Kairotopos: A reflection on Greek space/time concepts as design implications in Minecraft

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ABSTRACT
The game of Minecraft provides an open virtual environment which is somewhere between game and pseudo-game framework (at the current level of development) in which the player is free to explore, investigate and change the world around them. The "virtual environment" of Minecraft naturally involves a description and participation of a spatial and temporal framework in which the player is placed, and presents a unique set of qualities that cross into several categories of Greek notions of the meaning of space and time

This paper first describes the historical concepts that the ancient Greeks used for space and time and discusses their links to the concepts of theoretical and technical skills. These concepts are then examined in combination and individually. Finally, this paper describes the mechanics and affordances within the Minecraft environment that are either affected by these spatiotemporal terms or which have impact on the spatiotemporal experiences of the player.

Keywords
Space, time, kairos, chronos, chora, topos

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INTRODUCTION

The concepts of space and time were discussed extensively by the ancient Greeks, who formulated these ideas during their discussions around rhetoric, ethics, metaphysics and physics. Philosophers like Plato, Aristotle, Gorgias, Epicurus, as well as the Stoic, Atomist and Pythagorean schools, had their own originating ideas about the qualities and structure of space and time. In the case of space, the Greeks used terms such as *topos*, *chora* and *kenon* and in the case of time, *chronos* and *kairos*. The original meanings are now thousands of years old and to the extent that they are used at all in modern language, the flavor of the original usages has been diluted through culture and translation somewhat.

It is not my intent in this paper to talk about the general philosophical, scientific and/or metaphysical properties of space and time, per se. Nor is it my intent to talk about the usage of space and time within video games in general, particularly in a formalistic way such as regarding labyrinths, arenas, etc.

Instead, this paper aims to take a look at the specific ancient Greek spatial and temporal terminology and apply it to the design decisions in the video game Minecraft (Mojang AB, 2011). Looking through the lens of the original Greek concepts of space and time, we can see how Minecraft is constructed in spatial and temporal terms, as well as seeing how changes in the Minecraft design and mechanics affect- and are affected by- these same concepts. Minecraft appears to be particularly well suited to showing this. Ideally, this exploration illuminates how practical and seemingly innocuous design changes to the game can fundamentally change the way that players perceive space and time within the game.

SPACE, TIME AND PLACE

At this point in the history of videogame studies, space has been explored by game researchers such as Aarseth (1997), Wolf (2001), Nitsche (2008), Swink (2009), Walz (2010) and Gazzard (2008, 2011), just to name a few, and there is general agreement around space's importance in the role of video games. Many discussions center on the classification of space, in the form of arenas, mazes, labyrinths, gates, halls, etc. and naturally, these kinds of studies draw from other areas such as architecture, cultural anthropology, archeology and human geography. Space and the related (generally more humanistic) concept of *place* has been discussed for centuries by many authors from many approaches (Tuan 1978) (Hiss 1990) (Alexander 1977) (Lefebvre 1991) (Bachelard 1964) (E. Casey 1997) (E. S. Casey 1993) (Heidegger 1927/1962).

Time and temporality has also been directly discussed to a lesser extent in video game studies (Gazzard 2011) (Wolf 2001) (Aarseth 1999). There have been attempts to classify time within video games, as Jesper Juul does by referring to "fictional time" (2005), or perhaps with classifications like the ones posed by Zagal et al (2007), which puts forward a four-way segmentation of real-world time, game-world time, coordination time and fictive time. As with space, these discussions of time and the experience of time within video games draw from historical and cultural ideas about time in general (Heidegger 1927/1962) (Jaques 1982) (Smith 1986) (James 1890).

As mentioned above, all of these sources are valuable and many (if not most) of them allude or directly speak about the Greek terminology. However, at the same time most of them carry with them modern associations of the same terms, leading to a kind of dilution, as well as a modern emphasis on a psychological "place"[1].

We first need to take a look at the original Greek definitions before moving to their application. There are many books and papers dedicated to investigating the cultural and linguistic intricacies of the original Greek terminology and because of this, this paper can only afford to skim the surface of a complex subject. With our apologies, some concepts necessarily have to be generalized, while presenting an invitation to the reader to follow up with the wide and deep material on this subject that is out there.

Time

"*What… is time? I know well enough what it is, provided that nobody asks me; but if I am asked what it is and try to explain, I am baffled."* Saint Augustine – *Confessions*

The ancient Greeks had two concepts that were linked to the concept of time: *kairos* and *chronos*. Each of these concepts capture a different aspect of the time experience as discussed below.

