicit or second-order limitation on a game mechanic, as opposed to an explicit 'hard cap.'

⁶⁷ Cline, *1177 BC: The Year Civilization Collapsed*, 161.

Joseph Tainter's *The Collapse of Complex Societies* into a set of game mechanics. It was, perhaps surprisingly, not at all necessary to invent an entirely new style of game in order to do this. Rather, *The Jagged Time* uses the existing ludic grammar of deck-building games in order to model Tainterian complexity. More specifically, it does this by adopting the strategic challenge of variance as a deck increases in size, card-transformation effects, and card upgrading, and shaping them to the Bronze Age context in three ways: **Provinces**, **Transformation**, and **Specialization**, respectively.

Provinces

A player's deck at the start of the game is relatively simple, with cards that by and large convert the player's resources into one another at modest, but stable profits. This is a common design grammar for deck-building games in general - the player begins with a basic deck with a set of straightforward but inefficient actions, and steadily improves it over time, generally by adding new and more powerful cards. A player is also incentivized to remove cards from their deck whenever possible, as a smaller deck ensures that the player draws into their most powerful cards early and often, ensuring their turns are more consistently to their benefit and disincentivizing the player from simply gathering up every card they come across. I deliberately sought to prevent this line of play except in very specific circumstances - I want the player's deck to become more unwieldy and high-variance as the game goes on, in keeping with Tainter's description of increasing social complexity. I therefore only rarely allow the player to remove cards from their deck and, even then, generally force them to do so at random. By contrast, I strongly encourage the player to make their deck less efficient, particularly in the form of a unique card type called **Provinces**.

Early in the game, the player is able to supplement their income by raiding their immediate neighbors, granting quick one-time bursts of **Food** as booty. Repeated raids lead to wars which, if won, lead to the vanquished people being added to the player's **Action Deck** as a **Province**. **Provinces** represent, as their name might imply, the various territories and vassal relationships the player has brought under their domain and are unique among **Action Cards** in three respects. First, **Provinces** can grant the player **Resources** for free, representing tribute. Second, **Provinces** have the **Mandatory** subtype - when drawn, they must be played at some point before the player finishes their turn, though precisely when is left to the player. Third and most importantly, **Provinces** only grant the player their tribute of **Resources** if the current total of two resources, usually **Stability** and either **Food** or **Might**, exceeds a certain amount when they are played. If that total is under the indicated threshold, the **Province** is lost as it rises up in

rebellion. In narrative terms, the player must maintain a stable domestic government, a formidable army, or some combination of the two to prevent unruly vassals from getting out of line. I will elaborate on the mechanical implications of this when I discuss *The Jagged Time* as a strategy game, but for now I want to focus on how this translates to Tainterian complexity.

Introducing large numbers of **Provinces** into the player's empire is obviously advantageous - not only is there great profit to be made in the wars which bring them into the fold, but they are a free and vital source of **Resources** that the player desperately needs. They also, however, introduce new constraints. The player generally, unless they take specific choices in certain **Milestones** and **Objectives**, only draws five cards per turn. Each card added to the deck therefore decreases the likelihood that any given card appears in any given hand and increases the chances that a player draws a hand that cannot give them the **Resources** they need to resolve **Objectives** or **Milestones** in the way they want to, that turn. Assuming the player also wants to spend their **Resources** aggressively in order to stay in control of the **Agenda**, they run the risk of a bad draw which would lose them their **Province** and plunge them back into a war at the worst possible time. **Provinces** therefore encourage the player to play somewhat carefully as their empire expands, maintaining reserves of **Stability** in particular and planning their turns more judiciously. In other words, both the game and the player jointly create increased Tainterian complexity - the game by adding new kinds of cards the player must engage with (social differentiation) and the player by being more judicious and disciplined with their play (social organization). A player can further increase their social organization in a Tainterian sense by making decisions that increase the number of cards they draw per turn either permanently or short-term, thereby increasing the likelihood of favourable hands and therefore the state's flexibility and efficiency at marshaling resources. In game narrative terms, card effects that increase card draw are therefore associated with actions and institutions that raise state capacity like conducting censuses, establishing courier networks, and conducting clever political maneuvering. As we will see, however, that can only go so far.

Transformation

The player's **Action Deck** does not solely become more complex solely through addition but also through card **Transformation**. When prompted by certain **Milestones** and **Objectives**, the player may **Transform** certain **Action Cards** into more specialized variants, representing the growth of new social and political institutions. Whereas in a deck-building game like *Slay the Spire*, card transformation is generally random and capitalizes on a tension between risk and reward, card transformation in *The Jagged Time* is both player-directed and to the player's

benefit. These new cards are always strict improvements on the base card, but are usually more complex to play and manage because unlike other cards, they can impose negative effects every turn in which they are drawn into the player's hand but not played. Raising an army of professional charioteers from the ranks of the nobility makes the player's army very capable at generating **Might** quickly, but also locks the player in to keeping those charioteers fed (i.e., playing the associated card by paying its **Food** cost). The player is not only choosing what kind of cards they are adding into their deck, they are setting a historical precedent - the newly-empowered nobility now expect to be regularly paid, whether or not the player has any actual use for the resources they provide. This in turn might incentivize a player with many such cards to engage in frequent military campaigns in order to maximize the return on that accumulated **Might**, since any extra gained over the player's maximum is wasted, incentivizing the player to frequently spend **Might** and thereby ensure they are getting maximum value out of cards they are compelled to play anyway. This, in turn, adds **Provinces** to the deck, increasing its size and therefore volatility, et cetera. In addition to making the game overall more complex and therefore increasing the probability of unplayable "bad" hands, these cards represent the social institutions that the player's society has adopted in order to fulfill its basic needs. Every version of the People of the Reeds needs to generate some amount of **Stability**, for example, but how they do it, either through an exalted priesthood or through state control of religious ritual, gives roleplaying colour and distinctiveness to their society.

C4a Public Rituals  <u>Ma'at</u> Gain  <i>A lamb or two is a small price to pay for the favour of the Gods.</i>	C17a Moon God Sacrifices  <u>Ma'at, Moon</u> Gain  Retained: Gain "Seditious Priests" (C20). <i>The priests of Father Moon are diligent, fanatical, and very quick to take offense.</i>	C6a State Rituals  <u>Ma'at, Statecraft, Sun</u> Gain  . You may spend  to gain an additional . Retained: Gain "Court Intrigue" <i>We have far too many gods for the common folk to keep track of. They need only one. Me.</i>
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Fig. 4. The player begins the game with three copies of Public Rituals and is prompted early in Act One to replace up to two of them with either Moon God Sacrifices or State Rituals.

Design Case Study: *Noble Charioteers*

To illustrate my process in bringing these differing aspects of *The Jagged Time*'s design together, let us look at a case study of two mutually-exclusive cards, *Noble Charioteers* and *Royal Guard*. The player encounters the opportunity to gain these cards at the game's second **Milestone**, *The Turn of the Wheel*. Narratively, this is a crossroads moment for the People of the Reeds, who are considering whether to adopt the military techniques of their enemies, the Wheel-Turners, in order to defeat them or to double down on their traditional ways of waging war.

M2c Ways of War The Wheel-Turners were so named for their new way of war - standing armies led by chariot-riding nobles. Perhaps we may defeat them by emulating them. Embrace chariots [Spend 4 🏹] Gain "Noble Charioteers." Max 🏹+2 Preserve the old ways [Spend 4 🏹] Gain "Royal Guard." Max 🏹+2 🏹 ➡️ 🔄 Gain "Border Raid" and "Whispers of Treason."	C7a Royal Guard <u>Troop</u> 🌿🌿 Gain 🏹🏹 and 🏹. Retained: Gain "Court Intrigue" Take the third son of a minor house, give him a plumed helmet and bronze khopesh, and he will believe he's a god made flesh.	C27 Noble Charioteers <u>Troop</u> 🌿🌿 Gain 🏹🏹🏹 Retained: Lose 🏹🏹🏹 Chariot, noun: A two-wheeled vehicle that communicates just how very important your father is.
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Fig. 5. An early choice of military technology.

The first important thing to note about the design of these cards is that they, like all **Action Cards**, are not actually all that concerned with the comparative military advantage of chariots or elite infantry but rather represent military forces as a social institution. Insofar as chariots are, in most circumstances, a 'superior' military technology, that distinction is flattened into a differential in **Might** as opposed to variables like speed, survivability, range, or any other battlefield characteristic. This framing is downstream of my adoption of Cline's rather than Drews's explanations for the Collapse, at this point still hundreds of years in the future. That is not to say that this is a choice without consequences, but rather that those consequences are more diffuse.

