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Game Classification and Game Design

Construction Through Critical Analysis

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This article discusses the viability of the open-ended game classification model described in "A Multi Dimensional Typology of Games." The perspectives of such a model is discussed with emphasis on how a structural theory of games can contribute to game design and the development of formal and semiformal game design methods, such as *Game Design Patterns*.

Keywords: *game classification; game design; open-ended; Game Design Patterns*

Game Classification

Most of the time we talk about games with implicit or informal references to all possible aspects of games—be it game types, game play, or the visual artwork. Although we probably understand each aspect reasonably well on a casual level, this poses a problem if we, theorists and practitioners alike, want to communicate with at least some precision.

Comparison and Genres

There seems to be two very common ways we describe games—by comparing them or by referring to a genre. In the first case one might compare BotFighters to Snake because both are found on mobile phones. This comparison will clearly turn out to be futile because the two games have nothing else in common. Perhaps comparing BotFighters and a typical massively multiplayer online role-playing game (MMORPG), for example World of Warcraft, might yield better results because both games feature battles and avatar improvements in a persistent game world. A major difference though is that BotFighters takes place partly in the physical world, whereas in World of Warcraft, the stage is entirely virtual. Unstructured comparison lets us talk about games quite easily, but it lacks the precision needed in research or

development. Also, many game creators insist that their particular game is unique, which would mean that any comparison would eventually be inaccurate. On the other hand, which game is truly unique? A fundamental question seems to be How does one make sure that a comparison is truly descriptive?

Another common way to describe games is by reference to one or more genres. In that sense, games like World of Warcraft and Guild Wars fit nicely into the "roleplaying game" (RPG) genre. But are the games truly similar, and does *RPG* have the same meaning as in games like Neverwinter Nights and Diablo—or the "pen-and-paper," original version of Dungeons & Dragons? Incidentally Diablo was first labeled a *dark fantasy* game, so one might ask if dark fantasy is a subgenre of RPGs. Typically, genres describe completely orthogonal aspects of games, like mood and aesthetics (dark fantasy), time (real time), or focus (strategy). The creation of new genres and the interpretation of an individual genre is free, subject only to the intentions one might have by using them. Thus, it often seems that game developers make up new genres for marketing purposes, giving them enticing titles. On a noncommercial level, fans and gamers make up their own plethora of genres. Thus, we face a situation where games are classified by arbitrary, contradictory, or overlapping genres.

An Open-Ended Game Typology

These issues motivate the creation of a model for game classification presented in "A Multi Dimensional Typology of Games" (Aarseth, Smedstad, & Sunnanå, 2003). The purpose of the typology model is to identify essential differences between games and then classify them in a precise and analytical way. The typology consists of dimensions that describe specific game elements, such as the spatial representation used (perspective) or the type of game-agent evolution occurring (mutability). These dimensions are grouped in descriptive metacategories such as time and space. A key aspect of this typological model is that it is open ended, which means that individual dimensions can be modified, added, or rejected without compromising the integrity of the model as a whole. Thus, one could choose to disregard the metacategory physical space if the games examined were all purely virtual.

That being said, a couple of important aspects of the typology must be addressed and the open-endedness tested. Reflection on the strengths and weakness of the typology manifests itself on two levels. Within the typology itself on a dimension level, the individual dimensions face a continuing refinement to raise the precision of each dimension and to reflect that games as such are evolving. On the overall typology level, where the understanding of the typology's primary strengths and motivation is concerned, a claim can be made that the typology serves best as a tool for comparison—not as a solution to the genre problem as such. Furthermore, the way the dimensions of the typology are presented will have decisive impact on the relationships between games that can be inferred from the typology.

Discussions on the Dimension Level

The Aarseth et al. (2003) typology contains 16 dimensions grouped in six metacategories. A thorough discussion of all the dimensions falls outside the scope of this article, so for our purposes a discussion of the metacategory time will serve as an example of modification on the dimension level. Time comprises the dimensions pace, representation, and teleology. *Pace* describes whether a player can be active all the time (real time) or if he or she must wait his or her turn (turn based). *Representation* describes the way time is represented in the game, either reflecting the way time would pass in our physical world (mimetic) or disjointed from reality (arbitrary). *Teleology* describes if the game ends at a given time (finite) or if it in principle could go on forever (infinite). Whereas representation and teleology describe a game's relation to the rest of the world, the category pace describes internal game time. In that regard, time within games seems to be more complex than just real time or turn based. Although the distinction seems quite straightforward, at least three aspects seem problematic.

The first can be exemplified by looking at Neverwinter Nights, which would evidently classify as a real-time game. The player is free to click at any time and the avatar will respond promptly. But behind the scenes the game operates by the strictly turn-based d20-rulesystem (the core of Dungeons & Dragons, third edition), which in turns adjudicates the actual amount of actions allowed by the player. A seasoned Neverwinter Nights player will often select actions faster than the game allows them to be executed. The game will display a queue of actions selected—in a sense the experienced gamer can think a couple of turns ahead (see Figure 1). An easy rebuttal would be to say that Neverwinter Nights is actually a turn-based game. The problem with that reasoning is that Neverwinter Nights is much closer related to Diablo than to Chess because it requires focus under time pressure and dexterity with mouse and keyboard. Furthermore, from a classification point of view, it's illogical to say that the better you get at a game the more turn based it becomes.