Chronos

Chronos is perhaps the most straightforward of the concepts to convey as it more or less lines up with our modern and popular conceptions of time and in fact has changed very little since the original Greek. Aristotle defined the term as "the number of motion with respect to the before and the after", a definition that successfully captures the properties of time having a *direction* (an order, the before and after), a property of *change* and the very important quality of being measured (the *number* of motion). (Coope 2005)

This aspect of quantification is key to the notion of chronos. (Smith 1986) Aristotle essentially believed that time was a kind of number (much like the Pythagoreans (Babbitt 1960)), thus always measureable, and this informs our current usage of words like chronometer, chronology and chronoscope, all of which allude directly to the measuring and enumeration of time as it passes. *Chronos* belongs in the realm of clocks and perhaps is finally described best via the Encyclopedia of Time: "Chronos refers to the quantification of time and its length, how each second follows one after the other, and/or seeing time as being bounded." (Macey 1994).

Kairos

"*For everything there is a season, and a time for every purpose under heaven: a time to be born and a time to die; a time to plant and a time to pluck up that which is planted; a time to kill and a time to heal ... a time to weep and a time to laugh. . .* "- Ecclesiastes 3:1

Kairos is a much more difficult concept to convey, as it is tied up in multiple origins and usages. Modern usages, to the extent *kairos* is even used today, tend to focus on the term as a kind of sacred or creative state. As an example, Jean Bolen uses *kairos* as "when we participate in time and lose our sense of time passing […] we are totally absorbed and in the present moment, which may actually stretch out over hours". (Bolen 1996)

However, *kairos* is more complicated than this. The usage of *kairos* was very much tied up in the practice of rhetoric and the evaluation of ethics (Waterfield 2002) (Smith 1986). For the Greeks, *kairos* was the "right" time, a kind of special slice of time for action. For an action that someone wishes to take, there is a moment where it should occur. *Kairos* also implies that there are moments of crisis which require a particular action from those involved. There is a sense of skill wrapped up in this meaning, a sense of what the Greeks called *phronesis* (wisdom and judgment). (Smith 1986) (Rämö 1999) It is not enough to have the technical skills (*techne*) or theoretical skills (*episteme*) to solve a problem. The *kairos* moment is not just a special moment where you can do something well, but the "right" moment where a wise action makes all the difference.

The modern usages of *kairos*, to the extent they are seen, seem to simply indicate a kind of creative trance state and seem to completely lack any connotations of skill or "wisdom of the moment". These meanings of wisdom and judgment are important to understanding what the Greeks meant by *kairos*. *Kairos* is not just "unmeasured time", nor is it strictly a human psychological or creative state. While *kairos* cannot be measured and thus is radically different from *chronos*, *kairos* is a kind of experienced time at the intersection of natural events and human wisdom and is bounded by the opportunity that the moment brings.

While discussing kairos, there is an additional important connotation from the Greeks that should also be introduced. In the original Iliad, *kairos* is used to signify the struggle when fighting with an enemy, with more of an emphasis on the fragility and defense of one's own body. (Sipiora et al 2002) In this connotation, *kairos* seems to emphasize the moment of a critical hit, the ability to know exactly when to thrust the spear to win the fight. Again, this use of *kairos* is not a kind of extended special time, but indicates the "right" action that must be taken in the heat of the moment, not due simply to technical skill and prowess, but the wisdom to know when to strike. This link between *kairos* and battle will become clearer later.

Space

"…The Final Frontier." - Opening to Star Trek: The Original Series

It is important to note that the Greeks did not make a large linguistic difference between 'space' and 'place' as we currently understand those terms. (Algra 1994) If we look for analogues to the temporal concepts of *kairos* and *chronos*, we run into difficulties and some similarities. However, it is worth examining the three main Greek concepts related to space: *chora*, *topos* and *kenon.* As we shall see, *chora* and *topos* signify a similar kind of space/location, while *kenon* signifies a kind of emptiness/non-space/location.

Chora

"Things need to have space (*chora*) first [of all]" – Aristotle, *Theogony*

Between chora and topos, there are many similarities and in some cases they are used relatively interchangeably in the Greek texts, but neither term directly translates to our modern definition of "space", roughly the three-dimensional expanse in which objects are located. Neither does either one directly translate into our modern usage of the word "place", which has psychological and anthropological overtones. The Greeks, with some variations and disagreements too complex to go into here, generally envisioned both terms a kind of space/location where objects exist, with only a slight difference. (Algra 1994)

Chora is a general term referring to space which is occupied, a place of "Being". This is not a void, or an empty location, it is a space which is partially occupied by something. As Heidegger explains:

> "The Greeks had no word for 'space' [raum]. This is no accident; for they experienced the spatial on the basis not of extension but of place [ort] (topos); they experienced it as *chora*, which signifies neither place nor space but that which is occupied by what stands there." (Heidegger 1959/1987)

An example of *chora* would be something like "our country" or "this land", a semi-abstract concept of a world/region that objects can occupy. A *chora* is a definite "location", at least on a conceptual level, but there is nothing specific or meaningful about a piece of *chora*, it is basically a world/region that is either occupied or can be occupied. (Algra 1994) The Greeks didn't conceive of space as an independent entity that objects move through as we tend to do in physics today. For the Greeks, space exists where there are objects to be there. Nevertheless, *chora* is slightly closer to modern concepts of abstract space than the accompanying term *topos.*

