Title Written Experimentations in Laboratories and Role-Playing Games

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Essential Question

Beyond storing ideas and memories, how do written records actively participate in creative experimentation?

Understanding

Techniques and technologies not only facilitate communication, they directly contribute to what is communicated. Written records in particular, by establishing what is known and by giving shape to those known possibilities, open fields of creative activity and connect individuals into groups. Both scientific research and tabletop game design rely on—indeed, exist through—their technical supports. These objects and techniques enable participants to explore and especially to pass beyond the boundaries of what is possible.

Teacher's Note

Overview

In this lesson, students will read about and discuss how writing, as well as some other technologies, function as agents in their own right in both individual and collective creative activities. Thus one important aim is to complicate the typical view that recording technologies are inert storage devices. Students should come away from the lesson with a more critical attitude towards the technologies and media that make up their personal and social lives.

First, the lesson introduces some intermediate level concepts and investigative approaches to science and technology studies. It then leverages this perspective in an analysis of a cultural history of table top, paper and pencil game design. Finally, students may be encouraged to deploy this interdisciplinary approach in order to explore other examples of creative techniques. Students will arrive at an expansive understanding of how technical recording can foster experimentation.

There is a twofold motivation to pairing a philosophically informed critique of laboratory research with a historical account of popular culture. On one hand, this juxtaposition intends to situate sophisticated concepts and terminology in a more accessible context for undergraduates and advanced high school students. On the other hand, it models a critical perspective that can be taken on seemingly unintellectual mass cultural entertainment.

As a lesson designed primarily for undergraduates, students should come to class having read at least the first assigned reading. Class is conceived as beginning with the instructor giving a brief overview of the topics and readings, which then proceeds into a discussion of the texts. It is recommended that the texts be taken in order, with the short introductory lecture divided accordingly. Suggested comments are provided below in the "Context" and "Analysis" sections.

The first text, "The Economy of the Scribble," is the last chapter in Hans-Jörg Rheinberger's *An Epistemology of the Concrete: Twentieth-Century Histories of Life* (2010). It stages the bulk of the lesson's conceptual work, and so depending on the students' familiarity or the placement of the lesson in the course, the instructor may need to provide varying levels of

commentary before and after assigning it. At a length of only eight pages, "The Economy of the Scribble" presents its ideas in a very manageable form. By the end of the class discussion, students should have a strong grasp of Rheinberger's arguments and ways they can be brought to bear in other contexts.

With regard to the second text, the instructor has some flexibility. It is a small selection of excerpts from Jon Peterson's *Playing at the World: A History of Simulating Wars, People and Fantastic Adventures from Chess to Role-Playing Games* (2012). Depending on how the lesson fits into the course, these texts may be read beforehand in part or in full, or it may be presented as a series of passages in class (either on screen or as a handout). Additionally, should the instructor want to emphasize the Rheinberger portion, then the skill of skimming a text for its more pertinent sections may be practiced when reading the Peterson. It may also be replaced with or accompanied by another text or aesthetic object closer to the course's themes. A pop cultural example is, however, recommended to pair with "The Economy of the Scribble."

Media Theory

Although this lesson combines several disciplines—science studies, cultural studies, history, and a cursory glimpse at epistemology—it is intended to fit into a unit or course on media or media theory.

In many respects, the example of *Dungeons & Dragons* (*D&D*) makes for a classic case study of media as human prostheses and external records of memory. Its tools—dice, paper, pencil, miniatures, charts of numbers, speech—illustrate Marshall McLuhan's position that media are "extensions of man." According to this classic interpretation, something which had been intrinsically part of the body becomes "amputated" and increases in capacity as a result. Or to go back two millennia, visual aides, such as maps and illustrations, and written records, such as the player's character sheet and the dungeon master's story notes, all function in the way that Plato described writing in the *Phaedrus*: as a crutch of memory. When the retentional capacities of the mind are offloaded to external supports, those mental capacities for memorization may atrophy—but others are conceived and strengthened in their place.

D&D may also be examined for its creative potential as a platform in which groups of people participate. Rheinberger's short chapter provides a point of departure for exploring this perspective. It shows how the simple activity of note taking plays a much more productive role in scientific experimentation than merely recording what has taken place. Likewise in *D&D* and other table-top role-playing games, writing and the several aforementioned instruments all foster a collective, imaginary experience. Gameplay proceeds through layers of inventive interpretation of the media in use. Thus, for example, a Dungeon Master's map and some jotted down statistics and random quantifiers are no mere recordings for the game runner's memory; rather, these scribbles operate as the material sources for creating a story with a group of players.

