

⬅️ (https://onlyagame.typepad.com/only_a_game/2006/04/concluding_pref.html) Concluding Preface
(https://onlyagame.typepad.com/only_a_game/2006/04/concluding_pref.html)
Matters Arising (https://onlyagame.typepad.com/only_a_game/2006/04/matters_arising.html) ➡️
(https://onlyagame.typepad.com/only_a_game/2006/04/matters_arising.html)

The Complexity of Ludus

(https://onlyagame.typepad.com/only_a_game/2006/04/th

April 14, 2006 (https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html)



(https://onlyagame.typepad.com/.shared/image.html?/photos/uncategorized/cellularcomplexity_2.gif) What is ludus? What is a game? Are these two questions related? Is ludus synonymous with rules? What is the relationship between rules and games, and must games expressly possess rules? Because of the flexibility of language, these questions might not possess absolute answers. In tackling ludus, we have no choice but to indulge in philosophical discussions, because ludus exists in the abstract realm of ideas, and cannot be measured or otherwise objectively analysed. How then are we to understand ludus?

In 1958, the eclectic French intellectual Roger Caillois identified four patterns of play - Agon (competition), Alea (chance), Mimicry (simulation), and Ilinx (vertigo), about which I have written previously at some length. Caillois' model for play also includes an axis of distinction, between the anarchy of spontaneous play called **paidia**, and the more formal, rule-focused state he refers to as **ludus**. He describes ludus as follows:

A primary power of improvisation and joy, which I call *paidia*, is allied to the taste for gratuitous difficulty that I propose to call *ludus*, in order to encompass the various games to which, without exaggeration, a civilising quality can be attributed...

In general, the first manifestations of *paidia* have no name and could not have any, precisely because they are not part of any order, distinctive symbolism, or clearly differentiated life that would permit a vocabulary to consecrate their autonomy with a specific term. But as soon as conventions, techniques, and utensils emerge, the first games as such arise with them: e.g. leapfrog, hide and seek, kite-flying, teetotum, sliding, blindman's buff, and doll-play. At this point, the contradictory roads of *agon*, *alea*, *mimicry* and *ilinx* begin to bifurcate. At the same time, the pleasure experienced in solving a problem arbitrarily designed for this purpose also intervenes, so that reaching a solution has no other goal than personal satisfaction for its own sake.

This condition, which is *ludus* proper, is also reflected in different kinds of games, except for those which wholly depend upon the cast of a die. It is complementary to and a refinement of *paidia*, which it disciplines and enriches. It provides an occasion for training and normally leads to the acquisition of a special skill, a particular mastery of the operation of one or another contraption or the discovery of a satisfactory solution to problems of a more conventional type.

At this point we must pause and clarify that in talking about *ludus* here we are talking specifically of *Caillios' ludus*; the term can and is applied by other people, and therefore like all words has diverse meanings and definitions. Here we are talking solely about what Cailliois meant when he said *ludus* (or what we suppose that he meant), and looking at what this means in the context of the modern games industry.

A few key phrases are worth repeating, in order to understand what it was that Callois was speaking of:

- *Ludus* implies "...a taste for gratuitous difficulty"
- The early stages of *ludus* allow for "...the pleasure experienced in solving a problem arbitrarily designed... reaching a solution has no other goal than personal satisfaction for its own sake"
- *Ludus* provides for "...the acquisition of a special skill, a particular mastery..."

(<https://onlyagame.typepad.com/.shared/image.html?/photos/uncategorized/kickball.jpg>) Firstly, let us consider the idea that *ludus* implies intentional difficulty, because this is clearly stated. Why should this be so? A simple example will serve to elucidate. When children kick around a ball, this is *paidia* to Cailliois; it has no explicit rules, and its play is defined by the inherent properties of kicking a ball. This is principally the physics of gravity, friction, and air resistance and so forth, all of which are implicit – properties of the universe – and not explicit – properties assigned by human agency.