Topos

If we accept, in a minimal and hesitant way, that *chora* is closer to the modern concept of *space*, we may also be tempted to assign *topos* to *place*. However, in the same way that *chora* does not directly translate to *space*, we cannot directly assign *topos* to *place*. In *Concepts of Space in Greek Thought*, Keimpe Algra goes to great length to tease apart the differences between *topos* and *chora*, finding that they are largely synonymous, yet *topos* connotes a more relativistic and referential kind of space/location. (Algra 1994)

Topos, in this form, meant a *somewhere*, as in "ranches (*topos)* within our state (*chora)"*. This is certainly closer to what we understand as a *place*, but it is important to note that *topos* is a kind of "special" *chora*, a subset, a piece of the whole. There is a flavor of this in Lefebvre's *Production of Space* when he says, "This is a space, therefore, that is homogeneous yet at the same time broken up into fragments." (Lefebvre 1991) In this case, a *topos* would be a relative piece of the whole *chora.*

We may use *topos* as a place more than chora, for as Barthes describes it:

> "Why *place*? Because, says Aristotle, in order to remember things it suffices to recognize the place where they happen to be (place is therefore the element of an association of ideas, of a conditioning, of a training, of a mnemonics); places then are not the arguments themselves but the compartments in which they are arranged. Hence every image conjoining the notion of a space with that of storage, of localization with an extraction: a region (where one can find arguments), a *vein of some minerals*, a *circle*, a *sphere*, a *spring*, a *well*, an *arsenal*, a *treasury*, and even a *pigeon-hole*." (Barthes 1988)

Barthes is coming from a semiotic and rhetorical approach, as did the Greeks. The usage of the word "arguments" in the quote comes from that viewpoint. *Topos* is a location where things come together, it is a location which is a container for other things and is defined by those things. It is materially the same as chora, but made less abstract by the property of relativeness, i.e. that it is set apart by what it contains.

Note that the Greek term topos completely lacks the modern psychological and anthropological senses of “place” which have permeated the studies of human geographers and anthropologists. Strictly speaking, there is no feeling of “home”, belonging or embodiment in the term. Despite this, the modern term of topography has taken on more psychological aspects and in a general sense does not only refer to the shape of the land, but all aspects of a “place”, including all things that have occupied or currently occupied it. The original Greek term is far more neutral and scientific than “place”, closer to the more abstract *chora*.

Yet, it is not difficult to see where the modern interpretation of the term has come from. *Topos* as a term does somewhat connote “place”, in a sense. In the process of by naming and singling out a piece of *topos* from the general *chora*, we cannot help but to make it meaningful and significant. In the Barthes quote above, he lists a spring as an example. Certainly, a spring is just another space/place and there are many springs and non-springs in the world, yet there is a kind of meaning-making in the act of pointing out *this* spring versus *that* spring. A spring may not have essentially changed when pointed out, but by being pointed out, it has been differentiated.

The difference between chora (region/world) and topos (region/location) is one of degrees and it is nuanced. To talk about chora, one needs only theoretical knowledge and some technical skills. “My world”, “my land”, the Minecraft world, even 'Azeroth' all qualify as *chora* when talking about them in an abstract way. To talk about *topos*, technical skills and wisdom are needed to identify it, why it is set off from the rest of the undifferentiated chora. A farm, in the abstract sense, *is* chora, but *that* farm is not just chora but topos. We can point at *that* farm and say a few things about what differentiates it from the rest of the world. And for the Greeks, it was really easy to switch between the terms depending on the context. So, although in the Greek sense it is a nuanced difference between *topos* and *chora* (region vs region), there may be latent in the Greek usage a qualitative difference, found in the reasons why we have singled out a particular *topos*. This more concretely explains why *topos* has reasonably migrated in the modern era to be more “place-like”.

Kenon

Kenon comes from the original Greek adjective for empty (*kenos)*. (Algra 1994) Generally, the term is used in opposition to the other terms of *chora* and *topos* and sometimes as a modifier. In looking at the meaning of “empty”, Algra outlines three basic usages of *kenon*: (a) a pure void, e.g. nothingness, (b) void-as-empty-space, e.g. the space between molecules, and (c) void-as-empty-container, e.g. the inside of an empty bottle. (Algra 1994). There are many subtle differences between these characterizations, but the common thread that runs through them is that *kenon* is where *something-is-not*. The Greeks differed on what exactly was the thing that could not be in *kenon*, but it was largely a matter of how they viewed the question of Being.