Technics

One possible focus of this lesson is to investigate what it means for something to be technical. The term preferred by philosophers and media theorists for such things and processes is "technics," from the Greek *techne*. It refers to technological artifacts as well as techniques ranging from embodied disciplines to language and symbolic notation. This lesson offers a platform for students to discuss the variety of technics as well as how they impact human life and thought, social organization, and the kinds of work possible for the humanities.

Technics' place in the humanities has dramatically expanded in the last two decades.

Media theory or media studies, for one, has divided into numerous specializations: communication studies, infrastructure, software and code studies, "wirelessness," algorithmic culture, writing, automation, and so on. A discussion of technics, or of technical media in general, can be distinguished by its broad intent to clarify the nature of the technical. This has often been done in relation to the human as both a biological and a social individual. Early philosophical investigations, such as those by Gilbert Simondon, Friedrich Kittler, and Bernard Stiegler, considered technics to be constitutive of the human being and vice versa. Literary criticism and science studies were two fields in which this theoretical approach produced groundbreaking work; see, for instance, Donna Haraway, N. Katherine Hayles, and Bruno Latour. Recent work, in contrast, grants technical media and systems more autonomy from humans and society, though the former continue to be fundamental to the latter.

Contexts of the Reading

Hans-Jörg Rheinberger's "The Economy of the Scribble" proposes an alternative approach to the function of writing in science. Where many accounts analyze the written style of scientific publications and have also documented the correlation of citations to acceptance of a knowledge claim, Rheinberger focuses here on the "generative function" of writing in the research laboratory (244). Note how this position situates writing at the ground of knowledge production, part and parcel of experimentation, rather than at its interstices in the function of communication.

Jon Peterson's *Playing at the World* is an exhaustive history and cultural study of the inaugural publication of *Dungeons & Dragons* and of its many prefigurations. He traces a variety of lineages that inspired its rules and technical systems, its settings, and its innovative approach to role-playing. It invites the attention from a variety of historical and literary approaches; so the instructor should keep this in mind should they want to seek further reading for another lesson.

The first excerpts are taken from the end of the first chapter, "Prelude to Adventure," which "serves as a general introduction, explaining for the uninitiated what wargaming is," and chronicling events leading up to *D&D*'s 1974 publication (xvii). Peterson, in these selections, presents a snapshot of the wargaming hobby in the 1960s. Mentioned are some of its commercial products, community magazines and conventions, and the experiments that resulted in Gary Gygax and Dave Arneson forming the company, Tactical Studies Rules (TSR), that was to publish *Dungeons & Dragons*. The second excerpt comes from the third chapter, "System—The Rules of the Game," the contents of which are glossed in the following lines from Peterson's introductory remarks:

> Broadly, the system of a wargame is the set of mechanisms that simulate the conditions of the battle and allow for the resolution of conflict. *Dungeons & Dragons* inherits the bulk of its system from wargames, most directly the miniature wargame *Chainmail*, but since *Dungeons & Dragons* can model events other than wars, its system is more diverse and comprehensive. (203)

Historically, wargames synthesized statistics and empirical records into models of possible realities.

Wargaming itself goes back two centuries to *kriegsspiel*, a variant of chess that was used to train Prussian military officers. From it derive two general features of the wargames popular in the 1960s: a preference for historical accuracy, especially pertaining to the Napoleonic era and to a lesser extent Medieval settings; and a tension between detailed realism and playability. *D&D* and its role-playing game successors repurposed into unbounded creativity the statistical

simulations that constituted the core of wargames, especially their tabletop setting and combat results tables that correlated outcomes to dice roles.

Lastly, a note on *D&D* itself. These founding hobbyists read widely in fantasy and science fiction as well as in military history, all of which contributed to the gaming platform that emerged. (Contrary to popular belief, J. R. R. Tolkien is not the only, or even the most significant, influence for *D&D*'s fantasy setting, its dungeons, its magic, and its creatures.) Today, *D&D* has become very much its own generic context within the pantheon of fantastic imaginaries. Moreover, many table-top, paper-and-pencil role-playing games as well as computer games incorporate the general structure and rules of *D&D* into entirely different settings: from present day and alternative histories to science fiction and science fantasy. In both its table-top and electronic formats, either a game master or the game engine, respectively, provide details of the game world and resolve player actions, thereby progressing the world into another state. Everything in the game—player and non-player characters, environments, and events—proceeds through a dialogue between those present at the table on the basis of quantified abilities and statistical tables of more or less probable outcomes.