However, suppose that they add to their play a single vertical post – perhaps it is a broom handle stuck into the ground – and begin to play in order to see who can hit the broomstick with the ball. Here, the task has been made harder – for it is clearly easier to hit a ball than it is to hit a specific target with a ball. This is what I believe Callois refers to when he talks of 'gratuitous difficulty': the addition of rules which by their very existence increase the difficulty of the play.

Of course, increasing difficulty can be fun. Following Csikszentmihalyi's model of Flow, if the challenge is significantly less than capabilities, boredom results. Therefore, the addition of rules in this way (the application of ludus) can reduce boredom – it provides a sufficiently entertaining challenge. In adding such rules, however, especially in this early transition from paidia to ludus, it is important that the challenge remains attainable. If the goal were to kick the ball such that it would balance atop the broomstick, it would be beyond anyone's realistic expectation to succeed, and frustration would naturally result.

In this way, then, we can see ludus as the tempering of paidia with restrictions such that a sufficient level of challenge is maintained. "Gratuitous difficulty" should not be interpreted as 'challenges beyond reasonable chance of success' but rather the imposition of sufficient difficulty as to render the activity rewarding.

This ties in with Caillois' comment about "the pleasure experienced in solving a problem arbitrarily designed". This should not be taken to mean solely an intellectual problem (such as a crossword puzzle, or a chess game), but rather, a challenge of any kind, solved in the manner appropriate. The challenge of hitting the broomstick with a ball is a physical challenge requiring co-ordination of one's feet, but it is still "a problem arbitrarily designed".

This then is why ludus leads to "the acquisition of a special skill, a particular mastery"- because any challenge thus constructed requires specific skills to resolve: in the case of the ball and the broomstick, the skills of ball control which are also the skills used in the game of football (soccer to some) and its derivatives. Similarly, the skills acquired in learning to play a game of Chess are the skills of state space searching, which are also used in chequers and in some games of solitaire.

Ludus can thus be seen as being a synonym for the explicit rules of a game, which include the rules by which play proceeds (or rather, the limits of what is allowed), the rules that define the goals of the game (or any scoring mechanism, which is merely a more complicated form of goal structure) and the rules which dictate the allowable properties of the components of play (the size and weight of a ball, or the dimensions of the playing field).

However, in the transition to the realm of videogames we are faced with a certain problem. We have thus far considered the qualities of play in paidia to be the implicit properties of the system involved – the physics of the ball, for instance – and only the human-applied rules which temper this basic behaviour qualify as part of the realm of ludus.

In a videogame, there are strictly no implicit qualities: the entire system is comprised of programming code, and are thus quite literally explicit. Should we therefore consider all aspects of a videogame to be ludus? I do not believe this is consistent with how Caillois employed the term.



(https://onlyagame.typepad.com/.shared/image.html?/photos/uncategorized/200pxn64_super_mario_64_shifting_sand_la_1)

us consider a specific example in the form of a generic platform game. The game consists of a world in which the player guides their avatar, primarily through the utility of a jump ability, and secondarily through the use of other abilities awarded through play. Their goal is the acquisition of certain tokens by one or more mechanisms. Enemies populate the world, and can interfere with the avatar's activities.

Which of these elements fit the definition of ludus?

The avatar's movement in the world, on foot or by jumping, are inherent abilities possessed throughout the game, and seem analogous to the basic abilities one might possess in the real world. In playing a game of jumping, such as hopscotch, we can scarcely consider the jumping to be part of the explicit rules – rather, it is part of the implicit substructure of the universe in which the game is played. I contend that these basic avatar abilities are similarly part of the implicit substructure of the game world. That these abilities were defined by human agency during the development of the game is tangential (in discussing hopscotch, we did not need to turn to discussion of God or natural selection in order to appreciate that jumping was an implicit property of the players).

The secondary abilities gained are similarly considered. When a player interacts with a ball, they have new abilities as a consequence of the properties of the ball, but the addition of the ball would not normally be considered ludus. The only exception to this might be if the ball was acquired as a consequence of an imposed rule – for instance, the player must jump and balance upon a stool in order to earn the right to kick the ball. We are here in a strange middle ground – since we must consider whether the abilities gained are gained by rule or simply emerge as a consequence of the world.