Choosing *Noble Charioteers*, for instance, is more efficient in terms of raw **Might** generation, and also grants the player an increased maximum **Might** reserve to ensure that they can get full value from the card consistently. If left unpaid, however, they impose an immediate

and significant penalty on the player's **Stability**. This subtly incentivizes the player to put these charioteers to good use, indirectly representing the restlessness of a martial nobility eager to prove themselves on the battlefield.

Royal Guard, by contrast, is more flexible. What they lack in terms of raw **Might** output they gain by offering another source of **Stability**, a resource which can be otherwise difficult to come by. Unlike nobles, they do not undermine the player directly when neglected, but rather add a negative card, *Court Intrigue* into the player's **Action Discard**. This makes the player's overall deck worse, as not only is *Court Intrigue* a bad card, it takes the place of an **Action** the player might have needed in its place, but it is also a drawback that can be mitigated by increasing the player's per-turn draw. In narrative terms, a restive royal guard is always a problem, but it is an even greater problem in a society with poor governance institutions (low card draw).

In drawing these distinctions, I had several goals in mind. The first, as mentioned, was considering the player's **Actions** in the context of the political institutions that they represent. This is a choice with long-term political consequences beyond simply which resources the player has greater or lesser access to. In Act Two, the player's choice between these cards will affect the makeup of the Regency Council who they must then attempt to sway in favour of the young king or his regent. Choosing *Noble Charioteers* yields the *First Chariot*, whose implied impetuosity and élan incline him to support the ambitious regent, whereas the stolid and conservative *Captain of the Guard* is strongly inclined to favour the traditional line of succession. These are admittedly, if not stereotypes, then certainly clichés – the dashing cavalry officer and the rock-ribbed conservative – but they serve to highlight the ways in which the player's choices are changing the very political fabric of their society. In giving this brief glimpse, I wanted to communicate to the player that their choices have longer-lasting consequences than they might think.

The second was that I wanted to afford the player the ability to customize their decks and playstyles, while also offering both synergies and path dependencies. *Noble Charioteers* pairs well with cards like *Moon God Sacrifices* that efficiently gain **Stability** and benefits greatly from *Volunteers* reducing its cost, while *Royal Guard* allows *State Rituals* to be more efficient, indirectly synergizing with *Corvée*. These synergies allow a player to pursue a 'Stability Run' or a 'Might Run', maximizing certain resources at the expense of others, hopefully adding depth to their decision-making.

The third was that I wanted to afford alternate-historical outcomes, in this case the choice between a historical outcome (chariots) and an alternate-historical one (a kind of 15th

century BC Luddism). This is not to say that the alternate-historical outcome was equally likely, but rather that the presence of even an untaken alternate route highlights the reasons why the historical path might have been taken. *Noble Charioteers* is an easier card to manage, for all its one-dimensionality. Its synergies are more obvious, the increase in maximum **Might** generally useful. A skilled player may well build a successful empire without such newfangled fads as 'the wheel' and 'the compound bow,' but only through an ahistorical command of the game's systems as a whole. This counterplay, rather than undermining the historical argument, highlights it.

Trade and Specialization

Bringing the above analysis together, *The Jagged Time* merges Tainter's notion of complexity with Cline's depiction of the Bronze Age Eastern Mediterranean as a vibrant and interconnected world through the linked mechanics of **Trade** and **Specialization**. Beginning in Act Two, as the People of the Reeds regain access to their northern ports and begin to make contact with the broader world around the Great Green, the player shuffles new **Objectives** into the deck which represent envoys from, and eventually trade connections with, the various other cultures of the world. This system doubles as international diplomacy, as the player has the choice to open trade relations with the culture in question or to declare war on them.

Should the player choose to trade, they will acquire both **Trade Goods** and the ability to **Specialize** a card with a given subtype. A **Specialized** card produces two more of whatever **Resource** it normally produces at the cost of permanently raising its play cost by one **Trade Good**. In narrative terms, the player can choose to import copper from the Storm-Followers (Hittites) to improve their army of charioteers, but they will now need to constantly maintain that supply of copper in order to keep the army in the field. This dramatically increases the value density of the player's deck, allowing them to gain bursts of **Resources** more easily, thereby staying ahead of the curve of the increased demands of an expanded **Agenda**. It is not possible for the player to keep up with the escalating demands of the game if they do not do this - they are drawn by self-interest into trade relationships with the other powers of the world if they want to survive, let alone prosper, much in the same way that upgrading one's cards in a run of *Slay the Spire* is a requirement for staying ahead of the game's power curve. Moreover, because the ability to acquire **Trade Goods** is tied to seeing their associated **Objectives** regularly, the player is further incentivized not to let anything linger in the **Agenda** for too long, nor to fill the **Objective Deck** with **Calamities** that dilute their trade opportunities. When the Collapse begins in earnest in Act Three, the player may find themselves suddenly cut off from a vital source of

the **Trade Goods** they need in order to keep their highly-specialized economy functioning. A civilization which is destroyed in Act Three can no longer trade, and a player who has been keeping ahead of the curve through a steady stream of **Trade Goods** may find themselves suddenly unable, as did so many Late Bronze Age kings, to import the vitally-important copper, grain, or other strategic commodities that sustain them. All of this said, I am in one key way departing from just how fragile these systems were - **Trade Goods** are fungible in a way that real-world commodities are not. The collapse of the Storm-Followers/Hittites is not quite as problematic for a player as the collapse of the Cypriot bronze trade was for the armies of the Eastern Mediterranean, as the player can - implausibly - substitute Mural-Painter/Cretan lumber, which is equally represented by the abstraction of **Trade Goods**. A more rigorously economic, "Euro-style" board or video game, perhaps one that adheres more closely to Christopher Monroe's account of the Collapse than it does Eric Cline's, might more accurately reflect this friction but it proved too fine-grain for the high-level abstractions of *The Jagged Time*.

This system serves three purposes. First, I found it imperative to convey the interconnectedness of both the real Bronze Age Eastern Mediterranean and my fictional Great Green both mechanically and narratively because it was one of the parts of Cline's history that I thought players would find the most interesting. Kings of this era conducted formal diplomacy, signed treaties, waged large-scale wars, but also traded with one another over enormous distances, especially considering the technology of the day.⁶⁸ The disruption of these trade networks during the Collapse had an enormous impact on the economies of every major power, indicating a high degree of economic interdependence.⁶⁹ Second, I wanted to discourage the player from "gaming the system" by exploiting the fact that only **Calamities** of the same title can **Escalate**, thereby incentivizing a player to collect as many different **Calamities** as possible, reducing the chance of duplicates in any one draw. However, as indicated above, diluting the **Objective Deck** with too many **Calamities** will lengthen the time that it takes for new trade opportunities to be drawn into the **Agenda**, potentially starving the player of critical **Trade Goods**. In narrative terms, the voyage becomes too fraught with danger for merchants to attempt, or the reputation of the player's kingdom for instability casts doubt on their ability to pay. One playtest I conducted ended in precisely this way - because I had let the political situation at home deteriorate so badly, I did not see the **Objectives** representing trade frequently enough when I needed them, could not maintain my complex and specialized economy, and fell into ruin. Finally, I wanted to synthesize the two theoretical underpinnings of

⁶⁸ Cline, 1177: *The Year Civilization Collapsed*, 22-25.

⁶⁹ Ibid., 148-149

the project by ensuring that the increase in Tainterian complexity that I am modeling through **Specialization** is connected directly to Cline's description of an interconnected, interdependent Bronze Age which came to an end in the late thirteenth and early twelfth centuries BCE.

This last point is key to understanding my implementation of Tainter and Cline's work: they are not reproduced simply as in-game artifacts or academic asides, but rather they are enacted through play. There is no one single card that represents the Collapse as a whole, but rather a series of stressors that are placed on the system the player has been building over the course of Acts One and Two. Cline and Tainter's historical evidence is thereby transformed into systems which, like Adam Chapman describes in his analysis of *Sid Meier's Civilization*, "produce a historical experience when interacted with,"⁷⁰ even if the specific historical protagonists are fictional.

Representation, Curation, and Resonance

While I had decided early on that I was not setting *The Jagged Time* in the timeline of real history, insofar as it was going to be based loosely on that history, I had a number of curatorial and representational decisions to make. First, if there is a role for the player, who or what are they embodying? I decided on a common, fuzzy abstraction - the player would play 'a nation' over the course of the game, as is common in strategy titles like *Sid Meier's Civilization* or *Europa Universalis IV*. The player would not necessarily take the role of any particular ruler - as these would be represented by cards they could play - but rather as the state in the abstract. This is obviously both a gross simplification and an anachronism, but it was necessary to give the player a vector through which to engage with the game's systems.

