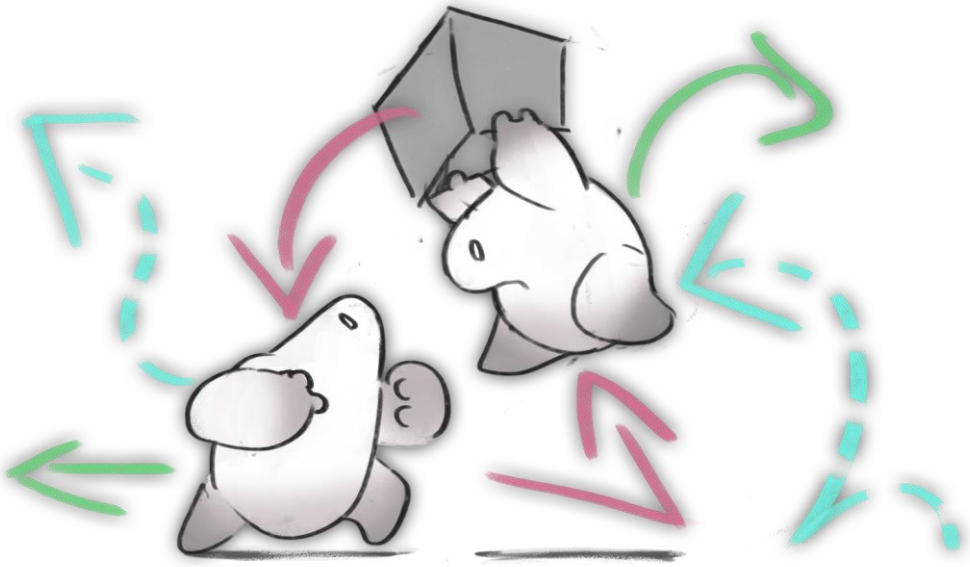
How can Competition in Opposition games be made more accessible?



AUQUIER JEAN - 2017

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Introduction:

In the animal kingdom, the desire to measure oneself against one another is a ubiquitous primary instinct and humans are no exception. It allows one to explore and fulfill oneself while also learning from others. This competitive desire takes many forms, from the most benign to the most violent manifestations. Ever since the dawn of time, this desire has led to a need to set up "neutral grounds", environments conducive to confrontation between two individuals. Through predefined rules, it becomes possible to objectively measure one individual against another in a specific setting. This is the “game”, by its definition of regulated activity. By the virtual aspect of its rules, it becomes accepted in its quality of simulation, of pretense that is both inspired by the real and allows to prepare for it.
Throughout history, it has taken many forms: sports, training, board games and other media that have evolved with their time to serve a purpose. Nowadays the relationship of games to society has changed in that it has become more than a simple scope of simulation, but is above all an entertainment without losing its quality of teaching tool. And it is opposition games that kept most of this desire of measuring oneself against another.

Opposition games are defined here as all multiplayer games where a player's success depends not only on his own actions in the game but also on those of his opponents. This exclude confrontation through the comparison of performances although we can find meta-game interactions between players in such set-ups.