The goal, and the resultant play of collecting tokens, is the only element which we can unambiguously assign to rules, and hence to ludus. Here we see the embodiment of “gratuitous difficulty” for in the positions of the tokens the challenges have been laid out for the player to both find, and to solve.

The enemies are in a similarly ambiguous state as the secondary abilities. Should one consider these as implicit in the world, or explicit problems to overcome? In a real world setting, a game involving (say) catching butterflies would not consider the butterflies themselves to be a product of ludus, and the only ludic elements would therefore be any rules or restrictions applied (such as the rule that the person who collects the most butterflies wins). But on the other hand, if one were to construct a mechanical dog as a component in a game – perhaps one that snaps at passers by, and thus they are out – would we not consider this to be an added difficulty, and therefore a ludic element?

What is apparent in this consideration of the specifics of a typical platform game is that the boundary between ludus as Caillouis defines it and the game world is extremely subjective. We know (or believe we know) how the real world is comprised and behaves – at least to a degree sufficient to play within it. But in a game world, the behaviour is defined by the developers of the software. To consider the abstractions of the game world as ludic elements is almost to suggest that God (or something equivalent) contributed ludic elements to the universe. But these are not the *purpose* of these elements (such as gravity) but rather these inherent elements are co-opted to play because they exist.

I wish to suggest, therefore, that we can choose to determine a distinction between the substructure of a game world – the physical laws of the world – and the infrastructure of the game rules – the rules of the game (or games) played within this world. This is a distinction between the nature of the game world, and the nature of the ludus (rules) of the game. Sadly, we can never draw this line precisely because the boundary between the structure of the game world and the rules of the games played within it is inherently ambiguous. But as Wittgenstein has suggested: “Many words in this sense then don't have a strict meaning. But this is not a defect. To think it is would be like saying that the light of my reading lamp is no real light at all because it has no sharp boundary.”

(<https://onlyagame.typepad.com/.shared/image.html?/photos/uncategorized/carwars.JPG>) What does this mean for a highly abstracted game, such as a turn based strategy game? Here, the substructure of the game world is unlike the substructure of the real world. It consists, for instance, of a series of squares (or hexes et al) within which the components of the game are capable of moving about. Furthermore, are we to consider the properties of the individual units to be originating in ludus or in the game world? Since the individual units have natural properties, and these properties do not in themselves appear to comprise “problems arbitrarily designed” we might be tempted to exclude

these from ludus. But in point of fact, the units in such a game can be seen as representing “problems arbitrarily designed”. After all, in a game of Chess, do the problems inherent in each move not originate in the properties of the pieces?

Games of this style, therefore – such as Chess, turn-based strategy games, non-real time cRPGs, game-like simulations and so forth – should be considered highly ludic games. Their world is defined in a fashion in which it is much harder to separate the game world from the game rules (the ludus) and therefore we can choose to consider these to be wholly ludic in their construction.

What, then, makes the world of the platform game so different? I contend it is that the world resembles the world of our every day experience, and as such, we interpret those elements of the world which most strongly resemble the world of our experience as being part of the substructure of the game world. Why should we make such distinction? Because in paidia, we play freely because we subconsciously accept the properties of everyday life (such as movement, jumping, gravity), and even in a game world we can accept these things subconsciously *if they resemble that with which we are most familiar*.

We will never entirely eliminate the subjective element in distinguishing between the framework of the game world and the ludus of the game, but in tying the game world to the expectations for which we are biologically pre-programmed to accept, we can at least minimise the need to debate the boundary conditions. The behaviour of a car in a racing game can be considered substructural because it follows our expectation, while the conditions of the race itself are ludic; the behaviour of a unit in a strategy game is ludic because we must always learn explicitly what that behaviour might be, we can never imply it. Note here that the understanding of the behaviour of a car is a *cultural artefact*, and not a universal, which further underlines the subjectivity at the core of this distinction.