As to which state the player would adopt, an analogue to New Kingdom Egypt proved to be a natural choice for several reasons. First, it is where Eric Cline both begins and ends his discussion in 1177, as New Kingdom Egypt was the only major power of the era to survive the Collapse and is also, through the murals in Ramses III's mortuary temple at Medinet Habu, one of our clearest sources for who the mysterious Sea Peoples were.⁷¹ Since I intended the game to be theoretically winnable, making the protagonist nation one who historically did survive this time period made intuitive sense. Second, Egypt has a natural historical narrative arc if the meta-narrative of *The Jagged Time* is one of the growth and collapse of a complex international system - they (re-)emerge onto the world stage with the end of the Second Intermediate Period,

⁷⁰ Adam Chapman, "Is Sid Meier's Civilization History?," *Rethinking History* 17, no. 3 (September 2013): 312–32, <https://doi.org/10.1080/13642529.2013.774719>, 319.

⁷¹ Cline, *1177 B.C.: The Year Civilization Collapsed*, 1.

grow in territory, prestige, and economic sophistication, engage in great-power conflicts with their neighbors, and ultimately are able to weather the storm of the thirteenth and twelfth centuries BCE. Third, there is a large well of what Mark Rosewater refers to as "emotional equity" with Egypt - a player has a far more emotionally powerful investment in what Ancient Egypt was like than they do with, say, the Hittite Empire.⁷² Given that a player's attention and ability to familiarize themselves with the world of the game is already going to be taxed by learning several novel game systems in order to play *The Jagged Time*, any savings I can find in player investment - without, wherever possible, resorting to cliché - seemed like obvious benefits.

It first must be noted that neither this equity, nor the resonance that it causes, are strictly positive. Andrei Zanesu, citing that same Mark Rosewater lecture, speaks of the perils of this kind of resonance - pop-cultural depictions of Egypt, the very things that make it attractive and resonant, are also loaded with Orientalist clichés of tyrannical pharaohs, cursed tombs filled with mummies, and fantastic religious cosmologies.⁷³ These depictions, writes Zanesu, "uncritically replicate what was already there by mangling the vibrant and living culture of Egypt."⁷⁴ The familiarity of Egypt is both a blessing and curse to a designer mindful of resorting to stereotypes. Even the fact that the People of the Reeds are, canonically, a distinct people from the real New Kingdom Egypt is no defense, as they are clearly *intended* to evoke them in the same way that *Magic: The Gathering's* Amonkhet is intended to evoke pop-cultural Egypt - that was, after all, the whole point of making them my protagonists.

This is, on some level, an unresolvable problem, and I am fully cognizant of the fact that *The Jagged Time* does not resolve it. While I made a conscious effort not to draw on any obvious cultural or religious imagery (cats, mummies, pyramids, and the like)⁷⁵ in designing the People of the Reeds, the core logic of the game, the cycle of tax collection, religious ritual, monument-building, and war, not to mention the implied physical geography of the Upper and Lower Lands are all steeped in both real and fictional Egypt. It is the 'real' Egypt that makes my fictional not-Egypt legible. I will further concede that the story of The People of the Reeds contains numerous deliberate inaccuracies for the sake of narrative cohesiveness or drama, to

⁷² Mark Rosewater, "Twenty Years, Twenty Lessons - Part 1," *Magic: The Gathering*, May 30, 2016, <https://magic.wizards.com/en/news/making-magic/twenty-years-twenty-lessons-part-1-2016-05-30>.

⁷³ Zanesu, "Blockbuster Resonance in Games," 226.

⁷⁴ Ibid.

⁷⁵ There are two exceptions to this - the "Ma'at" subtype, which indicates that a card provides Stability, is the name of the Egyptian concept of order and cosmic harmony, as well as the goddess that embodies those qualities. The term for the broader world, the Great Green, is taken from the Ancient Egyptian name for the Mediterranean Sea, as well as Wadj-Wer, the god who embodied it.

say nothing of the exceptionally broad strokes with which I draw my analogues for the Hittites, Minoans, and other Bronze Age cultures. By way of a short recounting of my known historical inaccuracies, elisions, and omissions: the Pharaoh who united Upper and Lower Egypt, Ahmose I, did not die in the attempt the way the ill-fated and nameless king of Act One does, and several generations separate Ahmose from Hatshepsut and Thutmose III - the real-world basis of *The Lady of Gold* and *The Young Conqueror* - who I depict as his children for the purposes of narrative pacing. Ahmenhotep IV / Akhenaten's mental stability is the subject of some historical debate and indeed probably ultimately unknowable, whereas he receives a rather negative, paranoid, and fanatical portrayal in *The Jagged Time*. Initial drafts of the Sun King were even harsher, with him being consumed by religious ecstasy and demanding to be legally married to the Sun Goddess - a choice which I cut for being too unfairly delusional, as well as for its implicit erasure of Akhenaten's real wife, Nefertiti. Similarly, the conflict between Akhenaten's elevation of Aten and the priesthood of Amun was a conflict between the relative importance of two solar deities, not a solar deity and a lunar one. This change I made principally for legibility's sake, to give players an immediate, if approximate, sense of the sides in the conflict - of all of my simplifications and distortions of historical fact for ludic clarity, this is the decision I feel most comfortable defending on its merits. The exact theology is not what makes Akhenaten's reign narratively and mechanically interesting, but rather the struggle of a revolutionary, iconoclastic king against an entrenched religious hierarchy.

This last point is key to how I have deployed history in *The Jagged Time* - I have endeavoured to mechanically convey a feeling of the time period insofar as it helps me advance Cline and Tainter's arguments rather than to adhere strictly to historical fact. This has precedent in historically-inflected game design, if not in academic history - Torpor Games's 2020 roleplaying game *Suzerain* is set in a fictionalized mash-up of twentieth century Iran, Egypt, and Turkey but nevertheless uses its setting to explore the politics of that time and place through its central political metaphor.⁷⁶ Similarly, the nations of ZA/UM's 2019 roleplaying game *Disco Elysium* are clear analogues for real-world states, with Oranje, Revachol, and Graad exhibiting clear cultural signifiers tying them to the Netherlands, France, and Russia, respectively.⁷⁷ This is a complete break from Clyde, Hopkinson, and Wilkinson's contention that a gamic form of history must necessarily contain the same kinds of truth values as academic history.⁷⁸ I would reply that *The Jagged Time* is *procedurally* historical in that, in its procedural rhetoric - in,

⁷⁶ Torpor Games, *Suzerain*, Fellow Traveller, 2020.

⁷⁷ ZA/UM, *Disco Elysium*, ZA/UM, 2019.

⁷⁸ Clyde, Hopkins, and Wilkinson, "Beyond the 'Historical' Simulation," 24.

without putting too fine a point on it, the way that games are distinct among media - it advances a historical argument that, in turn, does contain those very truth values.

These caveats issued, I do want to consider the process by which these historical elements were included because it is relevant to the general question of how designers go about designing games set in, based on, or drawing inspiration from, history. As mentioned above, the broad narrative arc - starting with the end of the Second Intermediate Period, detailing the rise of Egypt as a world power under Hatshepsut and Thutmose III, illustrating the Great Power politics of the age through the eyes of Amenhotep IV / Akhenaten, and culminating in the arrival of the Sea Peoples - is taken directly from the narrative structure of *1177 B.C.* such that one could play the game and read the book in parallel. If I was already adopting Cline's rhetorical position, it was sensible to adopt his narrative structure as well. That was not my only justification, however - I could just as easily source other narratives of New Kingdom Egypt, focus on other, lesser-known kings, and arrive at the same place, both temporally and rhetorically, as Cline did. I chose the three monarchs I did, though, both because of their resonance value but also because they furnished narrative justifications for mechanics that I wanted to incorporate into *The Jagged Time* for purposes of the broader ludic argument. If I wanted trade to be a mechanic in the game in Act Two, what better protagonists to introduce the system into the game than Hatshepsut and Thutmose III, whose reigns prominently featured the re-establishment of trade connections that had been lost during the Second Intermediate Period?⁷⁹ Similarly, if I wanted to show how societies become more complex in response to crisis, represented ludically by card transformation, who better than the heretic king Akhenaten to bring about those changes? If I wanted to make my argument mechanically, mechanical considerations had to come first and foremost. These are also all rulers for whom a host of secondary sources which I could draw on for inspiration already existed. I am indebted (in addition to Cline's work) in particular to two podcasts, both written and hosted by academic historians: *Tides of History* by Patrick Wyman and *History of Egypt* by Dominic Perry for much of my inspiration for the historical colour, characters, and events that made their way into *The Jagged Time*.