The existence of *kenon* is also important to realize because it again highlights some of the meanings of *topos*/*chora*. If we take *kenon* to mean (a) where it is pure void or nothingness, we are setting it in opposition to the other terms. Nothing could ever be there and it is a kind of Non-Being as described by Parmenides. (Algra 1994) If we take the (b) or (c) meaning of *kenon*, we are using it as a modifier of a space/place, i.e. an empty space or empty location, a kind of vacuum or empty, accessible void. (Paparazzo

2008) The differences in the usages of *kenon* was somewhat contextual and sometimes turned on whether the speaker metaphysically believed that such thing as a non-space/place could exist at all.

In our case looking at video games, it is most useful to focus on *kenon* in the sense of (a), a non-region, a space/world/location that one cannot go because there is nothing there, not even space itself. If a part of the video game space/place is not specifically defined, it does not exist and cannot be accessed, though it may be referred to or implied by the game space, metaphysical implications aside.

SPACE/TIME CONJUNCTIONS

It would be useful here to summarize some of the terms we have covered. *Chronos* is an abstract quantitative measurement of movement and change that we experience as normal "time". *Kairos* is an experience of a critical moment and having the wisdom to know what should be done right at that moment in time. *Chora* is an abstract conception of a world/region where something exists. *Topos* is a more precise and relative conception of a location/region where something exists, i.e. a specific region defined by what it "contains".

As mentioned earlier, *kairos* is tied up with the concept of *phronesis* (wisdom and judgment), rather than the more mechanical skills of *episteme* (theoretical) and *techne* (skillfulness and proficiency). To read a clock (*chronos)* requires only theoretical and technical skills, but a moment of *kairos* requires *phronesis* as well.

Hans Rämö draws this distinction tighter in his paper, *An Aristotelian Human Time-Space Manifold,* by referencing the work of J.L. Ramirez. (Ramirez 1995) (Rämö 1999) Ramirez makes the *chora*/space and *topos*/place distinction more concretely. Figure 1 adapts Rämö and Ramirez's description by (very) roughly mapping the four concepts against abstractness and the gradient of learning.

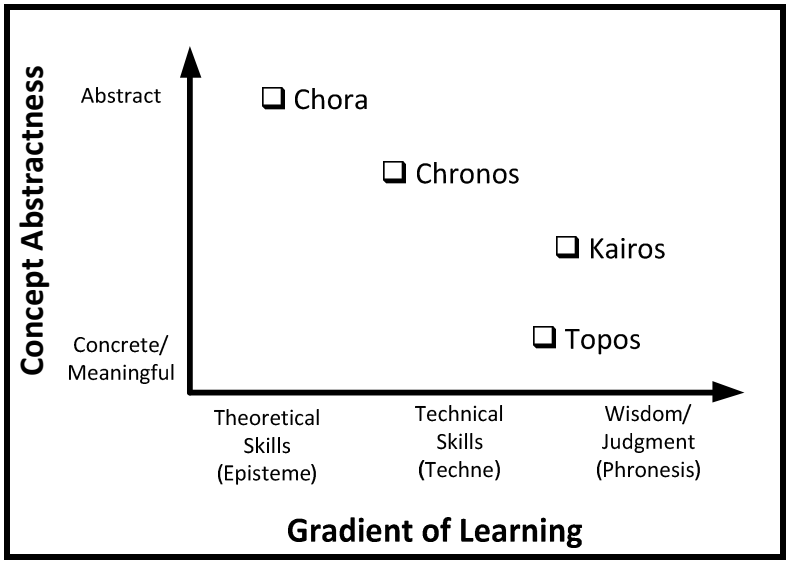

Figure 1: General Episteme/Techne/Phronesis Matrix

As Rämö explains:

> "The abstract chronos and chora have to do with science and theoretical knowledge (*episteme* and *techne*), whereas kairos and topos characterize practical wisdom and judgment (*phronesis)*. Because of this mapping, Ramírez changes Mikhail Bachtin's insightful and widely known notion of *chronotopos* into *kairotopos,* as a unification of place and time into a condensed, meaningful and concrete wholeness (Bachtin, 1919/1981)." (Rämö 1999)

Rämö is again quick to point out "that the explicit spatial division between chora and topos specified above was less accentuated, in comparison with the difference between chronos and kairos, in ancient Greek." (Rämö 1999)

Rämö then goes further by intersecting the two spatial terms with the two temporal terms, resulting in four combinations of terms:

- **Chronochora** (Abstract Time/Abstract space)- Dealing with *episteme* (theoretical skills), e.g. mathematics, (time-)geography
- **Chronotopos** (Abstract Time/Meaningful place) – Dealing with *techne* (technical skillfulness and proficiency), e.g. sports, physical games, time management
- **Kairochora** (Meaningful Time/Abstract space) – Dealing with *techne* (technical skillfulness and proficiency), e.g. virtual organizations, online MMO guilds
- **Kairotopos** (Meaningful Time/Meaningful Place) – Dealing with *phronesis* (wisdom and judgment), disconnected from a specific and quantifiable space and time

These compound terms become useful when describing the experiences a player might have in a video game world. I will return to these terms shortly.