Analysis of the Texts

"The Economy of the Scribble," Hans-Jörg Rheinberger

This particular analysis has been broken up into questions that may be used to prompt students to discuss. Or it can be used (in part or in full) as the basis for an introductory presentation.

Q1: What are experimental systems, and why do you think Rheinberger chose this terminology instead of more typical terms such as "laboratory," "research," or simply "experimentation"? What might Rheinberger want to emphasize by deeming experimental systems "material" and "functional"?

"Experimental systems are material, functional units of knowledge production": this statement expresses a common perspective in science and technology studies (244). Scientific knowledge must be constructed through specialized instruments that clarify the existence of a target phenomena otherwise obscured. Furthermore, Rheinberger echoes French philosopher of science Gaston Bachelard when he continues to write that the "corresponding concepts embodied in those phenomena" are also generated by experimental systems. Bachelard argues that concepts are much more than objects of thought, that even thought is much more than what goes on in the mind of a human being. Concepts and rational thought more broadly exist materially in such techniques as mathematics, formal systems, recording devices for experiments, and even the physical entities created in an experiment. Galileo's tidy metaphor of Nature as a book written in mathematics, waiting to be uncovered and read, has been replaced with a messier model: nature's books are still being written, edited, and rewritten. Experimental systems accordingly cohere across a series of material translations or transformations.

Q2: What sorts of transformations or translations come to mind with Rheinberger's term "redimensionalization"? Why does it make writing so central to scientific research?

"Redimensionalization," one very important translation of an experimental apparatus, is how "the organization of an experiment in time and space is projected onto a two-dimensional

surface" (245). It is the transformation that writing performs in the course of scientific labor, which serves two chief functions: (1) it facilitates that labor's communication; (2) it renders the variety of experimentations into a commonly manipulable format. Rheinberger concerns himself with the second function, arguing that notes do more than record, they induce novel experiences. When notes subsume discrete moments of a laboratory's history, "new patterns can become perceptible" (246). Rheinberger expresses their significant, foundational role when asserting that "laboratory notes and protocols are themselves new resources and materials opening a space that alone gives research its distinctive contours…" Notes and protocols do more than materialize and facilitate the creative impulse driving research. They also extend the period of significance of laboratory work, as if these scribbles and habits are the proper existence of experimental results, lending them more than a momentary lifespan. It is this duration of significance that Rheinberger has in mind when he concludes the previously quoted sentence with: "…and prevents it [research] from being closed off prematurely." Notes operate as a tissue connecting the object of an experimental system to the processes by which a laboratory of scientists construct a communicable result.

Q3: One key feature of scientific research for Rheinberger is the unexpected. How, according to Rheinberger, is the unexpected cultivated and to what end?

For context, the quoted François Jacob was a French biologist who shared the 1965 Nobel Prize in Medicine. What Jacob refers to as "day science," according to which the scientist neatly proposes a hypothesis, tests it, and publishes the findings, is a fiction. "Night science," by contrast, does not know where it is going, nor perhaps what it is testing. By "pre-normative," Rheinberger means this open-ended, only partly formed process. An experimental system, so long as it performs genuine research, remains to some degree ignorant of the very domain in which it operates.

Rheinberger invokes an understanding of "an experiment" that is crucial to this lesson's aims, one which pertains to experimentation in the sciences, philosophy, and literature: "it is an exploratory movement, a game in which one plays with possible positions, an open arrangement" (247). Accordingly, the resource of an experimental system consumed over the course of its operation is its "as yet unbound explanatory potential," which the experiments themselves treat as "a game of combinations" (247). Hence, the research question that botanist Carl Correns eventually answered in 1900 was entirely different from the one that initiated the experimental system in 1894 (247).

Rheinberger's reconstruction of Correns's protocol is itself similar to what Correns had to have done himself. Thus the experimental construction of knowledge followed a path of reconstruction made possible by Correns's protocol notes (248-249). Reading from right to left, as Rheinberger instructs, displays the transition from one research question and its paradigm to another one altogether (249-250). Moreover, Rheinberger suggests that Gregor Mendel's work from 1866 would also have taken an entirely different significance for Correns between 1894 and 1900 (249). Thanks to the written transformation of his experiments, Correns could perform another transformation, this time from linguistic description to statistics pertaining to a single property's transmission over generations of pea plants (249, 251).