Player Positionality and Empire

Strategy games, particularly historical strategy titles like the *Sid Meier's Civilization* series, have been consistently critiqued for their naturalization of imperialist and colonialist logics through their game systems. *The Jagged Time* is, in several respects, equally susceptible

⁷⁹ Cline, *1177 B.C.: The Year Civilization Collapsed*, 27-28.

to these critiques. It is a game that positions the player as, if not any specific king or state system, then as authority, or even empire, itself. It is a game that encourages the player to wage expansionist wars, to subjugate their neighbors, to tax the peasantry and respond to their grievances with naked force. The many lives lost in expansionist wars and the plundered booty of other civilizations are abstracted into resources the player needs and understood only in terms of utilitarian profit and loss. These are all deliberate design decisions, motivated by two principal goals.

The first of these goals is historical. The narrative of *The Jagged Time* is one that takes place over the course of centuries and an implied geographic area thousands of kilometres across. In order for that narrative to be legible to the player, they need to be in a position that allows them to observe political, economic, and ecological forces from, as it were, 'ten thousand feet.' This, to me, implies two possible player positions. The first is to put the player in the role of a more-or-less neutral observer, watching the history below play out and perhaps interacting with it only in indirect or supernatural ways. This would imply a highly simulational underlying design, with the various protagonist nations capable of interacting in intelligible and consistent ways without player input, as well as potentially complicating the historical narrative by introducing the player as a kind of providential (or malicious) god. The alternative approach recognizes that the player should be situated in the game's historical context at least somewhat, and moreover that this context should afford them a plausible reason to know and care about the movement of large historical forces. This need not necessarily be a position of political authority - a game about a sufficiently well-connected merchant house could have a similar standpoint - but political authority specifically sits at the nexus of the many overlapping crises like civil wars, invasion, and mass displacement that I wanted to present to the player.

The second of these goals is philosophical. It is entirely true that, in order to stay ahead of the game's difficulty curve, the player will have to engage in activities - or at least in the representation of those activities - that they consider unethical. It is equally true that, in the long run, these strategies are ultimately counterproductive. In a game like *Sid Meier's Civilization*, *Hearts of Iron*, or *Europa Universalis*, 'painting the map' by conquering all of one's neighbors or even the entire world is a strict mechanical positive. More territory means more resources with which to sustain more armies, which means more territory, and 'winning' generally means creating the largest, most extractive empire possible. That is not the message I wished *The Jagged Time* to convey. *The Jagged Time* is interested in the maintenance of an empire, and more specifically in the fact that this maintenance is active, exhausting, and ultimately unsustainable. Nor can the player really opt out of or disavow the violence inherent in their

position while still succeeding on the game's terms. Far from being a power fantasy either of liberal enlightened despotism or gleeful world conquest, the intended feeling toward imperialism that *The Jagged Time* wishes to evoke is suffocating complicity.

This feeling, along with the name *The Jagged Time* itself, is taken from a passage from J.M. Coetzee's *Waiting for the Barbarians* in which the book's narrator, a nameless colonial Magistrate, reckons with his complicity in a system of imperial domination that has both empowered and dehumanized him. The sole fixation of the book's Empire, as it is for any empire, is "how not to end, how not to die, how to prolong its era."⁸⁰ These are also, at the risk of flippancy, the verbs which compose the core gameplay loop of *The Jagged Time*. The player, like Coetzee's Empire, "live(s) in history and plot(s) against history" and is similarly doomed to failure.⁸¹ In that, I feel *The Jagged Time* is, in its own idiosyncratic and apocalyptic way, a hopeful game. After all, no empire can ever truly "stand the test of time."⁸²

Conclusion

Development of *The Jagged Time*, like the development of any game, involved a number of decisions, both big and small, that is too great to be recounted here. Instead, I have attempted to simplify the design process into three broad categories of decisions that I, as a designer making a historical game, encountered. At the high level, I used Eric Cline's arguments about the Late Bronze Age Collapse to inform my decisions about how the course of an entire game of *The Jagged Time* should feel and what a player's takeaways about history should be after playing the game. At the level of moment-to-moment gameplay, I experimented with using existing deck-building grammar to explore Joseph Tainter's model of social complexity and collapse, as well as harmonizing that model with Cline's systems-level analysis. The middle layer between these two - what a player would actually be doing, encountering, and discovering over the course of the game, was a curatorial decision driven both by a desire to make my fictional world legible without being stereotypical and by a need to harmonize mechanical progression with narrative progression. While I have separated these layers out for the purposes of clarity here, I wish to end this portion of my analysis by stressing the extent to which all three layers bled into one another constantly in practice. The design, dissected, is a different being altogether from the living organism.

⁸⁰ J. M. Coetzee, *Waiting for the Barbarians*, Vintage Fiction (London: Vintage, 2004), 148.

⁸¹ Ibid.

⁸² "Dev Diary #3: Managing Your Empire | Civilization VII." <https://civilization.2k.com/civ-vii/game-guide/dev-diary/managing-your-empire/>.

2. An alternate ludic framework to the '4X' genre

I will clarify the following section by stating upfront I am a lifelong fan of strategy games, but that this necessarily means that I also have a long list of design, aesthetic, and political critiques with them. It is the attempt to reify these critiques into a game, along with my desire to transpose historical argument into procedural rhetoric, that produced the most fruitful constraints in making *The Jagged Time*. In order to explain my most significant design decisions and their consequences, I must first start with a brief summary of my general complaints with existing strategy game conventions.

Design Critiques

Strategy game worlds are static and passive

In a game of *Sid Meier's Civilization VI*, the Protagonists - a blanket term in which I am including both the player(s) and any AI opponents - are in more or less complete control over the history of the world. Farms, mines, and cities are placed when the Protagonist decrees it, revolutions succeed or are crushed at will, and technology and culture develop along specially-sculpted pathways determined by the Protagonists. This all has very good justification from a design perspective - that feeling of control, of guiding a single civilization through six thousand years of human history, is central to the appeal of titles like *Civilization*. It is also what gives these games a "one more turn" feeling, as the ability of the player to plan actions five, ten, or twenty turns in advance allows for both long-term strategic planning and the joy of anticipation (i.e. thought patterns like "Once I get this city built, *then* I can get this wonder, *then* I can..."). It fails, however, to convey the nuances that make history interesting - the contingencies, trade-offs, and short-sightedness that often characterizes historical leadership, the emergence of social and political phenomena that bubble up out of human society rather than being imposed from above by elites, the drama of collapse and defeat. The tension in 4X games is not internal or systemic, but among equals - the Protagonists are competing against one another but have no other natural predators, creating a zero-sum world in which one civilization's success is necessarily predicated on the failure of another. Even titles like *Endless Legend* with an explicit meta-plot about the game's planet becoming progressively more uninhabitable only accelerate the urgency of these moves rather than qualitatively change them. The death of the planet, while dramatic, is functionally indistinguishable from play lasting a finite number of turns, with the Protagonists still being provided absolute agency within that time constraint.

Technological fetishism

Strategy games, especially 4X games, generally position technology in a flatly beneficial way, offering either radical new affordances (and thereby incentivizing "beelining" strategies) or incremental value that snowballs over time. In either case, the development of new technologies is a strict "upgrade." While there are historical cases where this might be true - advances in military technology being a good example - as a framework, it fails to convey the social ramifications of those technologies. Technological determinism can explain how a company of musketeers might be entirely outmatched by a division of tanks, but not the more complicated and nuanced effects of technologies like the cotton gin or steam engine.