A second problem in the distinction real time versus turn based is how to deal with games like Age of Wonders. The developers themselves call it real time–turn based, and similar games are sometimes termed *tick-based* games. In these game types, players act simultaneously and in real time until all units are moved (or the player feels he or she is done), after which the player indicates (ticks off) that he or she is ready for the next turn. When all players indicate that they are done, a new turn begins. Once again it would it seem straightforward to classify Age of Wonders as a turn-based game because the passage of turns determines the overall passage of game time. Age of Wonders does have a lot in common with turn-based strategy games like Heroes of Might and Magic as they both rely on (hopefully) profound strategies and planning many turns ahead. The problem is that if Age of Wonders is merely a turn-based game, a very important aspect is lost—the simultaneity. In that view, Age of Wonders has many commonalities with games like Age of Empires or StarCraft, which would classify as real-time games.

Figure 1
The Wizard (bottom) Has Just Launched a Fireball Toward a Demon (top).

Note: In the top left corner the interface shows four icons. These icons indicate four spells that have been chosen by the player. The wizard will cast these as fast as the game intervals allow, but for now they are queued.

The last problematic aspect of only classifying internal game time as real time or turn based is the way the mere passing of time can put pressure on a player—both in turn-based and real-time games. This kind of pressure can be on the manual dexterity of the player as was the case with Neverwinter Nights and Diablo—and it is common to most computer games whether racing cars or shooting everything that moves. Indeed, it seems tempting to let real-time games carry the meaning of time pressure. But as seen in classic games such as Blitz Chess, time pressure can play an equally important role in a turn-based game.

As a result, a more detailed view of time within games is needed. Thus, the aforementioned dimensions representation and teleology make up a new metacategory external time because they describe how time in the game relates to world outside of the game. Because time within the games themselves is far more complex than the dimension pace (real time vs. turn based) allows for, new dimensions are needed. To address the three issues raised earlier, the metacategory internal time contains three dimensions: haste, synchronicity, and interval control. *Haste* describes whether the passage of external time alters the game state. *Synchronicity* describes whether simultaneous player action is allowed. Finally, *interval control* determines whether a player has control of the game time (or time cycles within the game).

If we return to Neverwinter Nights, we are now able to describe the issues that eluded us before. In Neverwinter Nights the passage of time alters the game state, it has synchronous actions, and the player is allowed to control the game intervals.

Thus, a player can actually pause the game and select a series of actions to be taken by the in-game character and then resume the action. If we describe this in the terms of the internal time dimensions, we could say that the player uses interval control to temporarily suspend the haste of the game. This style of play might be considered cheating by some but is actually encouraged by the developers of Neverwinter Nights for novice players. By exercising interval control, not only is the haste of the game suspended but also to some extent the synchronicity—which might lead to some serious complaining if this instance of Neverwinter Nights were played by more than one person. This explains why interval control in games like Neverwinter Nights is quite rare.

The Modified Typology

The rejection of the dimension pace and the subsequent addition of new dimensions (haste, synchronicity, and interval control) witnessed earlier is an example of the work possible in an open-ended typology. Indeed, the typology as a whole has undergone a similar scrutiny and is presented here in a modified form with eight metacategories: virtual space, physical space, internal time, external time, player composition, player relation, struggle, and game state (see appendix). The following is a brief presentation of the dimensions in each metacategory.

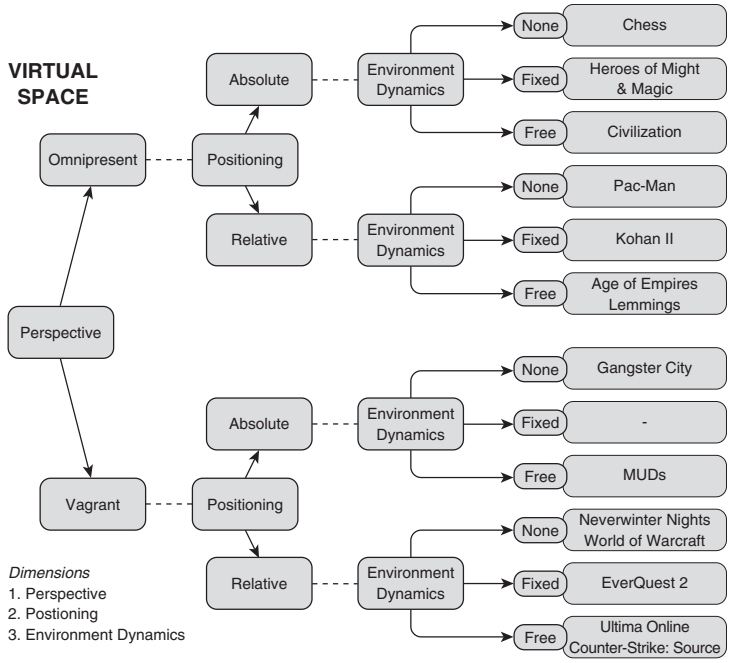
Virtual Space (Figure 2)

- Perspective describes whether the player has a complete overall view of the game space (omnipresent) or if the avatar (or game tokens) must be moved strategically (vagrant).
- Positioning describes whether the player can discern his or her position exactly as the game rules dictate it (absolute) or if he or she must relate to other objects to decide his or her position (relative).
- Environment dynamics describes whether the player is allowed to make additions or alterations to the game space (free) or if such alterations only alter the status of predetermined locations (fixed) or finally if no changes to the game space are possible (none).