Q4: Rheinberger concludes with two modes of collective note taking. What are these two modes and how do they compare with other, non-scientific collectivities rooted in shared writing?

Rheinberger next attends to a collective form of scribbling: the database, or archives of

laboratory records (251). Such a collection of information can provide the basis for new experimental systems. Additionally, Rheinberger includes in his account of collective note taking the routine procedures and rubrics of practice that become codified for "one particular laboratory" (252). Both of these categories apply to *D&D*. The first corresponds to such publications as fanzines and official source books; the second to "house rules," the particular ways of playing and running a game within a particular group. In Peterson's history of wargaming, especially its transformation into role-playing games, the first type of collective write-ups were fundamental to preserving the hobby and to modifying it. One could argue that the institutionalization of *D&D*, as marked by the incorporation of the company Tactical Studies Rules (TSR) and by its official publications and merchandise, evolved out of a more general, collective process of sharing ways to play different genres and styles of games.

Rheinberger finally argues for a shift in focus from famous individuals to "notational techniques" when considering the establishment of a research tradition (252). Likewise, modes of writing should be granted agency in the history of designing *D&D*'s rules and conceptual systems as well as in how a particular game of *D&D* is run.

From *Playing at the World*, Jon Peterson

"1.10 Blackmoor" (pp.64-72)

Note that Peterson's sources are often records written by Dave Arneson that had been published in wargaming fanzines. As opposed to playing the role of a disembodied general commanding an army, Arneson's campaign featured a one to one correspondence of player to character (66-67). "Campaign" for Arneson's Blackmoor campaign signifies two innovations that break with classical wargaming: continuity and progression (67-68). Practically speaking, this meant the implementation of "experience [points]" and "quantifiable abilities" (68). Arneson "thus introduced new ways that improvement could be measured."

In this section, the phrase "pen and paper" is synonymous with "dungeon crawl" (68). Why is this? To what does the notion of "dungeon crawl" pertain? Describe the role of media in making possible "randomly-selected monsters (drawn from decks of cards)" (70). How were the material conditions of play at the Lake Geneva Convention constrained by transportation, and what impact did this have on the type of game played?

"1.11 The Fantasy Game" (pp.72-75).

The first two paragraphs encapsulate much of what Rheinberger discusses as "the economy of the scribble." For instance, we read that "Arneson accumulated rulings from day to day without constructing any coherent overarching system" (72). This agglomeration of practices crystallized in writing parallels what Rheinberger terms "literal techniques," which are those ways of operating that come to individualize a particular laboratory or research tradition.

In contrast to Arneson, but with the twenty plus pages of transcribed notes sent by Arneson, Gygax "built a system inspired by his subjective impression of playing in the Lake Geneva roadshow of Blackmoor" (72). The distinction between their approaches to design is summarized on p.75.

How might Rheinberger's notion of 'literal techniques' help to characterize the different styles of play that Peterson discusses? Expand this to other collective forms of writing, where writing is broadly conceived to include such activities as social media and composing music. How does a accessibility for others impact the design process and result of written projects like a

game or experiment? What are some of the "literal techniques" that you practice in work, school, and/or daily life?

"3.2 System in *Dungeons and Dragons,*" "3.2.1 The Instruments of Play" (pp.303-320)

Wargaming's social and commercial milieu around 1970 was grounded in single-author texts and multi-author periodicals (303).

With *Dungeons &* Dragons, the original rules pamphlets recommended a specific graph paper and scales for drawing the various game zones (304). These preparations on the part of the Dungeon Master facilitated the transposition of the game world from maps to spoken language (306). Verbal communication, "a dialogue between referee and players," pushes the game forward (308-309).

Polyhedral dice work in concert with written remarks and instructions (313). Many-sided dice were not always widely available prior to their sale with the *Dungeons & Dragons* rule books. Therefore creative approaches to randomization and probability had to be invented. Note 186 on page 314 gives one instance (from Arneson's Blackmoor campaign) of game design following the technical possibilities that were readily available. For play-by-mail wargames, the last digit of a stock quote published in the newspaper provided a neutral "source of uncontrollable and unpredictable numbers" (316).

What are the different kinds of media involved in playing a tabletop role-playing game, and how do their materialities impact play? In answering this question, pay close attention to how causality and randomization mediate player agency. In what ways do players, especially the dungeon master, rely on the instruments of play? Can you think of alternative techniques or materials for achieving similar ends? How might a change in media change the game?

Vital Statistics

This lesson would fit in courses tailored to fulfill requirements in writing, science and technology, arts and culture, and communication.