Poor scalability / lack of social development

I have found it often personally unsatisfying that 4X games, *Civilization* in particular, lose momentum as they go along. I am not alone in this feeling - *Civilization VII*'s lead designer, Ed Beach, pointed to the fact that only forty percent of *Civilization VI* players actually saw a game through to the end, often abandoning games in the latter stages when the outcome was no longer in doubt.⁸³ There is no sense that societies are becoming more meaningfully complex either as they progress technologically or expand physically. The difference in game terms between a player empire in *Civilization VI* with two cities versus an empire with ten is quantitative and not qualitative, with the player simply making the same set of micromanagement decisions about construction and worker placement that were engaging when they were done for two cities but become tedious when they have to be made for ten. Some titles, like Paradox's *Stellaris* and *Imperator: Rome* allow the player to avoid this tedium by handing over parts of their territory to AI governors to manage on the player's behalf.^{84 85} However, because a reasonably skilled human player is almost always a better player than the AI, and because there is often no punishment for not delegating these tasks other than that a player might feel bored, optimal play generally means maintaining direct control wherever possible. Even were the AI to perform at near-human levels, the player who delegates management of their provinces is simply playing less *Stellaris*, outsourcing the management of complexity to their AI assistants. This to me fails to capture the real complexities of historical empires, deadening drama when it should be heightening it.

⁸³ Rollo Romig, "In Civilization VII, Empires Rise and Stereotypes Start to Fall," *The New York Times*, February 11, 2025, <https://www.nytimes.com/2025/02/11/arts/civilization-7-design-firaxis.html>.

⁸⁴ Paradox Development Studio, *Imperator: Rome*, Paradox Interactive, 2019.

⁸⁵ Paradox Development Studio, *Stellaris*, Paradox Interactive, 2016.

An Alternative Ludic Model: The Deck-Builder as Complex, Evolving System

None of the above critiques are novel - many have, in some form or another, been raised by critics and academics since the release of the very first *Sid Meier's Civilization*. Some of the game's ideological assumptions, like the technology tree and the extractivist understanding of the natural world, have become so naturalized within the strategy genre as to pass almost without comment among designers. My goal in designing *The Jagged Time* was to call attention to these assumptions by presenting a game with a similar thematic appeal to players of historical strategy games but without the traditional trappings of the genre - eschewing things like a map, a tech tree, settler and worker units, and the like. Translating the underlying appeal of historical strategy to a deck-building game, I found, revealed several new and interesting design affordances, while also posing novel challenges that recontextualized many of the design decisions made by the designers of traditional historical strategy games. I will begin with the positives and outline some of the affordances of this approach.

Compression of information / skeuomorphism

Perhaps the most versatile affordance granted by making a 4X game into a deck-builder is the strength of the metaphor of cards themselves. Decks of cards are an incredibly information-dense tool that allow a large amount of important ludic context to be conveyed with very little explanation. In presenting the player with a deck of cards, designers can intuitively convey that players can only take a certain number of actions per turn, that the exact combination of available actions is random but that they will see each of their actions at some point over the course of play, that certain actions will be more common than others due to their variable frequency in the deck, and that their choices offer new affordances or modify existing ones by either adding new cards to the deck or replacing one card with another. This is true of all deck-building games and may explain their popularity both with designers and players, but it is also precisely this familiarity that makes recontextualizing these mechanics in the context of Cline and Tainter's academic arguments compelling.

Translucency

Deck-building, particularly the two-deck structure of both player actions and narrative consequences that I developed for *The Jagged Time*, affords what I call *narrative translucency*. I wanted the events in *The Jagged Time* to neither be completely random nor to be overdetermined but rather that they should be something that the player can anticipate in the broad strokes but without complete certainty about exactly when the consequences will come

about. This is important both for purposes of encouraging the kinds of decisions that propel the game's narrative forward while also maintaining player trust that the system is generally 'playing fair.' I wanted the player to have just enough information to be able to act, but not enough to be able to plan themselves out of narrative drama. Simulationally complex titles like *Alien: Isolation* achieve this narrative pacing through the use of a sophisticated drama management system, adjusting the behavior of the xenomorph hunting the player based on a wide range of factors.⁸⁶ Games like *The Life and Suffering of Sir Brante* or *Sunless Sea* take the opposite approach, leaning on foreshadowing and dramatic irony to encourage the player to take narratively interesting but self-destructive decisions.^{87 88} Neither of these approaches would be appropriate for *The Jagged Time* - a drama manager would be overly complex and risk overdetermining the player's experience whereas RPG-esque foreshadowing runs contrary to the kind of informed strategic decisions I wanted the player to be able to make. Deck translucency, whereby a player may know the contents of the **Objective Discard** and the contents - but, crucially, not the order - of the **Objective Deck** allows the game to feel fair in dishing out its consequences while still being capable of blindsiding a careless or unlucky player. This approach incentivizes short-term thinking as players are often forced by circumstance to kick the can down the road by letting certain **Objectives** lapse or taking selfish, expedient narrative choices. These choices in turn add narrative payoff in the long term, as the consequences of their actions are gradually shuffled into the **Objective Deck** and then into the ever-expanding **Agenda**.

Escalation and acceleration

It was essential to me that *The Jagged Time* not only maintained narrative momentum as it went along but defied typical 4X structure by accelerating as it approached its climax. Representing the world through cards was invaluable for this, as it allowed the game to change its pacing simply by drawing greater and greater numbers of cards from the **Objective Deck** at once. This change is both informationally efficient - a player can immediately grasp the implications of having to deal with more problems at once - and also allows the game's **Escalation** system to function. **Escalation** obfuscates what could be a simple linear increase in difficulty by adding an element of blackjack-like push-your-luck risk to gameplay. It is generally advisable that a player try to limit the number of new cards being drawn at any one time, and therefore the risk of **Escalation**, by intentionally staggering their response to **Objectives** and

⁸⁶ Creative Assembly, *Alien Isolation*, Sega, 2014.

⁸⁷ Sever, *The Life and Suffering of Sir Brante*, 101XP, 2021.

⁸⁸ Failbetter Games, *Sunless Sea*, Failbetter Games, 2015.

not simply wiping the entire board clean whenever possible. This is, itself, a risky play pattern, as the uncertainty around which **Action Cards** a player might draw might leave them flat-footed and unable to actually gather the **Resources** they need to deal with the **Objectives** at a later date. Navigating these contradictory strategic objectives is one of *The Jagged Time*'s key themes and it is primarily enabled through the ludic metaphor of drawing, dealing, and matching cards.

Foresight, scouting, and the flow of information

Operating slightly in tension to the principle of translucency, the metaphor of a deck of cards also allows the player to potentially make very specific predictions about the future by looking at the order of the **Objective Deck**. The player may only do this under specific circumstances, indicated by the **Scout** keyword, and this ability is narratively associated with actions that involve proactively going into the world and gathering information. Scouting and information gathering is not the domain of a designated scout unit as in the case of *Sid Meier's Civilization* but rather can be freely associated with a range of narrative justifications, ranging from expeditions to the empire's borderlands, to detachments of domestic religious fanatics, to naval patrols. The affordances of cards mean that *The Jagged Time* can realize the "Explore" pillar of 4X titles in a novel way.

State capacity (and lack thereof)

Because, as a rule, the player's only source of **Resources** is by playing **Action Cards**, their ability to respond to crises is directly correlated with their ability to draw the right cards to give them the right resources at the right time. The downstream effect of this is that card abilities which improve the player's card draw are extremely valuable, as they increase the likelihood that the player is able to draw into the 'correct' hand for a given situation. This is narratively associated with state capacity and domestic information-gathering activities like censuses and courier networks. The implication of this, from a ludo-historical perspective, is that states which invest in developing a robust state bureaucratic infrastructure are generally more resilient and more able to respond to crises than ones which do not. This does not come without opportunity costs, however, either in the escalating costs required to conduct a thorough census as the empire expands, or through opportunity cost, as state-improvement **Milestones** pit increased card draw against the few opportunities a player has to duplicate their most powerful military cards. A player who never increases their state capacity is, by degrees, locking themselves into a playstyle defined by constant aggression, overcoming their domestic deficiencies through

looting their neighbors. The use of variable card draw, and the way in which I have implemented it, thereby implies three possible state equilibria: one in which the player prioritizes domestic development over military might, one in which they do the reverse, and one in which they attempt to strike a balance. My goal with *The Jagged Time* is not to guide the player toward one path or the other but rather use the informational efficiency of card-based gameplay to call these equilibria to the player's attention. There are furthermore other mechanics, like card tutoring⁸⁹ which *The Jagged Time* could employ but does not at time of writing.