USAGE IN MINECRAFT

Now that we have discussed the compound concepts as proposed by Rämö, I wish to backtrack a bit and individually discuss each of the original Greek concepts as they apply to Minecraft. Specifically, discussing *chora*, *chronos* and *kenon* and how they are used, followed by *kairos* and *topos* and finally reintroducing the compound concepts above.

Chora in Minecraft

The land and indeed all "matter" in Minecraft are exceedingly regular. The landscape is a measured discontinuity of unit blocks of virtual matter (voxel), which is appallingly ugly up close but which melds into a pleasing gradient when viewed from a distance.

The generation of land in Minecraft is seeded and, within computer memory and technical limits, will be generated infinitely (the so-called "far lands[2]" notwithstanding). With a few exceptions, the overwhelming majority of the landscape and world in

Minecraft is undifferentiated in that there are no singular landmarks placed within the world by the game, no explicit "locations". The experience of the landscape is similar to an aperiodic tessellation, where the player may see similar aspects to the environment within their exploration of the space, but the features of the landscape are not identical. This semi-paradoxical construction of the space results in an abstract experience of *chora*, of a space where something can occupy, but not a specific location. It is all just world/region.

When (or if) the player decides to settle down, they will carve out a specific piece of the *chora*, a region/location to hold themselves (*topos*), but it is important to note here that Minecraft does not provide that itself. *Topos* is player created. There are almost no "pre-existing" *topoi* in Minecraft (except as discussed later in this paper).

Chronos in Minecraft

The experience of time in Minecraft is also exceedingly regular. There are no seasons, so the days and nights are equally long. Minecraft is a perpetual equinox. Sunrise, sunset, noon and midnight are trivially predictable, such that when the player is above ground, there is almost no ignoring the *chronos* aspect of the game.

Kenon in Minecraft

Given that *kenon* translates almost directly into "void", it is extremely fortunate and trivial to note that the Minecraft world contains sections colloquially called "the void". Generally at this point, the non-space of the void is inaccessible due to being either blocked off by bedrock or by sheer high restrictions, but under certain conditions a player can accidentally access the void.

Kairos in Minecraft

The instances of *kairos* and *topos* in Minecraft are for the most part created by the player, particularly in the case of *kairos*. As the player interacts in the world, they are working to negate the effects of *chronos*, such that they are free to experience "right moments". Those kinds of right moments of *kairos* may expose themselves when combating enemies (or other players), or may occur in the realization of natural events such as the sunset or a rainstorm starting. In these cases, the player may not care about the "time" of sunset as a quantitative property, but rather they may wish to experience the sunset by moving to a high place in the landscape where they can view it. In other words, they know that the sunset is a good opportunity to witness beauty.

Taming *chronos* is key to this. To do this, the player will use technical skills (*techne*) to create armor, food, clocks, torches, walls and other crafts so that they do not have to care what time (*chronos*) it is. Borrowing from the similar term *flow*: "They [optimal experiences] are situations in which attention can be freely invested to achieve a person's goals, because there is no disorder to straighten out, *no threat for the self to defend against*." (Csikszentmihalyi 1990) (*Emphasis added*).

Topos in Minecraft

There is a game-provided *topos* that becomes apparent as soon as the player dies for the first time: the spawn point. There are also initially hidden default instances of *topos* in

the Minecraft world which take the form of underground dungeons. If they can be found, these dungeons are noted as concrete and relative places which hold treasure and danger, and they can be singularly identified and pulled out of the greater wildness of the world, i.e. "the spider dungeon just north and below of the spawn point". However, it takes skill and luck to reach these topoi and they are not immediately available to the player.

Beyond these examples of built-in *topoi*, the player is left to create their own, much like the creation of *kairos*. The player is left to tame the wilderness of *chora* through sheer technical prowess until it turns into a region/location (*topos*) that contains the player and all of their equipment. It should be no surprise that in many cases when left to their own devices to build whatever they choose, most players build what they would consider to be a "home", and will mark off a boundary in which they are free to act according to their own desires, whether this means torches, walls or other means.

Topos may also be found by the player in the "natural" landscape of Minecraft. For example, the player may come across a mountain range which has a particularly interesting outcropping overlooking the sea. In a moment of player choosing, the player may decide to name that outcropping in particular because they find it meaningful. That place has moved from *chora* to an instance of *topos*.

CHANGING PLAYER EXPERIENCES

Now we will discuss the player experiences in Minecraft using Rämö's terminologies and how as the player begins the game, they move from more abstract and theoretical experiences of time/space, to more concrete and wisdom-oriented experiences.

Chronochora in Minecraft

When the player initially enters the Minecraft world, they are faced with a regulated world, one which is very abstract as the player has not interacted with it. The world is undifferentiated *chora* and there is no specific *topos* visible to the player. The *chronos* is completely regular and there is no special time from the player's perspective. The player simply examines the changes in the world as they exercise their theoretical skills (*episteme*).