The classic arcade game Pac-Man has an omnipresent perspective because all the game space is visible on the screen. If we imagine a version of Pac-Man in which the game space is too large to fit one screen and thus scrolls when the player reaches the extremities of the screen, that version of Pac-Man would have a vagrant perspective.

The position of a chess piece on the board is determined by the square on which it sits. This square is described by a number and a letter (e.g., H4) that a player would

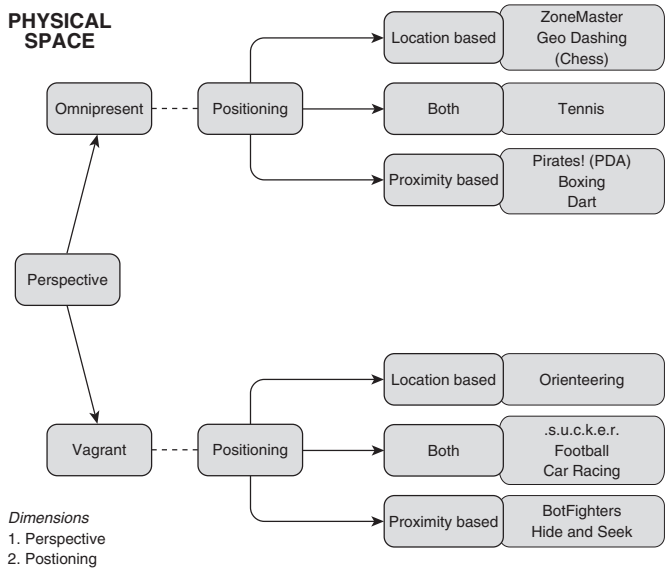
Figure 2
The Metacategory Space Containing the Dimensions Perspective, Positioning, and Environment Dynamics



easily refer to, making Chess a game with absolute positioning. The position of a player in Unreal Tournament is an entirely other matter. The position is a three-dimensional coordinate that the player has no chance of (or interest in) discerning, instead relating a position to objects in the game (e.g., "He's hiding on top of the second box to your left"), thus making Unreal Tournament a game with relative positioning.

A game like Lemmings lets the player alter the game environment freely, whereas others like Ultima Online or Age of Empires allow the player to add content (e.g., in the form of houses) to the game. Games like these are classified as having a free environmental dynamic. Some games allow alterations at predefined positions, such as specified sites for city building in Kohan II or shooting out windows for passage in games like Half-Life or Resident Evil 4. These games have a fixed environmental dynamic. Finally, games such as Tetris or Chess allow no changes to the game environment and thus have no environmental dynamics.

Figure 3
The Metacategory Physical Space Containing the Dimensions Perspective and Positioning

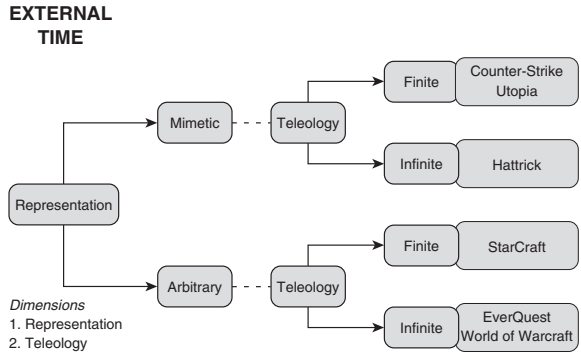


Physical Space (Figure 3)

- Perspective describes whether the player is able to see the entire physical game area (omnipresent) or if movement is required (vagrant).
- Positioning describes whether the player's position is determined relative to his or her location in the physical world (location based) or if it is determined relative to other game agents (proximity based) or finally if both factors combined determine the player position (both).

The game BotFighters spans over miles of physical space, which makes it impossible for the player to see the game area, whereas games like Badminton allow the player full view of the playing field. Thus, BotFighters has a vagrant perspective while Badminton has an omnipresent perspective. The prototype game Pirates! for PDAs (Björk, Falk, Hansson, & Ljungstrand, 2001) has a rather curious spatial classification. The players move within in a relatively small physical area that has WiFi antennae at the edges. The display on the PDA shows only a small part of the game space (a part of the ocean with islands), thus the player has to move around to discover islands or other players on the screen—making the virtual perspective vagrant.

Figure 4
The Metacategory External Time Containing the Dimensions Representation and Teleology



Meanwhile, the players can see each other walk around in real life and the physical boundaries of the game space quite easily—making the physical space perspective omnipresent.

Whereas games like BotFighters or hide and seek rely on the relative positions of the players (making them proximity based), games like GeoDashing or Orienteering rely entirely on the player's location in the world (making it location based). Other games rely on both forms of positioning, thus it is important for a football player both to stay inside the pitch but also not be "off-side" (relative to the opposing players) for instance.