Qualitative transformation

As mentioned above in my critique of historical strategy, I found the lack of qualitative change in gameplay over vast periods of time to be unsatisfying, especially given the scope of history that historical strategy games often encompass. Deck-building offers unique affordances in that regard, as common mechanics like card transformation and upgrading can be used to significantly alter the basic rhythm of a player turn by changing player affordances, both to their benefit and their detriment. Rather than a model city that the player steadily builds up over time, a player's society in *The Jagged Time* resembles the Ship of Theseus, with every card bar one of the original deck of 10 starter cards being replaceable at some point over the course of the story. Leveraging these qualitative differences allows a designer to draw connections between seemingly unrelated institutions in nuanced ways. In *The Jagged Time*, for example, an early-game decision to centralize religious authority in the person of the Pharaoh yields a card that improves the player's income of **Influence**, which in turn not only enables more aggressive use of cards that can spend **Influence** like *Political Maneuvers* (in narrative terms, the Pharaoh having much more political cachet than normal making his political dealings much more impactful) but also indirectly inclines the player to side with the Sun King in Act Two, as cards associated with his reforms both generate and use **Influence** in various ways. A designer that wishes to make this idea even more explicit, perhaps to demonstrate time periods of rapid social upheaval, could make even more extensive use of these affordances than I have here.

Reactivity and motion

The most significant philosophical change that came about by transposing 4X logic into a deck-building game is that the player is constantly put in a position of not just exploiting and controlling the world, but actively managing it. This comes across in two principal ways: through the constant management of the **Action Deck** and through the player's responses to the current

⁸⁹ Retrieving a specific card or kind of card from a deck

Agenda. State functions like tax collection and record keeping are made into active processes that the player must choose to perform rather than passive income. The sequence of play acts as a political treadmill, keeping the player actively invested in the operation of the state. At the same time, their control over the world is purely reactive - the player is responding to world events as represented by the **Agenda** rather than making long-term planning decisions five or ten turns out. This is a deliberate choice, and perhaps a controversial one, as it does run contrary to the future-oriented, "one more turn" philosophy of games like *Civilization*. What it does, however, is convey that keeping the state running is an active process - taxes aren't sliders that can be set and forgotten, they're a constant policy question. The player can for instance subsidize their domestic peasantry by instead taxing their vassals for the food they need to keep the state running, but at the cost of slowing down their whole engine and play style. The goal of this approach is that I wanted to make a game that shifts the traditional agentic framework of strategy games, placing the player in a purely *reactive* position, forcing the player to consider themselves part of a broader social ecosystem rather than being in strict competition with the other powers or lords over the natural world itself.⁹⁰ This is also truer to life than the vicious, dog-eat-dog competition that characterizes 4X games in their latter stages, when the Protagonists are driven into conflict by a shared desire to win the game. The New Kingdom of Egypt and the Hittites waged brutal wars, yes, but they also traded, negotiated, and allied with one another for reasons deeper than pure realpolitik.⁹¹

Economic affordances, not technological ones

Finally, it was important that the game not feature a typical tech tree, as a counterexample to the technological fetishism endemic to strategy games. *The Jagged Time* does not, in the strictest sense, feature technological development at all. Rather, player progression is tied to economic and social development. The player's deck does improve, but that improvement comes with complications and drawbacks that change the player's relationship to the game. Rather than simply researching a technology that grants a flat bonus, the player transforms and eventually specializes cards, making them more valuable but also exposing the player to more and more systemic risk. Even as a society becomes, in terms of total **Resources** produced, objectively more advanced, it also becomes unstable and unwieldy,

⁹⁰ See "Modeling Indigenous Peoples: Unpacking Ideology in *Sid Meier's Civilization*" by Rebecca Mir and Trevor Owens for an excellent analysis of the colonial ideology inherent in this framework.

⁹¹ Cline, *1177 B.C.: The Year Civilization Collapsed*, 46.

forcing the player into more complex lines of play as they progress through the story, which more faithfully conveys the increasing complexity and interconnectedness of the Bronze Age.

Challenges of a Deck-building Approach

Like any design framework, adapting traditional strategy logic to a deck-building game came with several challenges. Some of these challenges can be mitigated or overcome, while others are unavoidable.

Lack of a Spatial Dimension

The looseness with which a card game can treat the spatial elements of its setting is both a benefit and a drawback and the most radical departure from conventional strategy logics that *The Jagged Time* makes. The map is traditionally what the player Explores, where they encounter the resources which they Exploit, the valuable land to Expand into, and the enemies to Exterminate. Without a map, there is no Terra Nullius for the player to settle, with land instead being thought of in narrative terms, which is to say in terms relating to those who inhabit the land. This, in turn, introduces other challenges, mentioned below.

I did at one point consider breaking from this principle and at minimum producing a map of the Great Green as a whole, so that the player could orient themselves. I decided against this for two reasons - first, because the geographic ambiguity made writing substantially easier, as I didn't need to precisely place the many cultures the player would encounter but could rather simplify to a general sense of proximity or distance. Second, I wanted to keep the player grounded in the present moment, concerned primarily with the Agenda. The potential for conflict both in attention and in the narrative cohesiveness between the map and of a map / physical space (i.e. "Those people are *right there*, why can't I just send an envoy?") proved too much for me to make the inclusion.

This does however produce quite a lot of strain on other parts of the design in terms of game worlding. The various people, places, and things that come up over the course of *The Jagged Time* could only be depicted with words through the titles of cards, their flavour texts, and the titles of dilemma choices. This requires an extraordinary density of information in all three of these categories and is not a writing exercise for the faint of heart. This compression is particularly apparent in my descriptions of the various peoples of the Great Green from Act Two onwards, where short descriptions of their diplomatic envoys, trade relationships, military tactics have to all be rolled into no more than three cards. A system called **Flashpoints** was initially

part of my overall design in order to address this by giving more room to characterize the various powers, but it was eventually cut for time. In brief, **Flashpoints** were unique crises that emerged between the competing powers of the world and which offered the player the opportunity to align themselves with one faction or another. For example, one **Flashpoint** involved a city formerly under the dominion of the Storm-Followers rebelling and attempting to join the Four Sisters trade league. The player could support their independence or back the Storm King as he attempts to restore his control, gaining diplomatic favour with the faction they supported. This proved ultimately too mechanically complex to square with the game's other systems in the allotted time, but might bear returning to later.

Name	Historical Analogue	Buys	Sells	Upgrades
Storm-Followers	Hittite Empire	Grain and chickpea (Food)	Copper ingots	Troop
Mural-Painters	Minoans	Luxuries (Prestige)	Lengths of stout timber	Fleet
Four Sisters	Canaanites	Military protection (Might)	Warehouse space / storage	Increase Trade Good Maximum by 1.
Empire of Terraces	Kassite Babylon	Papyrus and ink (Prestige)	Religious innovations	Ma'at
Lord of Bulls	Mycenaeans	Beer and dates (Food)	Courtly fashions	Prestige
River-Crossers	Middle Assyria	Chariot horses (Might)	Legal innovations	Statecraft

Table 1. The principal powers of the Eastern Mediterranean, their analogues in The Jagged Time, and the narrative and mechanical effects of trade with each.

Instability of Basic Actions

The second challenge posed by this approach is downstream of the first: the lack of a stable UI to anchor the player. In a game like *Europa Universalis IV*, which has an in-game map, the player has the ability to click on any of the nations they are aware of and instantly be presented with a range of diplomatic and political actions ranging from dynastic marriage to espionage.⁹² Lacking a map to which to anchor these basic actions, *The Jagged Time* needs to make each of those possible player actions cards into a distinct card, with the attendant challenge that these cards do not appear consistently and, moreover, decrease the likelihood that other cards will appear at any given moment. This means that each new mechanic that gets added to the game increases the volatility of the system as a whole. Because of this, there is a rather high bar of utility that must be met in order to turn a possible player move into a card. Marking certain **Objectives** to only appear a certain number of times, therefore reducing deck variance in the medium to long term, could be a suitable approach to this, but is too computationally complex to be testable with a paper prototype. Similarly, tying diplomatic actions to **Flashpoints**, as described above could work, but also both significantly increases the number of cards in play at a given moment - thus increasing variance - or would require incorporating other systems like a diplomatic relations tracker which would distract from the core loop. **Troops** face a similar challenge, as their presence on cards and mechanical role principally as **Might**-generation tools mean that their design space is much more limited than they would be in a game with a clear spatial element. There is no such thing in *The Jagged Time* as even the most basic of rock-paper-scissors troop composition problems and indeed there cannot be, given how the systems have been designed. This is a conscious decision, but is also one that dramatically reduces the design space for a key card type.

Some of these problems have solutions that were not feasible in my timeframe, some could translate to a digital game but not to a physical prototype, and some I will simply have to bite the bullet on. Whether these trade-offs are worth the affordances granted by a deck-building approach, I will leave to other designers, but I am satisfied with the extent to which the design of *The Jagged Time* illuminates those trade-offs.