The player initially relies on their theoretical and –to a lesser degree- technical skills (techne) to explore the world. Thus, we say that the initial experience in Minecraft is one of *chronochora*, a theoretically driven exploration of abstract game space and abstract game time. However, this quickly comes to a close in the game as soon as night approaches, resulting in both *chronotopos* and *kairochora*, which are highly interrelated.

Chronotopos in Minecraft

As soon as night falls in Minecraft, the player must move from theoretical skills (*episteme*) into technical skills (*techne*). At night, the monsters come to kill the player and the player must have a safe place to be or they die and are spawned back at the original starting point. In short, when night comes (*chronos*), the player must create a relative space/place (*topos*) in which to contain themselves, at a minimum. This requires that the player put to use the various things they have learned during the day, mainly to

dig or build a dwelling. This requires the technical skills both in-game and without, to build the proper tools, to create doors and other "crafting" activities in the game. This experience of "making a safe place at sundown" is one of chronotopos.

Kairochora in Minecraft

Kairochora is slightly more of an activity of *phronesis* (wisdom and judgment) than chronotopos. As the player moves about the Minecraft world, they learn to recognize certain moments of importance which may expose itself in various ways.

Certain events only happen at certain times. Rainstorms may occur at random intervals. When the player places a block of water, a waterfall is created that may affect other objects. Enemies are spawned at certain times and places. The player must have the judgment to react to events in the world regardless of where they occur, to be aware of opportunities and to take advantage of them when they arise.

For example, it is a common occurrence for the player to guide their character into an arbitrary cave or wilderness area and be suddenly accosted by an enemy character. These moments are critical moments where the player must do the "right thing" (*kairos*), regardless of what the place happens to be (*chora*). In this example, *kairos* can be seen in the "battle" sense of the *Iliad* described above, having the wisdom and judgment to know what to do in a situation. This is "playing well" no matter where you are in the game's described space.

Kairotopos in Minecraft

Eventually, the player will mine and craft to a high level, exercising their technical skills and proficiency to a point where they have effectively conquered the nearby areas. By placing walls, traps and torches, and by removing and reshaping the landscape, the player makes a location which is distinct from the outer environment (*topos*). At the same time, the player frees themself from the regularity of the clock, for as the environment gets safer, there is no reason to pay attention to the chronological time (*chronos*). Instead, the player is free to pursue their own goals and moments, acting on their own judgment.

For example, the player may clear out a sufficient tract of land to eliminate all possible enemies from spawning, as well as putting up torches and then proceed to building a huge castle lit up exactly how they want. They are no longer subject to mere technical building but are free to pursue their own "right moments". This may also be true in the multi-player mode, where players work together to play and make things in tandem without being subject to the wilderness or the clock.

This aspect of kairotopos is perhaps somewhat equivalent to "the well-played game", a situation where the player has surpassed mere technical (*techne*) and theoretical (*episteme*) skills and is now using wisdom and judgment (*phronesis*) in their actions. Stretching the metaphor a bit with the definitional reservations expressed above, *kairos* might be compared to *flow* while *topos* might be compared to the pure geometric aspects of the "magic circle" coined by Huizinga. (Huizinga 1950) The player is acting in concert with the situation, exercising judgment and wisdom, within a relative space of their own devising.

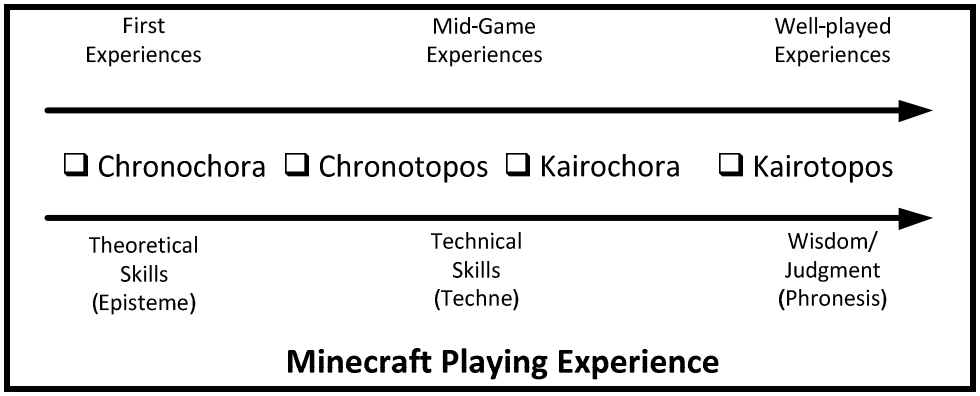

Figure 2: Changes of Player Experience

Figure 2 describes the evolution of the player experiences as they play, moving from chronochora to kairotopos.