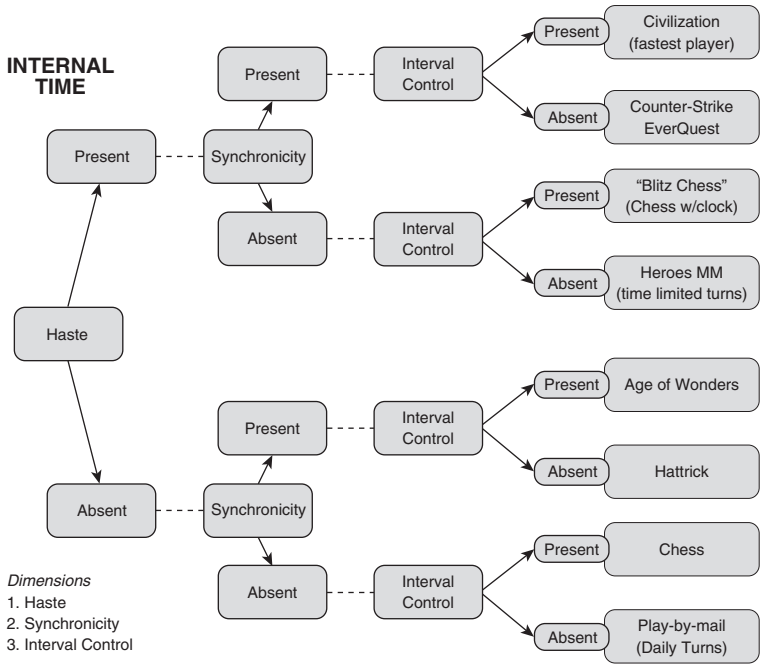
External Time (Figure 4)

- Teleology describes if the game ends at a given time (finite) or if it in principle could go on forever (infinite).
- Representation describes they way time is represented in the game, either reflecting the way time would pass in our physical world (mimetic) or disjointed from reality (arbitrary).

Games like Chess and Half-Life end at given points in time (e.g., when won or completed) and thus have finite teleology. Other games like World of Warcraft or EverQuest (indeed most MMORPGs) have no fixed time of termination and players cannot "win" them, which means that they have an infinite teleology.

The time flow in games like Counter-Strike:Source or Rainbow Six reflect our expectations of how long actions would take in real life, thus we classify these games as having a mimetic time representation. Games like StarCraft feature base building

Figure 5
The Metacategory Internal Time Containing the Dimensions Haste, Synchronicity, and Interval Control



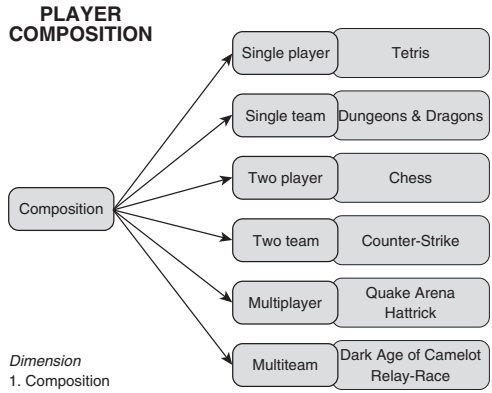
at a pace that defies what is possible in real life, which means that they classify as having an arbitrary time representation.

Internal Time (Figure 5)

- Haste describes whether the mere passing of real time alters the game state (present) or not (absent).
- Synchronicity describes whether game agents can act at the same time (present) or if they take turns (absent).
- Interval control describes whether the players decide when the next game cycle will commence (present) or if such control is denied (absent).

The game Civilization (fastest player) denotes a play style where the players act simultaneously until one player ends his or her turn, leaving the other players a fixed amount of time to act before next turn commences.

Figure 6
The Metacategory Player Composition Containing the Dimension Composition



The three dimensions of internal time are described in detail earlier (see Discussions on the Dimension Level).

Player Composition (Figure 6)

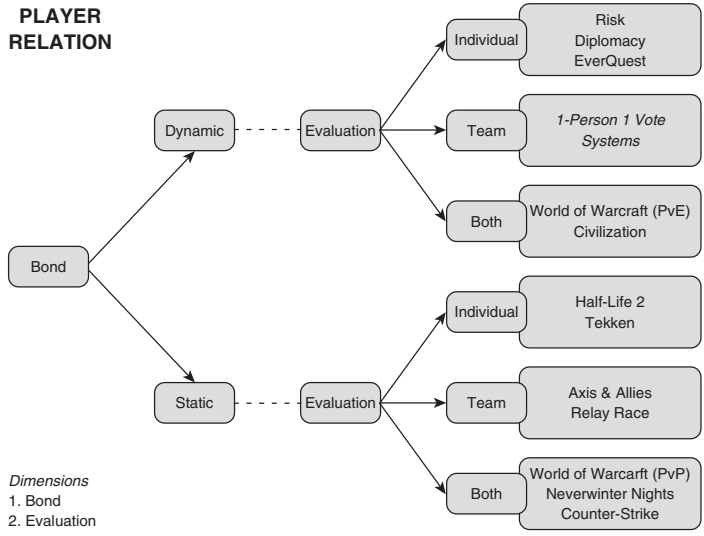
- Composition describes the how the players in a game are organized (single player, single team, two player, two team, multiplayer, multiteam).

Games like Pac-Man and Half-Life have only one player (single player), whereas the group of players gathered around the table playing Dungeons & Dragons makes up one team (single team). Tennis is played in singles matches (two player) or in doubles matches (two team). Finally, the online manager game Hattrick features lots of players competing against each other (multiplayer), whereas the online game Utopia has numerous islands (each with multiple allied kingdoms) waging wars against each other (multiteam).