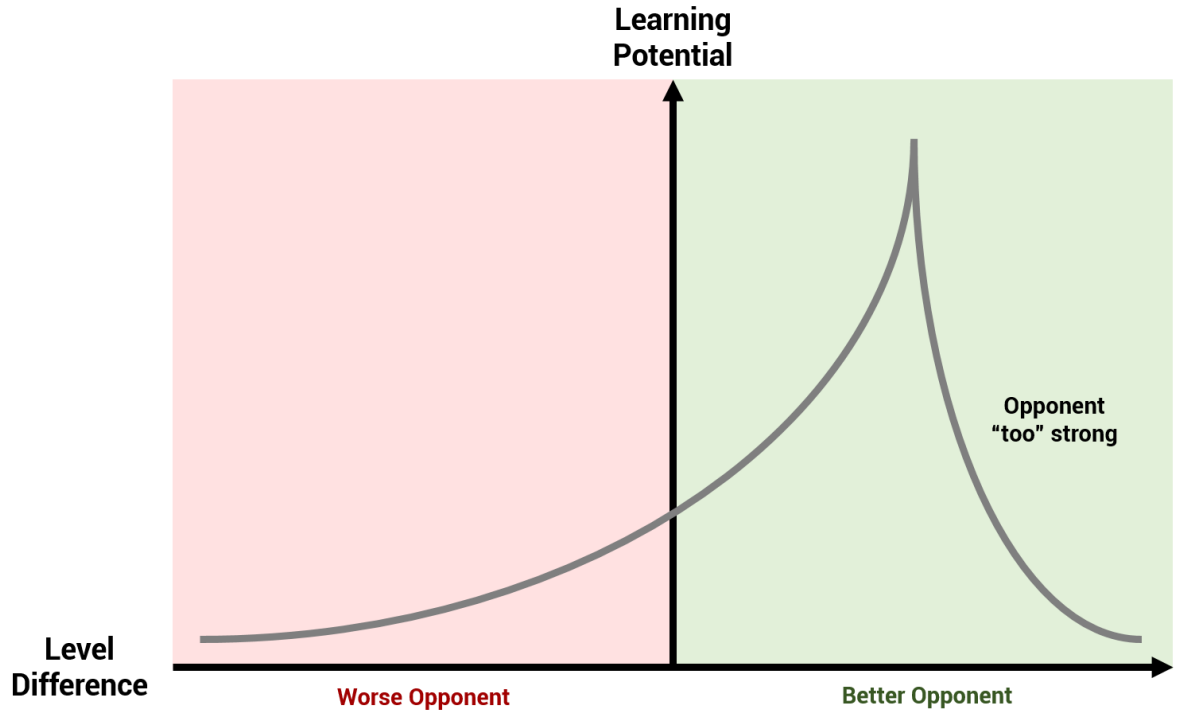
In contrast to opposition games, running (here the 100 meters sprint) is a performance based game. This is because in terms of rules, it makes no difference if the player runs alone or with others as there are no interactions between the players. In practice, the positive effect on runners of having a player ahead has long been known, but these are meta-game interactions.

This thesis specifically targets competition in opposition games to provide a setting. Here, competition isn't about a specific level or about earning money out of playing, it is about the competitive state of mind: the desire to measure oneself against others and to take the upper hand. Such a mentality ensures that the activity and therefore its rules and dynamics are taken seriously, which is necessary for the birth of meta-game dynamics (for instance opponent reading, solvency of the game, etc.) inherent to any competitive environment (and which will be widely discussed in this thesis).
The absence of such a predicate can result in the collapse of the simulation attempt, the rules becoming mere restrictions when their dynamics are ignored. This deconstruction phenomenon is present in any game the moment the player decides to go against the dynamics formed by its rules, but it is particularly striking in the opposition games, where the rules feel especially arbitrary since their main concern is to allow the players to measure against one another.

We must also address the elitist aspect of the genre. The competitive mentality is within the reach of the first comer and does not invite to elitism in itself, but its practice leads to a desire to progress within the game which can lead the player to run into several obstacles more or less important that can strongly undermine his motivation.
The most common of these obstacles is the lack of accessibility of the competitive dynamics of the game. The genre of fighting games is a perfect representative. While these games can be perfectly played and enjoyed in a non-competitive setting (some games like the *Super Smash Bros.* series and *Tekken* having even earned a reputation of being very enjoyable games for casual players), taking into account their competitive dynamics (dynamics of *Rock-Paper-Scissors*, risks taking, punishment ...) make their competitive practice diametrically opposed to that observed at a casual level. Paradoxically, competitive players may find it difficult to compete with more casual players. This is due to the fact that a competitive player has trouble understanding the actions of a casual player because such an opponent does not play with the same reflection process.
In the same way, such a shift in the way of playing the game can be found within the competitive environment because of advanced notion whose mastery and understanding (or not) can split the community in two. For example in *Super Smash Bros. Melee* (2001), many advanced techniques can significantly increase the mobility of characters. Therefore, although two players can have an understanding of the competitive dynamics of the game, they may still play on different levels (in *Super Smash Bros. Melee*, through the understanding and ability to use or (not) advanced movement options).

In Super Smash Bros. Melee, the "Wavedash" is a movement technique that consists of jumping and immediately making an air dodge into the ground. The velocity of the air dodge is preserved which allows the character to move by sliding on the ground. The use of this technique is fundamental at high level for the possibilities it opens.