⁹² Paradox Development Studio, *Europa Universalis IV*, Paradox Interactive, 2013.

3. Can a Game About Systemic Collapse be Engaging?

Because of the scale of this project and the limitations of a physical prototype, large-scale user testing was unfortunately beyond the scope of this research. In order to nevertheless attempt to analyze how *The Jagged Time* uses its systems to construct playful situations, I will take a case study from one of my own playthroughs of the game and analyze it through the lens of Brian Upton's six criteria of playfulness - Choice, Variety, Consequence, Satisfaction, Predictability, and Uncertainty. Since my focus is on a model of the Late Bronze Age Collapse in particular, my case study will begin at the beginning of *The Jagged Time's* Act Three, which concerns the Collapse. Since this is the most difficult portion of the game and the one most unlike the continual upward trajectory of conventional historical 4X titles, Act Three serves as an ideal 'stress test' for the game's systems as a whole. While imperfect as a measure, applying Upton's criteria should give a sense of how the game feels to play and validate the idea that the situations that *The Jagged Time's* systems can produce complex and playful experiences. In order to set the scene for the below case study, I will move on to a brief summary of the game thus far as interpreted as a narrative rather than a mechanical breakdown of the many player decisions in the preceding hours of play.

Narrative Background

As a new century dawns on the nations of the Great Green, the People of the Reeds are strong and prosperous. Their rulers had been proactive and diplomatic, building strong domestic political institutions and fostering alliances with their neighbors. Under the guidance of the Lady of Gold, they undertook spectacular trade expeditions to far-off lands and erected great monuments with the wealth they acquired. When, generations later, the Sun King ascended the throne, he overthrew the entrenched authority of the priesthood and consolidated power in the hands of the king and his successors. The Priests of Father Moon, once proud and independent, are now utterly subjected to the crown.

The kingdom is not invincible, however, and some cracks are beginning to show. The highly-specialized economy that emerged under the Lady of Gold has only become more complex with time, ever more dependent on shipments of bronze, oil, and timber to remain functional. The crown has largely paid for these imports with grain from the state treasury, harshly taxing an increasingly-agitated peasantry. It is not uncommon for this agitation to boil into outright revolt, which is then mercilessly put down. The state's capacity for marshaling the forces to quell these revolts has begun to decline in recent years, however. Ever since the Sun King's many purges thinned the ranks of the high nobility, his successors have been ever more

reliant on troops recruited from the very peasantry they are meant to suppress. Time will tell where these subject-soldiers' loyalties will ultimately lie.

Act Three Analysis

I begin Act Three of my playthrough of *The Jagged Time* in a comfortable but not exceptional position. I have mostly managed to avoid extremes in any particular direction, prioritizing decisions that improve my card draw per turn and taking a broadly peaceful approach with my great-power neighbors. The downside to this is that I do not have particularly high maxima of any of my resources, meaning that I need to consistently spend my resources quickly to ensure I get the greatest possible value out of my cards. This will be easier said than done.

At the start of the Act, I am prompted to 'activate' two of the possible **Cataclysms**. I roll a die and get "Plague Ships" and "Uncrossing a River" - threatening the merchant alliance of the Four Sisters and the Kingdom of the River-Crossers, respectively. If either of these cards **Escalates**, their respective culture will be permanently removed from the game. For now, I just shuffle one copy of each card into the **Objective Deck**. The **Objective Deck** is, to my chagrin, quite thick with bad news. I have aggressively taxed my people and rarely, if ever, granted them any form of relief, so the deck is full to bursting with *Peasant Unrest* just waiting to escalate into open revolt.

M25a Dominoes Fall <u>Inevitable</u> News of calamity spreads fast as a fever. A would-be thief is hanged from gates of the granary. Anarchy festers in the slums. Restore order at spearpoint [Spend 2 🍌 and 🍷: Advance 1] ⊕ If this clock is full, gain 2 "Seditious Conspiracy." Roll for a third Calamity, activate it, and gain one copy of it. Make extravagant sacrifices [Spend 2 🍌 and 🍷: Advance 1] ⊕ If this clock is full, gain 2 "Devastation." Roll for a third Calamity, activate it, and gain one copy of it. 🕒 ⊕ Gain 2 "A Human Wave." Reshuffle the Objective Discard.	O86a Plague Ships <u>Cataclysm, Sisters</u> Some say it started with the captain. Others, his crew. Others still, the rats. Soon, there will be none left to say anything at all. Organize a blockade [Spend 🍌, 🍌, and 🍷: Advance 1] ⊕ If full, gain 3(🍌/🍌) Distribute aid where we can [Spend 2 🍌: Advance 1] ⊕ If full, gain 2 🍌, then ↔. Gain "Plague." Escalation: Permanently destroy all Sisters cards. Gain 2 "A Human Wave." Activate another Calamity. 🕒 ⊕ Gain "Plague Ships" ↔	O90a Uncrossing a River <u>Cataclysm, Rivers</u> A coalition of the River-Crossers' subjects, steppe nomads, and outlaws has surrounded the Great City. The young state stands on the brink of disaster. Send men to break the siege [Spend 3 🍌: Advance 1] ⊕ If full, gain 2(🍌/🍌). Attempt to broker a truce [Spend 2 🍌: Advance 1] ⊕ If full, gain 3(🍌/🍌), then ↔. Escalation: Permanently destroy all Rivers cards. Gain 2 "A Human Wave." Activate another Calamity. 🕒 ⊕ Gain "Uncrossing a River" ↔
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Fig. 6. These Cataclysms, if not addressed quickly, will tear the Great Green apart. Dominoes Fall's Inevitable subtype means that its timer cannot be delayed by any means.

This position, wherein a player's actions steadily accumulate over time and come to define later stages of the game, is an illustrative example of Brian Upton's criterion of Consequence. The consequences of player decisions, in order to be meaningful, need to be clearly communicated.⁹³ The presence or absence of that communication distinguishes meaningful and interpretive play from empty speculation.⁹⁴ The fact that repeated use of *Tax Collection* incurs *Peasant Unrest* in response has been communicated from the very beginning of the game. Whenever I have added new cards either to the **Action Deck** or the **Objective Deck**, I have had full knowledge of precisely why I have done so, either through action or inaction. I did not set out to play as a tyrannical ruler taxing his subjects into penury, but the game is communicating to me that that is precisely what I have become, and I cannot say that I was not warned.

I lay out the seven cards in the **Agenda** and, to my surprise, draw only a single *Peasant Unrest*. The revolution has clearly been postponed. That is where my good fortune ends, however. Aside from a pair of anodyne **Objectives** I opt to ignore for now, I draw two *Diplomatic Incidents*, which **Escalate** into a *Foreign Claimant* - a potentially severe drain on my Influence unless I can resolve it quickly. What's worse, a pair of *Crop Failures* escalate into a *Famine*. I also draw a *Wheel-Turner Pretenders* - the foreign nobles I overthrew but spared in Act One repaying my act of mercy by attempting to undermine me and regain by subterfuge what they could not hold onto by force. Finally, the first of the **Calamities**, *Plague Ships* appears, a grim portent for what's to come.

As things stand, I do not remotely have the resources to deal with all of these issues at once. I take a moment to prioritize. Allowing the *Famine* to spiral out of control would be devastating, but tackling it now means keeping a large reserve of **Food** and playing fewer cards to gain other **Resources**. Both the *Wheel-Turner Pretenders* and *Foreign Claimant* are theoretically manageable, but I could more easily recover from the expense from the latter than the former. *Plague Ships* has the potential to be catastrophic in the medium term, but is the least problematic for me right now. I decide to prioritize the short term over the long, resolving the *Famine* and *Foreign Claimant* and stalling for time with the *Wheel-Turner Pretenders* and *Plague Ships*.

The Jagged Time is built around these kinds of decisions, weighing short and long-term consequences with relatively limited ability to plan in advance. Upton, in defining his criterion of Choice, observes that interesting games tend to have three to five major choices for a player to

⁹³ Upton, *Situational Game Design*, 33.

⁹⁴ Upton, 38.

make in a given moment - enough to be interesting and satisfying, but not enough to be overwhelming.⁹⁵ On the surface, a turn of *The Jagged Time* involves many more choices than this - I entirely omitted, for instance, the seven **Action Cards** that I drew and in which order I decided to play them - but in practice, gameplay collapses into overall lines of play which the player then chooses between. In that way, small decisions are collapsed into broader strategic choices, keeping the decision space manageable even as the number of both **Action Cards** and cards in the **Agenda** steadily increases.

