

Games as Artificial Media

Abstract

Contemporary game design is mired in a sea of specific frameworks and lenses. Their 'interactive' qualities have been proven to exist in ways both foreign and similar to other contemporary and classical arts. Their elements are reusable in culture, provide methods of communication between individuals, oftentimes have physical pieces transposable from one copy to the next, and have both prescriptive and descriptive 'rules' that both govern, suggest or explicitly demand how they are to be experienced. Rules supported by everything from biological drives to formal 'artist statements' (aka written rules) to social and cultural contexts. It is no surprise that in the absence of a "unified theory of game design", a definitive understanding of what *exactly* is being manipulated in their creation leaves designers with a rather alchemic process.¹

In this paper I will explore both accepted and disputed theories on the formal underpinnings of games. I will also make an argument that individual games are individual forms of *artificial media* in so far as their accepted formal qualities are almost exactly expressed in Malcolm McCullough's writings on digital craft. As artificial media, games possess idiosyncrasies which makes their existential dilemmas unavoidable.

Reconfiguration

Games and the like have an odd quality in that they not only support closure through interpretation like other art forms, they also allow or require closure on a completely formal level. In other words; In 'interacting' with a piece we literally modify its formal qualities. While you and I might have the same 'experience' when viewing or manipulating an interactive work, it's almost guaranteed that you and I will not be presented the *exactly* the same experience. The specifics or the formal qualities of the work will vary from one instance to another. Furthermore it's not impossible we may be subject to *completely divergent* experiences. As such games are typically characterized by being reconfigurable in that the work is made up of individual formal elements without static relationships. These relationships have specific qualities that separate them from other dynamic media however.

Let me make a distinction between this re-configurability and *dynamic* relationships. On the surface re-configurability also exists with any animated or kinetic work (whereas in 'static' works the literal, measurable, relationships between elements are qualities of the work itself). A much closer analogy exists with the performing arts, particularly in music. An individual 'playing' (for them self) something classical and prescriptively notated such as

¹ Schell, Jesse, *The Art of Game Design*, (Burlington MA: Morgan Kaufmann Publishers: 2008) xxv

a Bach Sonata can subtly alter its form whether through the manipulation of tempo and dynamics while preserving the essence of the work. This interesting overlap between reconfiguration and interpretation is generally outside of the scope of this paper though. Finally there is the remediation of passively receptive media like film and music into reconfigurable documentation. Which as Evan Eisenberg describes, allows audiences to recontextualize not only the piece itself, but its parts.²

In contrast to kinetic work, the reconfiguration in interactive work is meant to be undertaken by the audience or viewer-user. How though is a viewer to assume that they are *meant* to manipulate? Practically any physical item can be manipulated by hand or with the aid of tools. How is a person to know, for example, that a 50 foot leaning steel panel by Richard Serra is not 'meant' to be pushed over, that the wheel of Duchamp's *Roue de Bicyclette* is not intended for spinning, that the hinged panels on Jasper Johns' *target piece* might not be closed?

How a user is to assume they should reconfigure a piece's elements, or even which elements to reconfigure, is not easy to pinpoint, though there are a number of strong contexts which assist. (This ability to 'invite' interaction is fuzzy to the point of being a criteria for *judging* interactive works.) using **Zimmerman's definition of 'interaction'** we **can** roughly quantify a functional and permissive message in any invitation to interact. Outside of directly addressing the viewer ("Break Glass in Case of Emergency") each aspect relies on a variety of constraints and contexts both physical and cultural.

Assuming permission and starting with how, usability and cognitive psychology provide a number of explanations about how we understand how to manipulate the world around us.³ For one, physical elements in their form have low level 'affordances' or clues to their usage.⁴ Bars afford grasping, buttons afford pushing, handles afford grasping and twisting. These affordances do not dictate how people interact with an item so much as provide clues when an item's purpose is unclear. Cultural context also provides clues at this low level. A person unfamiliar with chess will likely understand through a piece's representational qualities (that of a horse in the case of the knight) in addition to its formal properties (a flat surface) that the pieces are to be placed on a surface 'upright'. It's certainly possible for misunderstandings to arise, of which there are endless examples, and learning how to mitigate these misunderstandings is the subject of the fields such as user experience, interface design, and industrial design.