MINECRAFT DESIGN DECISIONS

Thus, Minecraft out of the box appears to offer mainly experiences of chronochora and leaves it to the player to pursue experiences of kairotopos through the application of technical skills, eventually leaving the player with wisdom and judgment and the ability to "play well". Whether this is an intentional design decision is unclear, as it is a result mostly of *not* including certain features. Minecraft as implemented now has few constraints on behavior and few overall goals, seeming more like a playful sandbox and less like a more formal game.

By default, Minecraft players seem to act as their own level designers, creating their own game spaces in which to act. Minecraft gives the players the tools to succeed and then leaves the result up in the air, leaving players to their own judgment about whether they are winning or playing well. Again, this seems to be an instance of moving from chronochora to kairotopos as the game moves the player from theory to skills to wisdom (bringing to mind certain theories of learning and pedagogy).

Minecraft Features

Minecraft is evolving, however, whether it is due to the expectations of players or due to the intentions of the creators (notably the main creator known as Notch). As Minecraft is updated and changed, it appears to be modifying and changing the way it deals with *kairos* and *topos* (particularly *topos*), as described in the following current and future feature changes:

Dungeons. As discussed above, one of the few instances of Minecraft-provided *topos* are the existences of the dungeons within the game world (*chora*). Initially there were no dungeons, which were added in a later update and definitely qualify as a kind of *topos*.

Achievements. Achievements are a way of supplying meaningful moments, a kind of turning technical skills into a form of false wisdom. A player will either know about an achievement and will pursue it, or the player may complete the achievement accidentally, but in either case the player is implied to have gained a kind of wisdom, a kind of meaningful *praxis* (the process of applying a skill or theory). Though this kind of event

purports to have bestowed a kind of advancement on the player, the player has not experienced a true *kairos*. It is not enough to have the achievement, but to achieve true *kairos* the player must understand when it is the right time to have achieved it, and this is something only truly possible from the player's perspective. It cannot be assigned.

NPC Villages. As in the case of dungeons above, a future update to Minecraft is expected to contain villages scattered throughout the landscape, a move which will greatly change the balance of *chora* versus *topos*. Suddenly, there will be distinct space/places *(topoi*) to visit and to use as references points during exploration, competing with the urge or necessity of players to construct their own *topos*.

Bed. The player is able to construct a bed that they can place anywhere. When the player "sleeps" in the bed, two things happen. First, the player's spawn point (*topos*) is set to the location of the bed. Rather than adhering to the game-provided spawn point, the player is now free to ignore the default *topos* and create their own. Secondly, if it is nighttime, the time (*chronos*) advances to the morning (under all single player and certain multi-player conditions). This turns the bed into a tool to ignore the constraints of *chronos* and frees the player up for their own *kairos* activities.

Maps. When a player creates a map in Minecraft, the map is associated with where it was created. If the map was created at an arbitrary point in the middle of a desert, the center of the map will always be that point, even if there is nothing of note at the point. Much like the abstract spawn point (*topos*), the map always refers to a specific place in the middle, a true topographical map.

Compass. A player is able to create a compass when they have the right materials. The compass always points back to the player's original game-provided spawn point (even if they have used a bed to change their current spawn point). The compass is an artifact which underscores the existence of the abstract and game-supplied spawn point (*topos*).

Clock. With the right materials, the player is able to create a clock. Where previously the player was not rigorously aware of the time-say if the player was underground and unable to see the sky- the player can create a clock and be subject again to the experience of *chronos*.

Quests. The experience of a quest is similar to an achievement. A player decides when to enact a quest and it is up to them to complete it on their own time. Thus, the completion of a quest is not linked necessarily to the passage of *chronos*, but rather an opportunity for a moment of *kairos*. When is the right moment to complete the quest and how can it best be completed? By introducing quests, Minecraft is introducing opportunities for the creation of *kairos* moments.

The Nether. As part of an update, the Nether was introduced, a separate "land" which can be accessed purely through a gate that must be constructed and activated by the player. This is a particularly interesting concept, for if we initially considered the main "land" of Minecraft as a *chora*, this effectively also turns the main "land" of Minecraft also into a *topos*, i.e. a specific region/location. Due to the ability to refer to either the Nether or the main land in relative reference to each other, they gain the secondary meaning of *topos* while simultaneously keeping their own *chora*. Both are simultaneously a place and a space, and like the Greeks, the use of *topos* or *chora* is completely contextual in usage.

The Nether also has particular properties of interest. Whereas the main world of Minecraft has an open sky with a regular day/night cycle, the Nether has neither. It is fully enclosed on all sides with no notion of time. The Nether is timeless and has no strictly enforced *chronos* features. If the player constructs a clock and brings the clock into the Nether, the clock will spin randomly and will not work, suggesting that the basic laws of physics (and metaphysics) are somehow not applicable.

The Nether is particularly dangerous as well and a constant battle to stay alive, primarily through fighting enemies, trying not to fall and staying away from fire. This sense of constant battle and choosing a path is highly referential to the original usages of *kairos*, in the sense of using wisdom to stay alive and knowing how to do it well.