Player Relation (Figure 7)

- Bond describes whether the relation between players can change during play (dynamic) or not (static).
- Evaluation describes how the players or the outcome of the game is quantified. The individual player can be evaluated (individual), the players can be evaluated as a team (team), or they can be evaluated both as a team and as individual players (both).

Figure 7
The Metacategory Player Relation Containing the Dimensions Bond and Evaluation



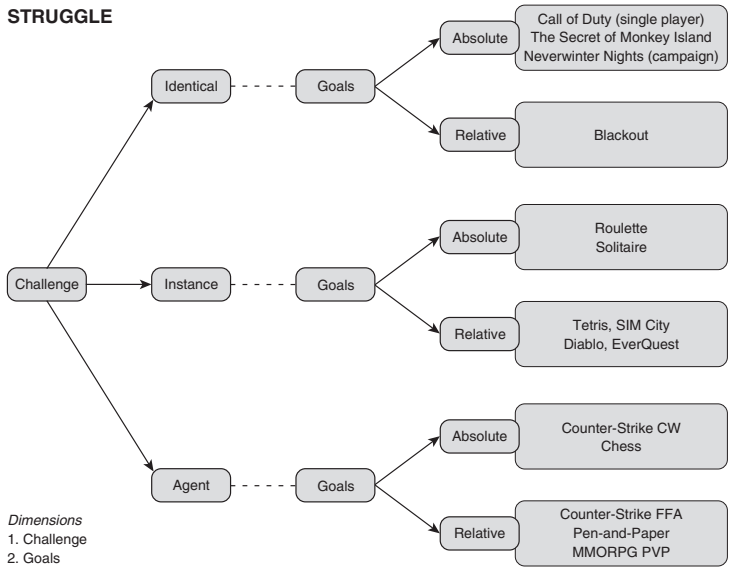
In a game of Risk or Ludo the players often form alliances to defeat a player who has taken the lead, which in turn means that a new leader arises, thus making the alliances change, which means that the bond between the players is dynamic. Games like Axis & Allies or Counter-Strike have predefined which teams are in conflict, and this structure does not change during the course of play, making the bond static.

In a game of Risk only one player can prevail, which means that the evaluation is individual. In Football it's the performance of each team that is evaluated (i.e., the amount of goals), which means the game has team evaluation. In Neverwinter Nights each player is awarded an individual amount of experiences points, whereas the whole team gets to share rewards from completing quests, thus the game makes use of both types of evaluation.

Struggle (Figure 8)

- Challenge describes three principal ways a game can provide opposition. It can come in the form of predefined challenges, which are exactly the same each time the game is played (identical). It can come from a predefined framework that is varied by mathematical randomness (instance). Finally, opposition can come from game agents whose actions are autonomous (agent).

Figure 8
The Metacategory Struggle Containing the Dimensions Challenge and Goals



- Goals describe if the game has an exact and unchanging victory conditions (absolute) or if the goals are subjective to the unique occurrences in a specific game or the players' interpretations (relative).

In The Secret of Monkey Island you guide your avatar through a series of puzzles and encounters that are exactly the same from game to game, making the challenge identical. In games like Diablo, the dungeons resemble each other from game session to game session, but they are not entirely alike. One monster type may be different, and the spatial layout of each dungeon will differ. Thus, the challenge is different (but based on the same framework) from each game instance to the next. Finally, some games rely on the challenge that comes from facing one or more strategic agents capable of winning or losing. This is the kind of challenge you face in games like Counter-Strike or Civilization, which classify as having an adversarial challenge structure. It is worth mentioning that such adversaries need not be unpredictable—indeed both humans and computers can behave exactly like one expects. The point is that their actions are potentially unpredictable, making a part of the challenge to figure what the opposition is doing.

The goal of Chess is one—capture the adversary's king. Likewise, a scenario in Heroes of Might and Magic might have the occupation of a specific city as its focus. Goals like these are absolute because attaining them will always produce an outcome that is quantifiable without factoring in the subjective player(s) playing the game or the specific events of the unique game session. In other games, the result of accomplishing a goal will not necessarily mean the same from game to game—or even from player to player. The goal of Tetris could be to get as far as possible, to beat a high score, or just to improve from the previous game. Goals like these we call relative goals. A game can feature both types of goals, in which case the game in a classification context is considered to be more than one game. Consider Football, which would normally classify as a game with relative goals because winning requires that you score one goal more than your opponent. Sometimes a draw is not an acceptable outcome (e.g., in cup tournaments) and an absolute goal is introduced—"The Golden Goal." Because scoring a goal will now produce certain victory, this mode of play would classify as a game in its own right (with an absolute goal), which makes sense because the actual game play is much different from "normal" football.