While physical communications of permissiveness exist – it is common and highly stressed usability practice to disallow user operations which may be detrimental. In gallery design this would equate to simply placing a painting behind glass, effectively preventing people from touching it – cultural context typically plays a larger role. Laws, norms and morals play a significant role in guiding our understanding of what may be approached and how it may be approached. Games are commonly accepted as separate

² Eisenberg, Evan, "The Recording Angel",
Aesthetics: A Reader in the Philosophy of the Arts 2nd ed.
(New Jersey: Pearson Prentice Hall, 2005)

³ Norman, Donald A., *The Design of Everyday Things*,
(New York: Doubleday. 1990, c1988)

⁴ Ibid

from daily life however. When it comes to the interaction in these spaces we have another context “older than culture”,⁵ our proclivity towards play.

Play is a quirky phenomenon to say the least. While many animals outside of humans exhibit play behavior, it’s hardly a primitive trait. Play can take many forms from competition to role-play and is an activity unrestricted by age. It can give meaning to the trivial and remove threat from what may otherwise be dangerous real life situations. While it permeates culture and takes place voluntarily in a space removed from traditional social functions. While play is free form and spontaneous it comes with implicit rules necessary to create and maintain the play space; a space understood to be ‘not for real’. While specifics of a play structure often evolve and transform inside of a singular play space, they can become highly formalized and codified allowing for recreate-able spaces. These are game-play spaces, and they are governed in some part by rules.

From Reconfiguration to Rules.

While a game might invite manipulation, it certainly doesn’t invite *any* kind of manipulation. It invites a *specific kind* of manipulation. A prescriptive kind of manipulation. This embodies the game’s rules. The relationship between the rules of the game and the formal qualities of the pieces or even the works context varies widely. Often they are abstracted enough that they can not be intuited and must be learned. Their quality and mere existence can distinguish games from toys and puzzles and distinguish one game from another when both have the same traditional-formal elements (such as *Poker* and *Blackjack* which both use a standard deck of cards).

With a rule set a selection of elements is transformed into an entity. Unfortunately the qualities of this entity are more than the sum of it’s rules and elements (despite what typical game reviewers might lead a consumer to believe with the reviewer’s individual ratings on graphics, sound, gameplay etc.)

The seeming pre-eminent quality of rules in games has led one contingent of academics and professionals to view game design as a completely abstract undertaking. These ‘ludologists’ view mechanics (albeit a specific kind of mechanics) as both essential *and sufficient* criteria in defining the ‘material’ a game designer works with. The formal qualities of a game’s elements are not denied, but classified as a context for the mechanics or as the “window dressing”⁶ of a game. Even when formal qualities are given a meaningful or even primal role in a game’s *interpretation*, they are still referred to as a “context”⁷.

Unfortunately, describing games as a collection of abstract systems doesn’t help the game designer much. Game designers traditionally have had difficulty in describing exactly how the creation, modification, or improvement of these systems was accomplished other than through a process of iteration and trial and error ending when a game was sufficiently ‘fun’. It’s only been relatively recently that a lexicon of terms have

⁵ Huizinga, Johan “Nature and Significance of Play as a Cultural Phenomenon.”
The Game Design Reader.
(Cambridge Massachusetts: The MIT Press, 2006), 96

⁶ Koster, Raph, *A Theory of Fun for Game Design*,
(Scottsdale Arizona: Paraglyph Press: 2005), 84

⁷ McDonough, David, “Context is King”, *New Rule* blog entry.
<http://www.davidmcdonough.net/archives/202>

amassed to begin to describe these abstract formal elements in terms concrete enough to evaluate and discuss.

The best example of the this is game designer Greg Costikyan's essay *I Have No Words & I Must Design* published in 1994. Along side articulating the problems just described he collects, organizes, and oftentimes creates a set of terms indicative of all abstract game systems and presents the following definition: "A game is a form of art in which participants, termed players, make decisions in order to manage resources through game tokens in the pursuit of a goal."⁸

His definition has six aspects qualities: player(s), tokens, resources, decisions, information, and a goal. Together they describe the specific type of re-configurability found in games and how abstract actions can have any kind of meaning. i.e.. how specific configurations of elements are privileged over others avoiding an 'anything goes' situation. This definition begins to distinguish a game's qualities of re-configurability from that of toys and puzzles. It also provides a set of abstract formal elements a game designer can manipulate, modify, and user for analysis.

Suffice to say that while Costikyan's definition and elaboration on these terms provides a starting point for discussion how these aspects of games are manipulated for effect is vague at best. While the Costikyan's is widely regarded as sound and descriptive it only goes so far in helping game designers or critics evaluate works. Henry Jenkins states "There have been real creative accomplishments across the first three decades of game design, but we haven't really sorted out what they are and why they matter"⁹ Doug Church still laments not only is the vocabulary lacking "The primary inhibitor of design evolution is the lack of a common design vocabulary." but that designers lack 'tools' to manipulate what few elements they can actually describe.¹⁰

Difficulty in analyzing or formalizing the abstract mechanics of games has not stopped people from trying though to mixed degrees of success. Nor has it prevented a structuralist mechanical-formalist ideology from growing in the professional community.