What makes this decision space interesting, per Upton, is that the choices presented to the player vary in their utility to the player.⁹⁶ The player can win a game of *The Jagged Time*, and lines of play are not interchangeable. In the above example, I have made progress in the game – I have removed one set of crises from consideration and gotten that much closer to winning the game, even if I have also introduced challenges I must now overcome later on. This variety, between short- and long-term objectives, strategies with varying risk and reward structures, or which are in some way mutually exclusive, contribute to Upton's criterion of Satisfaction.⁹⁷ Satisfaction, for Upton, necessitates that the player not only make choices but that those choices be meaningful and that the player be able to tell when they have made a good move or a bad one. I receive meaningful feedback for my choices – the *Plague Ships* will return, and in greater numbers, but I reap rewards for having dealt with the *Famine* in a timely manner. It matters not just that in this example I had to choose between several crises to address, but rather that I had to decide what I wanted to prioritize in a broader strategic sense. Because **Objectives** and **Milestones** are all on their own timers, the urgency of dealing with them will vary from turn to turn, playthrough to playthrough.

It is also relatively rare for the player to constantly have to make the same kinds of strategic decisions over and over again. Brian Upton identifies this strategic depth as the key element of his criterion of Variety.⁹⁸ Highly variable games, he writes, make each element distinct, allow their elements to be reused in novel contexts, and gradually introduce game elements over time.⁹⁹ *The Jagged Time* fulfills all three requirements. There are, in total, one hundred and sixty-nine unique cards in *The Jagged Time*, split across **Milestones**, **Objectives**, and **Action Cards**. The majority of **Objectives** and all but a handful of the **Milestones** are dilemmas, offering the player two different approaches to the problems they present, generally a

⁹⁵ Upton, 29.

⁹⁶ Upton, 42.

⁹⁷ Ibid.

⁹⁸ Ibid., 30.

⁹⁹ Ibid., 31.

'right way' and an 'easy way.' Most cards only enter play at particular points in the story. The player does not have access to the *Naval Patrol Action Card*, for instance, until they have regained access to the sea at the end of Act One. Even for cards present in the very beginning of the game like *Conduct Census* or *Peasant Unrest*, the fact that the player does not encounter these **Objectives** individually, but rather assembles them into an **Agenda** three, five, or seven at a time means that even when the player sees a card repeat, the context in which it appears is unique.

Returning to the game, my luck has held, for now. I am able to, over the course of a couple of turns, deal with the seditious nobles and reap the benefits of having consolidated my hold on the throne. I am not, however, able to respond in a timely manner to the rumors of plague, which now threatens to wipe the Four Sisters off the map altogether with one unlucky draw. I should pick up the pace to attempt to end the game before that happens. The current **Milestone**, *Dominoes Fall*, describes a society gripped by panic - do I attempt to restore order by force or appeal to the gods for their intercession? Both of these are long-term processes, represented by clocks I can expend resources to advance. Clocks like these have been used repeatedly over the course of the game, representing everything from the construction of monuments to the overthrow of kings. The **Milestone's** text informs me that, should I attempt to hold onto power by force, I can expect political resistance, whereas failing to secure the granaries and offering up desperate sacrifices to the gods will see me suffer economically. I opt for the former - I would rather deal with murmurs at court than another famine. In either event, the crisis escalates. I am prompted to randomly produce another **Calamity**. This time, I roll *The Old Enemy* - the Storm-Followers, my longtime trading partners, have been invaded by a rival power. If I fail to come to their aid, the **Trade Goods** that are keeping my own economy afloat may be cut off forever.

According to Brian Upton, it is important that the consequences of player action be predictable. Predictability is what makes games playful and is what allows players to turn a series of choices into a strategy.¹⁰⁰ At the same time, a game that is perfectly predictable becomes boring. Player predictions must be imperfect, obscured by random chance, human error, or hidden information.¹⁰¹ Upton describes these seemingly contradictory tendencies of games as the criteria of Predictability and Uncertainty.¹⁰² *The Jagged Time* exhibits signs of these criteria in two ways.

¹⁰⁰ Brian Upton, *Situational Game Design*, 36.

¹⁰¹ Ibid., 39-40.

¹⁰² Ibid., 36-41.

First, while there is randomness in which cards the player has access to and in which order, cards themselves always behave in the same way regardless of context. A *Tax Collection* the player plays as the very first action of the game will act in exactly the same way as one played on their final turn. This holds true of mechanics, as well – **Escalation** always works the same way, as do the advanceable Clocks I use to represent everything from building monuments to the last, desperate defense of a city besieged, allowing me to reuse each in multiple narrative contexts, as illustrated above. Second, the player can at the same time never be completely certain what **Action Cards** or **Objectives** they are going to draw on a given turn. This makes any kind of planning beyond a turn or two in advance risky, as the player cannot look at the order of the cards in any of their decks unless explicitly instructed to do so. This ensures that, though the overall arc of the game's story branches only slightly, no two games of *The Jagged Time* are ever exactly the same.

I did not ultimately go on to win the game of *The Jagged Time* described here. My decision to invite political dissension was my undoing, as an unlucky draw of Objectives meant that the conspirators could stage a successful palace coup, destabilizing me at a critical juncture and eventually costing me the game. This, to me, is a perfectly satisfactory ending, though I do not expect every player to agree. It is a fate that was shared, if not by the New Kingdom of Egypt, then certainly by other cultures during the Late Bronze Age Collapse and many more historical peoples besides. The above case study demonstrates not only the narrative structure of *The Jagged Time* but also scopes out some of its decision space; its ability to represent both great triumphs and crushing defeats. In that sense, *The Jagged Time* represents not a reconstruction of history in a linear sense but rather a procedural model *for* history, an example of using history itself as a playable system.

Conclusion

The goal of this project is to use the development of a game, *The Jagged Time*, to highlight the ways in which the design of historical games can embrace historical argument as the basis of game design. In particular, this project sought to begin to close the gap between historians, game studies academics, and developer-historians by deliberately constructing a game that reproduced historical argument through its procedural rhetoric. In addition to serving as a boundary object between these disciplines, this approach can improve existing design practices for game designers, allowing top-down and bottom-up design approaches to be fruitful without resorting to pop-cultural cliché.

At the same time, this project is intended to act as a critique of the limited ways historical strategy games have thus far attempted to adapt history to gameplay. Many design assumptions, like tech trees, expansionism, and zero-sum thinking, reflect a particular ideological attitude – a sense that, if not historically accurate, these systems are a part of how this kind of game ‘ought to be made’ – rather than embracing the kinds of experiences historical strategy games can produce. While the effectiveness of this approach remains to be seen, by documenting the ways that this has been done in making *The Jagged Time*, I hope to have shed light on the decision-making processes of developer-historians in developing games in this mode and hopefully encourage future designers to do the same. At the same time, this project illustrates the possibility space of using historical dynamics as playable systems unto themselves, capable of producing meaningful and engaging play.

For my own part, I have several important takeaways for my continuing practice as a game designer. The first of these is that preproduction and a dedicated effort to finding the best and most scalable tools for a game is essential, even at the cost of delaying the first iterations on the game’s core loop. I knew from the very beginning of the project that I was going to be making cards, and quite a lot of them, at that. This is not a novel situation for any game designer, and reflection on that fact might have led me to tools that would allow me to generate and modify large amounts of cards quickly and at scale, dramatically reducing turnaround time. My second major lesson is related to the first, namely that it is important to find intermediate prototypes. Physical prototyping suffers from steeply diminishing returns and ceased to be the appropriate method for this project at around the third month, when the game’s core systems – Escalation, the three-act structure, and specialization – had all been well-established. At that point, I should have considered transitioning the entire project to a platform like *Tabletop Simulator*, which would have allowed me to test more rigorously and introduce far more new

cards and mechanics than was physically practical. As this environment would also more closely approximate the eventual digital environment of the final game, I would also gain valuable insight into the unique affordances of a digital card game as opposed to a physical one – affordances which, at present, are still somewhat obscure to me. Finally, on a more personal note, these considerations also come with a recognition that I should not design as though my own time and energy are inexhaustible resources, particularly with projects of this scale. Failure to adopt time-saving tools not only affects the ultimate quality of the final product, but also incurs costs of time, energy, and motivation that are not sustainable in the long run. If I want to keep making *The Jagged Time*, and other games like it besides, I will need to learn to pace myself better and conserve my strength for when it is most needed. Designers, like societies, are problem-solving systems. If they do not invest in keeping the costs of their solutions as low as they can, they, too, are susceptible to collapse.

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