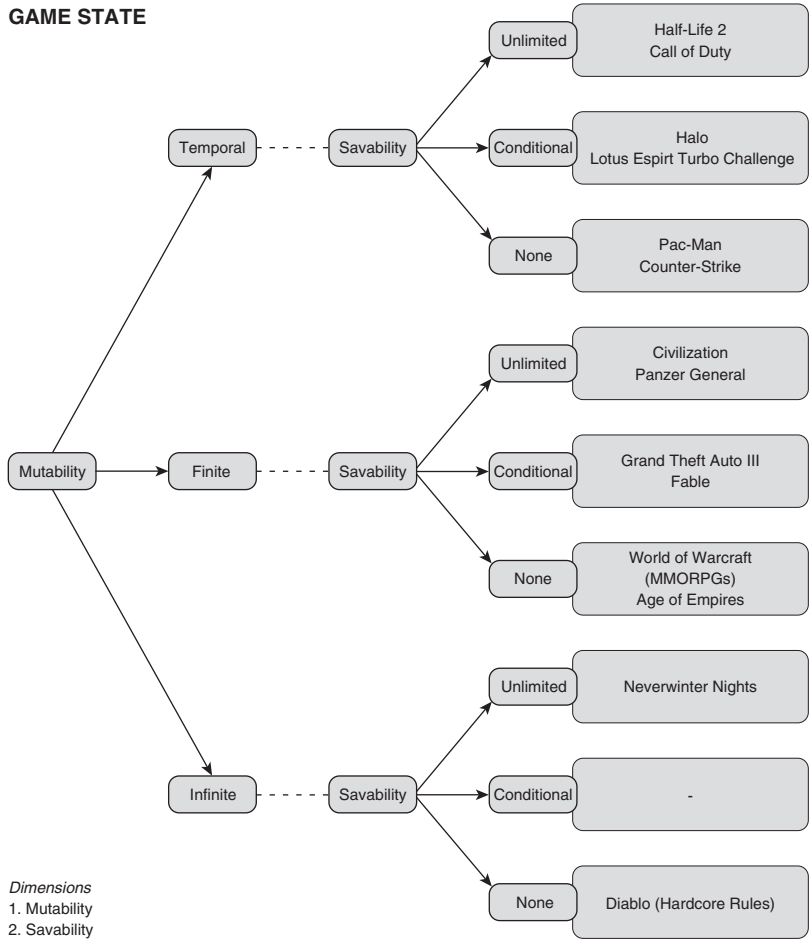
In most MMORPGs we often encounter quests, which state a goal to be attained. These do not however constitute absolute goals because the outcome of the quest is not quantifiable without factoring in the subjective player(s) playing the game or the specific events of the game session. Thus, a player can choose to do a quest or not, and the goals fulfilled by completing the quest could be many (getting further, hoping for a particular item drop, helping a friend, etc.) and not discernible without taking the subjective player into account.

Game State (Figure 9)

- Mutability describes how changes in the game state affect the game agents (be they player or computer controlled). The state changes can be passing (temporal), last throughout the game (finite), or span beyond multiple game instances (infinite)
- Savability describes whether the game state can be saved and restored at the player's discretion (unlimited), if this is only allowed in certain circumstances (conditional), or if it is impossible to save the game state (none).

The classic role reversal in Pac-Man, when a "pill" is eaten and the ghosts change from predators to prey, is what would classify as temporary mutability—because the change is time limited. In other games, some of the evolution spans the entire game—for example the scientific achievements in Civilization or the experience leveling in World of Warcraft. In some games the evolution spans over more than one game—thus a character in Neverwinter Nights can play and evolve in many different modules, and a player can continue to evolve skills and abilities in Diablo by starting the game over with the same character. Finally, some games (e.g., Chess) have no mutability.

Figure 9
The Metacategory Game State Containing the Dimensions Mutability and Savability



Discussions on the Typology Level

One of the main goals of the Aarseth et al. (2003) typology is to solve the problem with the use of arbitrary genres, but one might ask if the typology does this successfully and if a solution to the genre problem should be the main focus at all. First of all,

the need for precise terminology and strictly defined dimensions will most often mean that the dimension labels in the typology will be less intuitive. Furthermore, aesthetic and subjective preferences are areas that the typology obviously doesn't engage.

Instead, the primary strength of the typology model is that it lets us compare games easily and precisely. If we look at the games Diablo and World of Warcraft we will see that they classify as almost totally identical with the exception of the dimensions describing player structure. Both games feature leveling and instanced opponents, whereas neither allows the player to make changes to the game world. This aspect of World of Warcraft is exactly what makes it different from a game like Ultima Online in terms of the typology. So by comparing likenesses and differences we gain a tremendous amount of information about what makes the individual games what they are. Even if two games classify as being identical we will have gained useful information. If we compare the games Counter-Strike and Call of Duty (multiplayer search and destroy missions) we will find that they are identical in each dimension of the typology (see Figure 10). Even though most people playing the two games would probably agree that were very similar, they would probably also be able to say which game they preferred. Thus, some might like the more slow-paced and gritty "World War II Shooter" Call of Duty, whereas others might prefer the fast-paced Counter-Strike. This means that using the typology model also helps us identify when differences between games are of a more qualitative nature—and thus merit other means of investigation.

Another important aspect of the process of discovering the similarities and dissimilarities between games is the way we represent the metacategories and dimensions of the typology. Listing the dimensions of the internal time (see Figure 11) in different ways shows us very different relationships between games and their classification in the typology. In the first case (A) we see a divide between action-packed games with high adrenaline and the more contemplative games of in-depth strategy. The second case (B) shows us that allowing a player to control the game interval will probably rule out it ever being a successful MMO.