One way of tackling the problem is through 'fun'. The idea that fun is in some way essential to games and indicative of their structure is not an uncommon view. Henry Jenkins describes how "[Game Designers] can offer no simple, straightforward justification for what they are doing or why they are doing it except by way of talking about 'the fun factor'."¹¹ Critic Ben 'Yahtzee' Croshaw slams games which forget their roots: "Remember that? Fun? What we used to have before gaming felt like a second job."¹² Doug Church even called for its analysis: "Game designers can discuss 'fun' or

⁸ Costikyan, Gregg "I Have No Words & I Must Design."
The Game Design Reader. Cambridge
(Massachusetts: The MIT Press, 2006.), pp.

⁹ Jenkins, Henry, "Games as the New Lively Art", *Handbook of Computer Game Studies*.
(Cambridge Massachusetts: The MIT Press, 2005) pp.

¹⁰ Church, Doug, "Formal Abstract Design Tools", *Gamasutra*, (July 1999),
http://www.gamasutra.com/features/19990716/design_tools_01.htm

¹¹ Jenkins, 2005

¹² Crosshaw , Ben, review of *Psychonauts*, *escapistmagazine.com*, (August 2007):
<http://www.escapistmagazine.com/videos/view/zero-punctuation/2-Psychonauts>

'not fun,' but often the analysis stops there. Whether or not a game is fun is a good place to start understanding, but as designers, our job demands we go deeper."¹³

Game designer Ralph Koster begins by defining games as activities which possess similar types but varying degrees of "Fun" and develops an instrumental theory of games. He describes game-fun as a type specific to the medium and separate from other forms of entertainment and enjoyment. That "[game] Fun is about learning in a context where there is no pressure."¹⁴ He argues that the pleasure in games is what "...the brain gives us for successfully exercising survival tactics."¹⁵ Finally concluding "That's what games are for in the first place – to package up the unpredictable and the learning experience into a space and time where there is no risk."¹⁶

However in arguing this structuralist view Koster presents some highly problematic views. "The fact that I can describe *Deathrace* as being a game about picking up objects on a two-dimensional playing field is evidence that its "dressing" is largely irrelevant to what the game is about at its core."¹⁷ Unfortunately subjective description does not an empirical or even objective observation make. Even in advocating a specific instrumental view his resultant methodology for improving creation and analysis is simply that the study and construction of games should be done with complete disregard for any of their formal qualities; "The best test of a game's fun in the strict sense will therefore be playing the game with no graphics, no music, no story, no nothing."¹⁸

In *theory of Fun* Koster briefly touches on but quickly downgrades a relationship between game-fun and Csikszentmihalyi's theories of flow. Csikszentmihalyi describes flow as a state of (psychical or mental) problem solving which is neither easy enough to promote boredom nor hard enough to produce anxiety or frustration.¹⁹ This formulation is perfect for formalist game designers as it provides more meaningful ways of understanding how gameplay can veer towards or away from "fun". Koster dismisses any kind of tautology out of hand arguing that games are based on learning while flow is concerned with challenge. This isn't entirely accurate however, as flow is particularly concerned with how individuals maintain the balance between over and underwhelmed while the skills they're practicing are improving. In other words, while they're learning.

The most useful direct application of flow is in real-time difficulty adjustment. Award winning game designer Jenova Chen's MFA thesis game *Flow* is an investigation of this technique. "Player-oriented DDA [dynamic difficulty adjustment] based on choices effectively extends the game *Flow*. It extends a simple timing game's lifespan from 1-2 minute to about 5 – 12 minutes."

¹³ Church, 1999

¹⁴ Koster, 2005, 98

¹⁵ Ibid, 90

¹⁶ Ibid, 116

¹⁷ Ibid, 84

¹⁸ Ibid, 166

¹⁹ Chen, Jenova, "Flow in Games" MFA Thesis.
<http://www.jenovachen.com/flowingames/thesis.htm>
(accessed 19 May 2009)

More interesting than these results though is a subtle assumption upon which the project was based, namely that on some level longer gameplay time is value positive. The pragmatic aspect of this was clearly stated at the 2009 Game Developer's Conference where game designer and lecturer Mark Nelson stated "If your game is not fun, no one will play it."²⁰ While game time isn't explicitly stated as a quality of good games, there's an insidious but unavoidable connection.