The Nether lacks any kind of built-in *topos* at all. There are no dungeons or any kind of differentiating feature that the player can refer to, other than the location of the original gate the player entered through, which acts as an effective spawn point. Unlike the typical Minecraft spawn point which is chosen by the game, the location (topos) of the Nether portal is arguably chosen by the player as they could potentially build it anywhere in the main land (there is a somewhat asymmetric spatial factor in the relationship between the main world and the Nether).

And finally, the Nether lacks the sky present in the main Minecraft world. The sky in the main world is effectively a void (*kenon*) above a certain height, a non-space/place that cannot be reached. The Nether is completely sealed in all directions and thus suggests no void (*kenon*), other than a more prosaic meaning that might refer to the empty space in a cave.

Sky World. Quite similar to the Nether, a future update of Minecraft is expected to contain a kind of opposite world, a "sky world" that is floating in a void *(kenon*) and relatively free from any enemies (fewer opportunities for *kairos*). It is unclear at this time what the behavior of clocks or other artifacts will be in the sky world. Based on this little information, it should be clear that there are many implications on the space and time experiences a player would get in such a world.

Minecraft Design Changes

It would be hard to say that Minecraft is better or worse due to these kinds of changes. Through the inevitable insertion of new artifacts and behavior, Minecraft cannot help but introduce new factors and interactions with the experiences of kairotopos and chronochora.

If "play is free movement within a more rigid structure" (Salen et al 2004), it is tempting here to say that Minecraft's initial *chronochora* makes up part of that rigid structure, i.e. the abstract and regular aspects of the space and time of the game environment. It is even more tempting to suggest that as Minecraft provides more game-provided kairotopos (NPC Villages, quests, beds, maps, etc.) it is slowly moving from a sandbox to a game, in that as the game inserts opportunities for player-created meaning (*kairos/topos*) and world constraints (*chronos/chora*) it locks the player into more rigid structures that tell the player *how* to play in a certain way.

No longer does the game offer general opportunities for player-created *kairos or topos* experiences, but rather it dictates and guides the player into game-provided specific

opportunities. In the case of the bed, for example, this allows the player to create new *topoi*, but it does it in a specific game-sanctioned way. As a counterpoint situation, a player may stumble into a Minecraft canyon that they find beautiful and construct a small chapel (*topos*). This latter action is more of a free movement of play, a player-created *topos*, instead of a game-supplied affordance.

The question here is not whether Minecraft in its current, past or future state is a true game or not (versus a sandbox, say), nor to debate a formal definition of what a game is. The implication instead seems to be that, at least in the case of Minecraft, it provides an initial basic chronochora structure and experience that leads to kairotopos opportunities and experiences for the player. As Minecraft has proceeded to add new experiences of game-sanctioned and default instances of kairotopos (and to a lesser extent, more chronochora), it may be argued that it *seems* like more of a game.

This may simply be a case of correlation versus causality and that the addition of mechanics and rules simultaneously add kairotopic artifacts as well as making it more game-like. But, this distinction should help highlight the place of these Greek terms within a game and/or sandbox. Kairos, topos, chronos and chora in their original meanings seem well suited to describing the experiences that the player undergoes in Minecraft, particularly when considering their connections to the practices of theory, skillfulness and wisdom. The design decisions made for the Minecraft game have definite impacts on the experiences of the players in the Minecraft world and the lessons learned from those decisions can be valuable when considering the design of other games.

CONCLUSION

This paper has explored the meanings of the original Greek terminology associated with space and time and taken a look at their connections to theoretical and technical skills as well as wisdom and judgment. Taking Minecraft as a specific example, when these concepts are applied to the game, we can see that game features, objects and affordances have distinct relationships to the way a player would manipulate the space/time of the game world.

There are other related areas that are of interest, particularly an exploration of Minecraft as a wilderness and/or landscape and what that means for the experience of space and time, especially as Minecraft becomes more populated with RPG inhabitants. For now, designers should be able to think about how players experience the in-game environment through the lens of these terms and perhaps make informed decisions about what they chose to include in their game. In simple terms, by thinking about how space and time are manipulated and presented in the game, designers can provide experiences that allow players to exercise their wisdom and judgment in addition to just simply technical and theoretical skills.

ENDNOTES

[1] In particular, Edward Casey's *Getting Back into Place* has a large amount of valuable information on the historic origins and meanings surrounding space, time and particularly place, though his material is primarily focused on the creation of place through the intersection of space and time.

[2] Due to technical constraints of memory storage in Minecraft and because the map is automatically generated based on the player's initial spawn point, at an extremely large distance away from the spawn point the landscape of the terrain changes radically to the point that it becomes extremely impractical to cross. Traveling to that "edge" can be done in all directions and takes a huge amount of time. So despite the Minecraft landscape being theoretically infinite, it of course runs into the physical constraints of memory at some point.

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