Teacher's Guide

Background

In this lesson, you will read about and discuss how writing, as well as some other instruments, function as agents in their own right in both individual and collective experimentation. Thus one important aim is to complicate the typical view that recording technologies are inert storage devices of human thoughts and actions. You will take away from the lesson a more critical attitude towards the technologies and media that make up your personal and social lives.

Behind the lesson's specialized topics, notice the broad themes of memory and imagination. Hardly a moment passes which is not imbued with the valence of past experiences and colored by one's creative feeling. This lesson reflects on some material objects and processes that preserve and promote specific memories and imaginings. As both Rheinberger's assessment of laboratory note taking and Peterson's history of role-playing game design attest, memory and imagination function in tandem. These two constitutive features of experience play off one another in ways that depend on whether one or both exist in an objective, communicable form.

All this is to help you to recognize meaningful relations between yourself and the world,

how these relations form and change, the shapes they take, the experiences they make possible and compose. This recognition effectively distills the contributions of the humanities into a moment: a Humanities Moment. Whether it concerns free creation in pop culture or the rigors of science, humanistic disciplines give rise to insights into the complex, yet often ordinary, workings of our daily lives.

Vocabulary

epistemic thing, or graphematic traces: The latter refers in particular to Rheinberger's study of symbolic notation and written models in organic chemistry. Epistemic things, or epistemic objects as he calls them earlier in the book, are the created objects of scientific work around which the knowledge in question is organized. They are "epistemic" insofar as they pertain to knowledge ("epistemology" being the study of knowledge); and they are deemed "things" in order to preserve a generality of scope. Examples of epistemic things range from scribbled data or formulae to the transient existence of a subatomic particle like the Higgs-Boson at CERN.

redimensionalization: How, by way of write-ups and notes, "the organization of an experiment in time and space is projected onto a two-dimensional surface" (Rheinberger 245).

the concrete: In philosophy, the concrete is counterposed to the abstract. The concrete refers to the fullness of existence, its relations, and—depending on one's persuasion—its many intertwined processes. In contrast, the abstract is separated out from the concrete to be considered in isolation from much of what actually contributes to its existence. For example, Anglo-American mathematician and philosopher Alfred North Whitehead refers to the concrete as "that which has grown together" (*Science and the Modern World*, The Free Press: 1967, 174). Rheinberger therefore titles his project "An Epistemology of the Concrete" in order to signify that it pertains to the actual processes and their many relations involved in scientific knowledge production, not simply to the isolated results that are ultimately abstracted from an experimental system.

kriegsspiel: German for "wargame," a variant of chess that dates to the early 19th century when it was developed to train Prussian military officers. Games were often coordinated by a referee, who alone knew all that was taking place on both sides of the game and who would take written orders from the officers (players) and decide how well and to what extent their troops followed commands. This simulated both the fog of war (or limited information) as well as the actual role of an officer in a battle.

sand table: A table covered in moist sand used to model terrain in wargames.

postal games: Due to the limited player base of wargames and strategy games like *Diplomacy*, some were played by mail. Turns were taken via written instructions, as in classical *kriegsspiel*, except they were mailed to a referee who coordinated all player actions.

Follow-Up Assignment

For in-class group discussion or short written response:

Consider some technical media you may have interacted with and explore the ways those

media fostered creative experiences. Obversely, consider a creative activity and explore the ways its media shape the experience. How might another medium change that activity? For instance, would the social networks of early 1970s table-top gaming, especially the relationship between Gygax and Arneson, been much different today due to a change in media landscape?

What are some of the relationships your mental memory has with writing? Does the relationship varying depending on the types of memories (school, research, social, personal journaling, daily tasks)? How do these forms of writing impact the way you approach the world, especially other people and social systems? Can you transpose the creative workings of written records evinced by Rheinberger and Peterson to other activities, particularly those in which you engage?

Sources

Peterson, Jon *Playing at the World: A History of Simulating Wars, People and Fantastic Adventures from Chess to Role-Playing Games* (Unreason Press 2012): "1.10 Blackmoor" (64-72), "1.11 The Fantasy Game" (72-75), and from "3.2 System in *Dungeons & Dragons*," both the introductory remarks and "3.2.1 The Instruments of Play" (303-320).

Rheinberger, Hans-Jörg. Ch.13, "The Economy of the Scribble," *An Epistemology of the Concrete: Twentieth-Century Histories of Life* (Duke University Press 2010), pp.244-252.

Keywords

writing, memory, science studies, games studies, epistemology, media