To paraphrase Jason Rohrer from the same conference, games are the only discursive spaces in which "addictive" can be used as a value positive description.²¹ Rohrer looks at the topic in artistic terms. He notes how a 40+ hour role playing game is praised for its expansive narrative while a three hour film is derided for its director's self indulgence. In all fairness the comparison might be a little unfair. Lengthy narrative intensive games might be better compared to long running broadcast shows, that when purchasable by the season have a similar length and price tag. This is also fitting as in their original broadcast format TV shows are also valued in their viewership, as viewership brings eyeballs, and eyeballs bring money.

The tautology between game-play-time and value goes back to the coin-op machines of pac-man and pong and continues today with online games involving monthly payment plans. It even reaches down into stand alone, self contained pieces. *Braid*, by Jonathan Blow was one of the most artistically lauded games in 2008 despite being a relatively short (10 hours or less) narrative puzzle game. Oddly though it includes an online score board for "speed runs", a feature that was in many ways unwarranted and out of place. *Braid* though was initially released on Microsoft's X-Box Live, an online pay-per-month game service. Games released on which are required to have online score tracking. This "added value" is one more incentive to continue a paying membership.

This emphasis on continued play is interesting as one of the commonly accepted demarcations between toys and games lies in a clear starting *and ending* state. Even while games may have very clear and prescriptive goals, they often hint at an open ended and continual experience. While it has been mathematically proven that no game of *Tetris* can continue forever it asks to be treated as if it could. A mechanical structuralist ideology in viewing games would arguably emphasize this, as from that view the true value of the game is in the absorption of the rule system through prolonged interaction.

The idea that games *do* or perhaps *should* have beginnings and endings gives them a peculiar narrative quality. One group who takes the importance of mechanics as a given but not exclusively definitive has paid much attention particularly to the linear results of the playing of a game. Janet Murray and others labeled as 'Narratologists' by those interested in the primacy of game structure refuse to dismiss the traditional aesthetic elements and the meaning they bring to game studies. While being multi-dimensional every game has a beginning configuration and an end configuration, the path from one state to the next providing the at minimum the basic outline for a story. There is also the fact that many games have a very intentional narrative. However their integration into games is of much debate engenders criticism for attempting remediate films or other forms of media.

²⁰ Nelson, Mark, "Conflict to Content: A Survivor's Guide to Open Worlds, Sprawling Narrative and Crotchety Designers", Game Developers Exchange 2009, Savannah GA.

²¹ Rohrer, Jason, "Game and Other Four Letter Words", Game Developers Exchange 2009, Savannah GA.

While a structural methodology is important in understanding games, using mechanics as the definitive quality of a game is limiting at best. The simple game of charades has a rule system heavily reliant on the interpretation of semiotic and representational subject matter. The deliciously subversive *White Chess Set* by Yoko Ono subverts the rules of the game by removing a color. Mechanics and elements may be distinct but they are inseparable.

Towards an Abstract Media

“The chess pieces are the block alphabet which shapes thoughts; and these thoughts, although making a visual design on the chess-board, express their beauty abstractly, like a poem... I have come to the personal conclusion that while all artists are not chess players, all chess players are artists.”

- Marcel Duchamp, Cazenovia, 1952

Marcel Duchamp, having famously forsaken the classical arts for *Chess*, found a sense of aesthetic beauty not within its inherent structures, but within the *manipulation* of them. To evaluate the rules of *Chess*, or any game, would be to evaluate the forms created by the game's execution. Game designers would speak of the system's *ability* to create 'emergent gameplay', some perhaps arguing it exists solely as such, bereft of any 'contextual' narrative and semiotic aspects. However it is described, it is unavoidable that the qualities of the game – whether completely non-objective or naturalistically representative – exist in its enactment. I believe this 'calling forth' is a direct analogy to craft, and that however designed the structure and traditional formal elements are, they function as a medium, a manned factory of sorts, from which the player(s) conger forth artifacts. Artifacts which may be appreciated for their aesthetic qualities. In these terms, attempting to formalize a craft of craft is a daunting task to say the least.

It must be noted that there is a distinguished difference between game *as medium* and game *as artificial medium*. Game Art, as Ian Bogost describes in his article *Persuasive Games: The Proceduralist Style*, is the recontextualizing of specific game elements. Removed from their game context the lose their previous mechanical relationships are thus intentionally and functionally unplayable. They are used as semiotic elements opposed to the representation of an abstract game variable. Dutch collaborative JODI's work *Max Payne Cheats Only* (<http://maxpaynecheatsonly.jodi.org/max13.html>) is a good example. In reconfiguring the game *Max Payne*'s code their work creates distorted images of its 3D world. Characters are scripted to act out repetitive schizophrenic actions and viewpoints are moved inside polygon structures originally designed to be seen only externally. Games as 'artificial medium' in contrast are manipulated in ways explicitly covered or prescribed by the game's rule system.