While these problems are common without being inherent to opposition games, the will to progress that comes with the competitive state of mind garners a strange paradox which is inseparable from the competitive mindset.
Indeed, it is known that one progresses much faster when playing against someone better than oneself. By watching someone better play, one can see their own flaws and realize aspects of the game that they did not exploit. This is self-evident: someone better at the game is so because he has strengths that one does not have himself, because he has filled the defects he had or because he learnt to exploit defects present in his opponents. Conversely, one learns less by playing against worse players as it is possible to beat such opponents with less effort and by capitalizing on one's own strengths and their mistakes. And if playing against people of one's level can motivate one to progress and push for concentration (which promotes learning), one does not progress as easily as by playing against someone better than oneself. Moreover, by playing against players of oneself level or lower levels, it is possible to contract bad habits that exploit the weaknesses that have such opponents but not necessarily higher level players.
Therefore, in order to progress most efficiently, one wants to play against better than oneself and not against worse. But if one player is better, the other is necessarily worse, and hence everyone shall not be satisfied. As a result, the lower level a player is, the more difficulties he will have in finding training partners that will allow him to progress quickly, thus cutting him partially from access to the knowledge discovered around the game.



Although one learns better against a stronger opponent, one must not overdo it. An opponent "too" strong can simply crush a player without really giving him the opportunity to learn from the game.

Having to deal with such difficulties, competition centered opposition games draw strong communities proud of having to overcome or having already overcome these obstacles to play the game they enjoy. This can be a hindrance to addressing these obstacles. By targeting these communities - rightly - when creating a competitive opposition game, the developers are not interested in the players suffering from such problems (basically low-level players, and therefore also new players of the genre) and worse, lean towards well-established and often conservative insider communities.

Despite all this, the landscape of competitively practiced games has changed little by little in the last ten years.
This is particularly due to the “casualization” wave initiated in the early 2000s by the rise in strength of mobile gaming and the Wii (2006). This process aimed to open up the video games productions to all demographic targets and has notably led to strong accessibility initiatives that have gradually spread in the videogame landscape. While such approaches have been widely decried by established player communities in the beginning, it has been well proven and is now gaining up the competitive gaming world. It is now commonly accepted that a competitive game cannot generally only survive with its community of *aficionados* and must therefore favor the increase of its potential number of consumers by making itself accessible to a wider demographic target. Similarly, communities (both of players and developers) have since learned that simplicity is opposed to complexity and not to depth (i.e. the complexity not of game mechanics, but of the dynamics that are born and how they interact with each other).

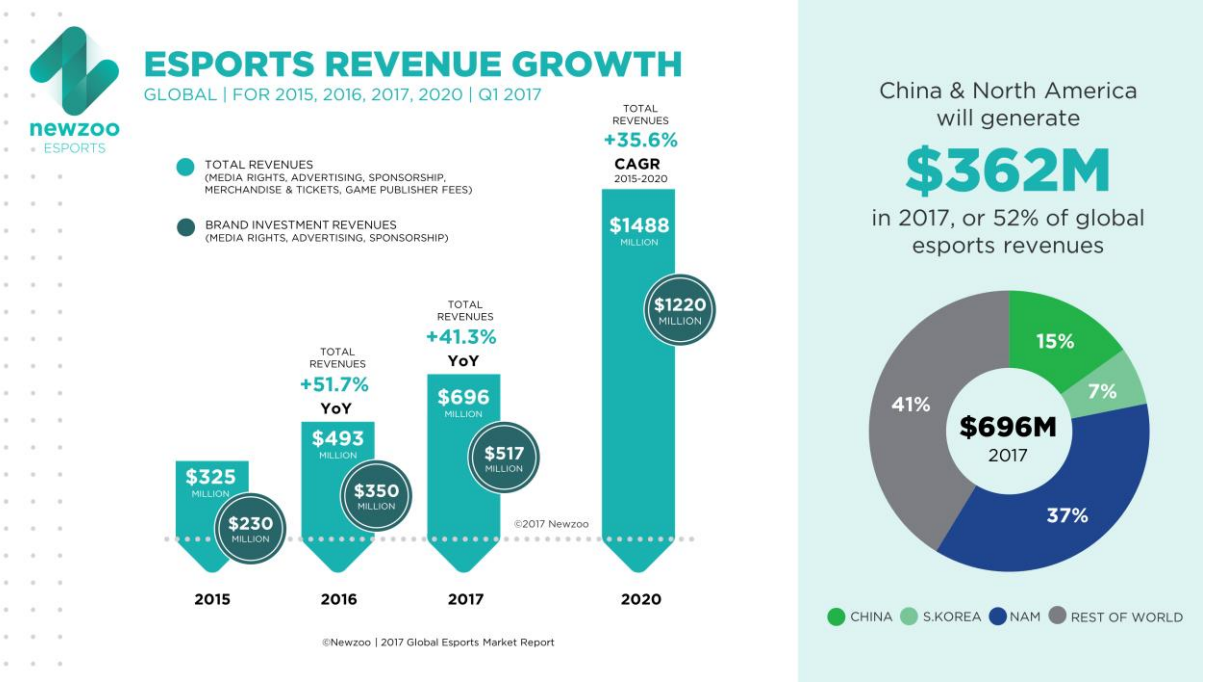
The ads for the Wii are centered on the "multi-generational" aspect of the console, its ability to reunite the family.