Game Classification and Game Design

The following section discusses the perspectives of the typology in a game design context, asking the question What can a structural theory of games contribute to game design? Compared to one of the recent contributions to the field of game design, *Game Design Pattern*, a certain affinity both in the theoretical framework but also in the strengths they share with regards to game design seems apparent.

The ability to compare games and communicate with precision seems to be of evident use in the game design process, but it is also a valuable tool in the process of making or adjusting the formal or semiformal design tools themselves. If we compare the game component framework (Björk & Holopainen, 2004) that is the basis of the formulation of the design patterns, we can see that the terminology used

Figure 10
Compared Dimension by Dimension We See That Call of Duty (Search and Destroy) and Counter-Strike Are Classified as Identical in the Typology

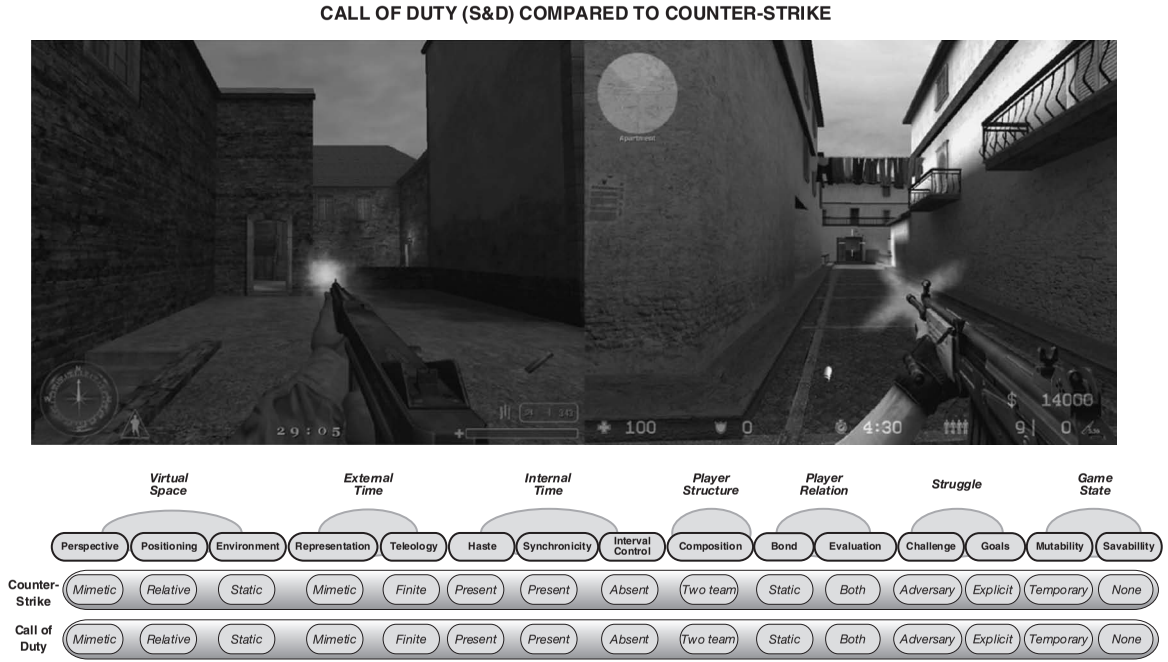
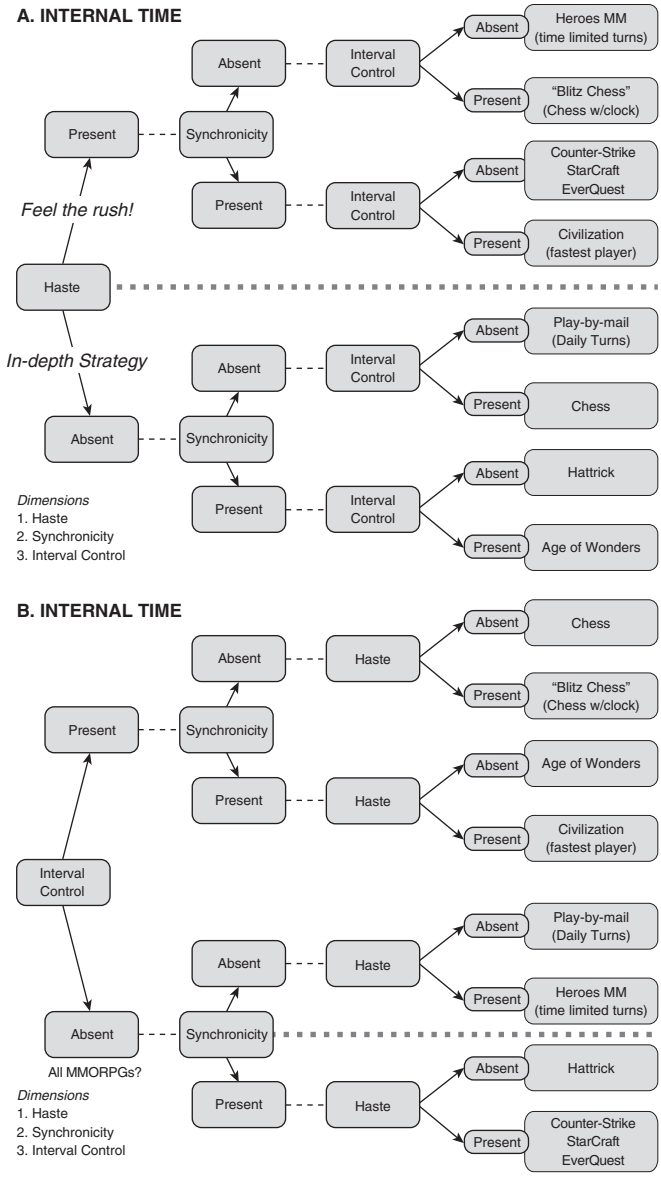


Figure 11
Sorting the Dimensions of a Metacategory Will Have a Profound Impact on the Likenesses or Relations Between Games We Might Find



closely resembles that of the typology—but also that the typology could be used to improve the framework and the individual patterns. For example, the single-player and multiplayer patterns could be refined to also describe two-player, two-team, single-team, and multiteam aspects of games represented in the typology.