McCullough defines medium as the collection of materials and tools used in its manipulation. He discusses meta-media, media built out of a collection of other media, out of the re-interpretation of an artifact created by one means through the structural conceits of another. These meta-media are each distinct media as the manner of 'working' them is typically completely disparate. While aspects of the digital "micro structure" may appear in a medium (such as recombination and reversibility) it is certainly more than a generic digital media. Like Game Art, media be can and often is re-appropriated as materials in other works. What I call artificial media I think differ in their use for creating artifacts within

their prescriptive artificial structure without the co-option or recontextualization of their parts. These don't *have* to be games. I think that something like *God's Facebook* (<http://www.collegehumor.com/article:1764710>) might constitute the use of Facebook as an artificial medium.

McCullough also identifies not only play as an aspect of craft, but a certain quality of play. "Play serves through experimentation without risk."²² he says. Compare to Koster: "Fun is about learning in a context where there is no pressure."²³ McCullough goes on to describe the pleasure of making in terms of learning, "If a medium is defined by its affordances and constraints, than learning consists of exploring those constraints."²⁴ This idea of the exploration of underlying structure bares considerable resemblance to Koster's emphasis on Fun as the learning of abstract systems.

These constraints exist of the medium are in one way the limitations and idiosyncrasies of that medium's tools. Similarly the constraints in affordances in games are a quality of the abilities of their tokens. On a personal or cultural level both tokens and tools can take on representative roles. McCullough says "An oar if you are a skilled boatsman, is not just for plying the water, it is *about* plying the water. It may evoke memories, it may have a romance." This is strikingly similar to the role iconic figures like Pac-Man, Mario, or Master Chief symbolize for devotees of their respective media.

McCullough notes how particularly good tools become invisible and shorten the distance between a user and the material.

"[A tool] is something to extend your powers: a piece of technology, or applied intelligence, for overcoming the limitations of the body... It requires your participation, ad for that reason it engages your imagination"

Compare to Costikyan's definition of Token

"You effect actions in the game through your game tokens. A game token is any entity you may manipulate directly... What is the difference between "resources" and "tokens?" Resources are things you must manage efficiently to achieve your goals; tokens are your means of managing them."²⁵

Tools and tokens both extend and/or specialize a user's or player's influence in a system removed from themselves.

The qualities of these affordances and constraints are not exclusively material specific, they're also an aspect of the tools used to reconfigure the material. In an artificial medium the exploration of its constraints and affordances is done through or assisted by the manipulation of the tools which define it. Here another analogy exists to Costikyan's description of tokens and resources.

In addition to the aspects of the collection which a player can manipulate directly, the material qualities, a game's resources, create restrictions and affordances like the grain

²² McCullough, Malcom, *Abstracting Craft : The Practiced Digital Hand*, (Cambridge Massachusetts: The MIT Press, 1996), 223

²³ Koster 2005, 98

²⁴ McCullough 1996, 228

²⁵ Costikyan 2003, 199

of wood. Goals act as suggestions for how to reconfigure the material in ways which produce results deemed by the producer of the game to have the highest aesthetic quality. Of course the player is *always* free to ignore them and pursue other techniques. This typically leads to less than interesting configurations or even the potential loss of work in the event a player is literally forced to start over.

Finally both acts of craft and game-play often produce recognizable artifacts. Artifacts which *can* be appreciated for their own inherent aesthetic qualities *and/or* as indexical of the process which created them. As *artificial* medium, a medium with additional layers of self imposed structure, the versatility of a game *may* be limited in comparison to a collection of the same formal elements but without the games rules. A game like *Gears of War* which exists as a highly select collection of symbolic material with a highly select set of game-meaningful arrangements is likely to produce a highly select type of artifact, a narrative resembling a summer block buster. Games in this sense act like a sophisticated paint-by-numbers.

What does describing games as 'artificial medium' accomplish? Is it even possible to interpret or judge a medium? McCullough discusses this also: "For a medium to be engaging, it must be dense. This means that it must surround us in possibilities. Such immersion is more than sensory, for it also serves the imagination with opportunities to coax the medium from one state to another."²⁶

²⁶ McCullough 1996, 196

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