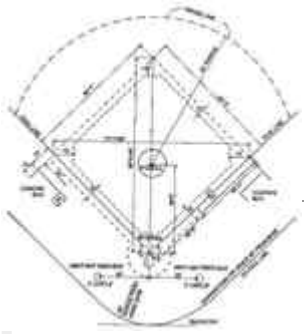
Ludus, therefore, in Caillois’ sense, is a measure of artificial complexity, and therefore of imposed challenge and difficulty. The more ludic a game, the more complex its components (and the more learning is implied), and the more difficult the play of the game. The more ludic a game, the more and different skills that might be learned – and perhaps too, the more intrinsic to the game these skills become.

When one masters a strategy game, one learns nothing of what is required to play a first person shooter, and vice versa, although of course the ludic elements of the continuum of games are so interbred as to provide more crossover than might perhaps be expected. To give a more specific example, learning the power sequences for specific pokémon provides no benefit when you play a different cRPG, despite the fact that there is considerable crossover in the basic mechanics of any given cRPGs. The ludus that defines each pokémon is specific to a pokémon game.

The least ludic games are therefore those whose substructure is most akin to our conventional reality, and the most are those which are comprised of many layers of rules and strictures. We might therefore consider the platform game to be quite low on the ludic scale, with a first person shooter perhaps being similarly light in its ludic components, while a cRPG is relatively high upon the ludic scale, and a typical strategy game higher still. Real time strategy games lurk in a middle ground, being highly ludic, but less complex than the turn based strategy games which disappear into an esoteric realm of their own construction.

(https://onlyagame.typepad.com/.shared/image.html?/photos/uncategorized/baseball_diamond.jpg) And what of sporting games? These are highly ludic – but the barrier of learning their peculiar rules is usually mitigated by the fact that those that play the videogame versions are in general fully cognisant of these rules. Since we have been unable to eliminate the subjective effects of culture, one must be tempted to place these lower down the ludic scale than cRPGs and strategy





games, since the rules of these games are practically a cultural inheritance. In this, as in any discussion of ludus, there is sufficient subjectivity as for debate to be both possible, and simultaneously quite unlikely to be productive.

Returning to Caillois, the following paragraph succinctly encapsulates the role of ludus:

What I call ludus stands for the specific element in play the impact and cultural creativity of which seems most impressive. It does not connote a psychological attitude as precise as that of agon, alea, mimicry orilinx, but in disciplining the paidia, its general contribution is to give the fundamental categories of play their purity and excellence.

Indeed, this notion of purity is intimately intertwined with ludus, and those games which express ludus most strongly (including state space games such as Chess, and strategy games of all kinds) are in many respects *pure games*, or *pure ludic games* (which need not be a tautology). They barely contain the capacity for paidia at all, because they have no game world substructure, and it is here – in the implicit components of a world – that paidia thrives. They are so far up the ludic scale as to be all but incapable of paidia.

Ludus, as described by Caillois, is a measure of the complexity of a game system, and the challenges and difficulties inherent to those systems. Ludus refers to rules, and also to those abstract properties of systems which function as rules in defining the extent and nature of the interactions possible within the game space. Ludus is abstract and intellectual, whereas paidia is informal and visceral. Ludus describes that which we generally consider a game, whereas paidia describes that which we generally consider play.


Videogames can encapsulate both ends of this continuum. The ludic extreme has already been thoroughly explored, and arguably it is time for us to commit more certainly to exploring the other end of the scale, where paidia is dominant. But then again, the realm of ludus is so vast as to be effectively infinite, and perhaps we will never exhaust the possibilities inherent in the limitless realm of play defined by ludus.

The opening image is Cellular Complexity by the artist and scientist J. David Sweatt (<http://sensor.neusc.bcm.tmc.edu/David/researchers%20files/daveart.html>). As ever, no copyright infringement is intended, and I will gladly take the image down if asked.

Posted on April 14, 2006 at 04:32 PM in Game Design (https://onlyagame.typepad.com/only_a_game/game_design/) | Permalink (https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html) | Comments (11) (https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html#comments)



Comments

 (https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_/comments/atom.xml) You can follow this conversation by subscribing to the comment feed

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_/comments/atom.xml) for this post.

Great post as usual.