Similarly, many of the advantages highlighted in connection to the use of *Game Design Patterns* seem to hold equally true for the typology model. One of the benefits of the use of *Game Design Patterns* is that having a listing of game concepts provides the designer with a knowledge base. The same can be said of having a precise way of identifying and comparing key elements of the design with existing games using the typology. In the process of analyzing which patterns and subpatterns to be used in a design or their consequences for the game, a broader base of comparison would seem helpful. Also it could work the other way around, helping the designer analyze a flaw in an existing game and take the necessary steps to avoid making the same mistake in the development of a new game. Finally, the typology could establish whether a game was truly unique or not.

So why are the typology model and the *Game Design Patterns* so closely related? And what are the key differences? The ability to communicate with precision is the foundation that both game research and game design depend on. One of the most basic "design tools" is an internal understanding of the problems or possibilities at hand. Björk and Holopainen (2004) used the analogy of *Game Design Patterns* being a language. In that sense, the likeness and difference with regards to the typology can be described by saying that the typology is the grammar of the language of games—and thus the grammar in the language of *Game Design Patterns.*

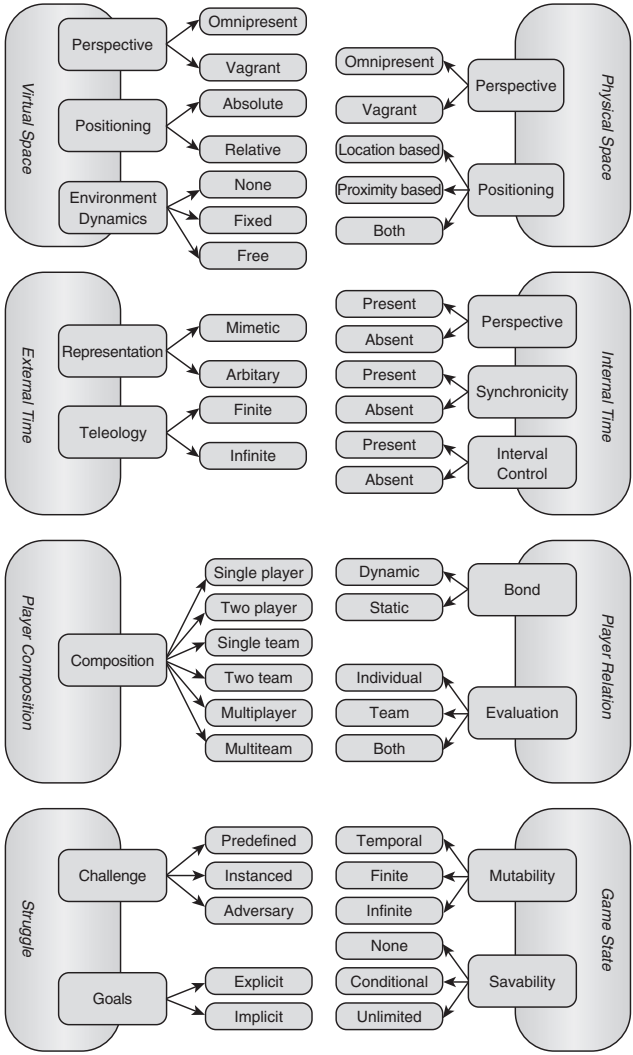
Perspectives and Further Work

Because the open-endedness of the typology model works—as we witnessed by the process of refining the internal and external time categories—it seems fair to assume that iterations of the refinement process will go on as long as games are made and played. Hopefully this article will inspire the constructive criticism needed to increase the precision of the model.

If we stick to the analogy of languages, one could hope that the typology model could serve as the grammar that would make the communication between different fields of science much easier. Could sociologists, hypothetically speaking, use the typology to find out which fundamental game mechanics or *Game Design Patterns* are pervasive in games preferred by, for instance, male gamers over the age of 40? Or could the typology shed some light on what (if anything) are the constituents of a casual game?

Thus, one of the issues that needs to be addressed is how to make and maintain a knowledge base of classified games that is accessible to a broader field of researchers and developers—while allowing the continuing discussion and refinement of our understanding of the basic components of games.

Appendix
Overview of the Typology Model



Dimensions

1. Virtual Perspective
2. Virtual Positioning
3. Environment Dynamics
4. Physical Perspective
5. Physical Positioning
6. Representation
7. Teleology
8. Haste
9. Synchronicity
10. Interval control
11. Composition
12. Stability
13. Evaluation
14. Challenge
15. Goals
16. Mutability
17. Savability

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