I think you should take a trip and observe some Marines hanging out in garrison some time (if you could somehow keep them from changing their behavior with a civilian present). When the big boredom sets in, you can observe them going through the stages from paidia to ludus.

First, someone tries hanging from a bar. Then it becomes timed to see when the person falls. Then more challenges are added, more restrictions. By the end of the day there might be round robins and alternate goals.

I can't even imagine how many times a game was formed and solidified over two or three days, and then promptly cast off for the next distraction. It really was fascinating, and I'm sorry I didn't document them as they happened.

Posted by: Johnny Pi (<https://designsynthesis.blogspot.com>) | April 14, 2006 at 10:34 PM
(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16180615#comment-6a00d83452030269e200d834b81f1a69e2)

Johnny Pi brings up a perfect example of adults going through the same paidia --> ludus process normally associated with children. Great write-up. We've talked about paidic type of play that always seem to pop up in FPS games--stacking, various forms of jumping/launching... or in many online multiplayer games involving vehicles, simply messing around.

Reading this, I also couldn't help but picture one of the inevitable occurrences in virtually every racing game I've ever played: invariably, someone gets behind, and then decides that they're going to drive the course in the wrong direction (game permitting, as some do not) in order to sabotage the winning efforts of the lead car.

I think your appraisal of the paidic and ludic elements of videogames is dead-on; even in some very ludic games, certain spontaneous paidic style play is bound to occur, especially if the substructure or ground rules make for enjoyable play. Certain games' most basic elements (movement, jumping) are so enjoyable as to encourage paidia; though ludic elements are essential to longer term play, some games smartly invest a great deal of work into making the basic substructure work very well.

Take Katamari Damacy for instance--though katamaris don't really exist, the idea of a ball that smaller objects will stick to is easy enough to grasp, and the game's one essential verb, rolling, is intrinsically enjoyable. True, you're trying to roll a specific size, beat an established record, etc. most of the time, but the simple act of rolling is intrinsically gratifying.

Oh, and another good example of the transition of paidia to ludus would be the tremendous growth of the speedrunning subculture, primarily centered, though far from limited to FPS games. What begins as a fairly paidic impulse (I wonder how fast I can get to the end of this level?), has grown into a fascinating and rather formalized competition: the employment of near game-breaking exploits (though not cheating in the traditional sense), declared and implied rules regarding segments (unbroken length of playing during a speedrun) etc. have gotten such that this subculture has created its own highly ludic play around games that do only implicitly support its play.

Posted by: Jack Monahan (<http://www.gausswerks.com>) | April 15, 2006 at 01:03 AM
(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16183883#comment-6a00d83452030269e200d834b82acc69e2)

You cite physics as part of an implied framework that compliments but is polarized away from physics. What happens to this analysis when physics simulation is completely absent from the game world? Perhaps social dynamics, replacing physics, would fall into the same analysis, being an assumed framework imported from the outside world.

Posted by: Patrick Dugan (<https://www.kingludic.blogspot.com>) | April 15, 2006 at 10:00 PM
(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16202273#comment-6a00d83452030269e200d83482d48153ef)

Just a couple of brief comments:

First. Pure games, as you define them, seem to me to be also games of complete (perfect) information. That implies that they can be reasoned about formally, using game theory for instance, and thus can be played by artificial agents. This in turn means these games are algorithmically computational which, since I ascribe to the non-algorithmic view of human thought, gives (me at least) a clear(er) picture of where to draw the line under ludus. Somewhere around the reflection principle.

Second, is playing chess a matter of skill in state-space searching? I haven't thought through this, but it seems when one becomes skilled (which I'm not), it's more about reflex pattern-matching.

Third, another nice post. Have you thought about writing a book?

Posted by: zenBen (<http://zenben.net>) | April 16, 2006 at 01:00 PM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16212980#comment-6a00d83452030269e200d834b85a8d69e2)

He's already got one very excellent book under his belt (see sidebar of this site), and if I'm not mistaken, another one in progress :)

Posted by: Jack Monahan (<http://www.gausswerks.com>) | April 16, 2006 at 09:36 PM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16221209#comment-6a00d83452030269e200d83483053953ef)

Dear all,

Thank you for an interesting collection of comments!

Johnny: the marine example you cite is quite pertinent. I myself can think of similar examples from my own life of spontaneous creation of ludus. It's a behaviour definitely not constrained to children!

Jack: I agree that the 'easy to grasp' notion of a katamari makes this game more accessible, and also that speedrunning et al is another example of creating ludus - although rather than being from paidia to ludus, it is perhaps a case of taking the formal ludus explicit in the game, and then adding a layer of player-mediated ludus on top. It reinforces the idea of a game as a tool for play in my mind. :)

Patrick: I totally agree that it need not be restricted to physics. Anything that our day-to-day minds has a "standard model" for is fair game, including social dynamics. There's much work still to be done in this regard!

ZenBen: Yes, I think in applying the term 'pure game' I was purposefully thinking that these are where game theory et al begin to apply most strongly. Regarding Chess, I dare say you are correct that pattern matching is a key skill - I have not really researched how people play Chess; I wonder if there is material about this already in circulation?

And yes, as Jack says, I already have one book out (21st Century Game Design), and I've just finished editing Game Writing: Narrative Skills for Videogames, which is out later this year.

No doubt, more to come in the future - but right now, I need a break. This last book project was exhausting! :)

Posted by: Chris (<https://onlyagame.typepad.com>) | April 17, 2006 at 08:08 AM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16231472#comment-6a00d83452030269e200d834b89aa869e2)

Ahh, yes, sorry if the book question sounded literal - I have read 21st Century Game Design, and was only disappointed that it didn't go further (which in part led me to regularly read this blog, in search of DGD2). It is the curse of typed electronic communication that what sounds sarcastic, ironic, witty, or subtle in one's head as one types, just sounds literal (and therefore often stupid) to the recipient.

Hurts me when I'm on IM!

Posted by: zenBen (<http://www.zenben.net>) | April 18, 2006 at 03:04 PM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16280577#comment-6a00d83452030269e200d834b9119f69e2)

I get your point about strategy games being very ludic but I think "so far up the ludic scale as to be all but incapable of paidia" is a touch far. True those games have been designed or refined for that end of the scale, but that doesn't mean the environment doesn't allow for paidiaic subversions. You can always just stick the bishop up your opponent's right nostril, or change the very rules to the game (True example: complicated rules for off-board artillery in Chess).

Even without fundamentally altering the game environment paidia can be found. Players can collectively try to make the pieces spell out rude words on the board, they could play the regular game but change the winning condition to "take both of your opponent's rooks", they could even play normally but as fast as they possibly can (and then even that can be taken by some determined ludite a few steps back up towards ludicity - <http://www.geocities.com/bprice1949/speedrule.html>).

To refine my point a bit more neatly, I'd say Chess is an example of a highly ludic game, but only if you follow the established rules by the letter and promise your opponent you will do your best to win the game by taking their King. But isn't that the same for Super Mario?

Posted by: Ben Kirman | April 18, 2006 at 05:00 PM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16286039#comment-6a00d83452030269e200d834b91e9b69e2)

Z. Ben: We lack a device to detect 'tone of typing', alas. :-D

Ben K.: I would tend to agree that all these things are possible, although I've never seen it - maybe they happen behind I'm back when I'm not looking. :) In fact, I haven't played Chess in (...thinks) more than a decade. I last played it in Toulouse, France, as I recall. I lost. :)

I gleefully concede that even highly ludic games can still be turned to paidia by a willing mind. :)

Posted by: Chris (<https://onlyagame.typepad.com>) | April 18, 2006 at 06:06 PM

(https://onlyagame.typepad.com/only_a_game/2006/04/the_complexity_.html?cid=16288925#comment-6a00d83452030269e200d83483b57253ef)

dj i/o here..

Chris, I wanted to link you to another article I thought you would find interesting, called "Beautiful simplicity" on the "Brainy Gamer" blog..

http://www.brainygamer.com/the_brainy_gamer/2008/09/beautiful-simpl.html

It talks about how complexity does not necessarily equal depth. Something perhaps a lot of game designers are overlooking?