This approach partially addresses the problem of differences in the practice of a game between casual and competitive level. This is through a simplification of the main mechanics and a better education of novice players through the game.
The success of games like *Overwatch* (2016), *Hearthstone* (2014) or *Super Smash Bros. for Nintendo 3DS / Wii U* (2014) are excellent examples. Through intuitive and immediately enjoyable Gameplays, these games have built large communities of players, without losing any depth on the competitive level, thus allowing these games to be deepened in their practice and therefore sustainable.

In addition, the increase and facilitation of the means of communication makes it possible to partially bypass the paradox of the player seeking to progress, by providing him with other means of access to the knowledge related to the game as well as facilitating the observation of better players. Similarly, the possibility to play online and the matchmaking systems[1] have offered solutions that make it easier for players to train. Therefore, the bigger the community of a game, the more visibility it gives to its best players and to the knowledge they hold, fostering overall community improvement.

[1] Set of methods and techniques allowing one to compete against players of similar level. The most well-known is the Elo ranking system which rates players by a point value that increases when they win and drops when they lose. Lost or earned points are all the more important as one has "surprised the system" (by winning against a stronger opponent or losing against a weaker one).

With the rise of e-sport (i.e. video-game competition) in recent years, developers have become increasingly aware of the interests that popular competitive confrontation games hold: a long-term exposure to the public once popularity is gained and games that pay a lot and for long at a lower cost. It is therefore necessary to understand how to make such games popular in order to reap the benefits they sow. While some guidelines are already well known (the importance of marketing, relying on strong licenses and pre-existing communities), the importance of opening up to the widest possible target by simplifying the mechanics and making the games as accessible as possible is increasingly put forward.



One of the many studies of the site Newzoo on the evolution of the economic weight of e-sport.

This is an approach that the publisher Blizzard has understood well and already put into practice. Thus, Hearthstone comfortably and durably took the vacant place of online card games by seducing occasional players, fans of the universe of *Warcraft* and veteran card game players through an accessible, intuitive and engaging gameplay. While Heroes of the Storm (2015) has since then lost momentum, it has still managed to find a place in the very crowded MOBA[2] world in which *League of Legends* (2009) and *Defense of the Ancient 2* (2013) seemed untouchable. This was done by offering an original Gameplay and daring to put away many mechanics inherited from the first *Defense of the Ancient* that were not necessary to the genre; thus taking the opposite of the market leaders, more difficult to access. Finally, *Overwatch* swept the market of the First Person Shooters, also shining by its ease of access and its intuitiveness.

Apart from Blizzard, we can also mention *Street Fighter V* (2016) who opposed its predecessor *Street Fighter IV* (2008, having received newer versions until 2014) by greatly simplifying the access to advanced techniques. While this was widely criticized by the community of the *Street Fighter* series at the beginning of the game, such changes have since become accepted and are now mostly seen in a good eye.

[2] For *Multiplayer Online Battle Arena*.

Therefore, this thesis will aim to understand this approach of casualization applied to competitive opposition games (we will talk about the "competition accessibility approach"), in its foundations and its interests; as well as to theorize its application in order to be able to put it into practice, but also to push it further than it appears today in the market.

In order to do this, within the first part we will discuss the competitive dynamics of opposition games and define the competition accessibility approach around these dynamics.
In the second part, we will look at case studies to put into perspective the dynamics discussed as well as to realize how the accessibility approach is applied today, and what remains to be done.
Finally, in a third part, the accessibility approach will be observed under other points of view, as well as moderated.

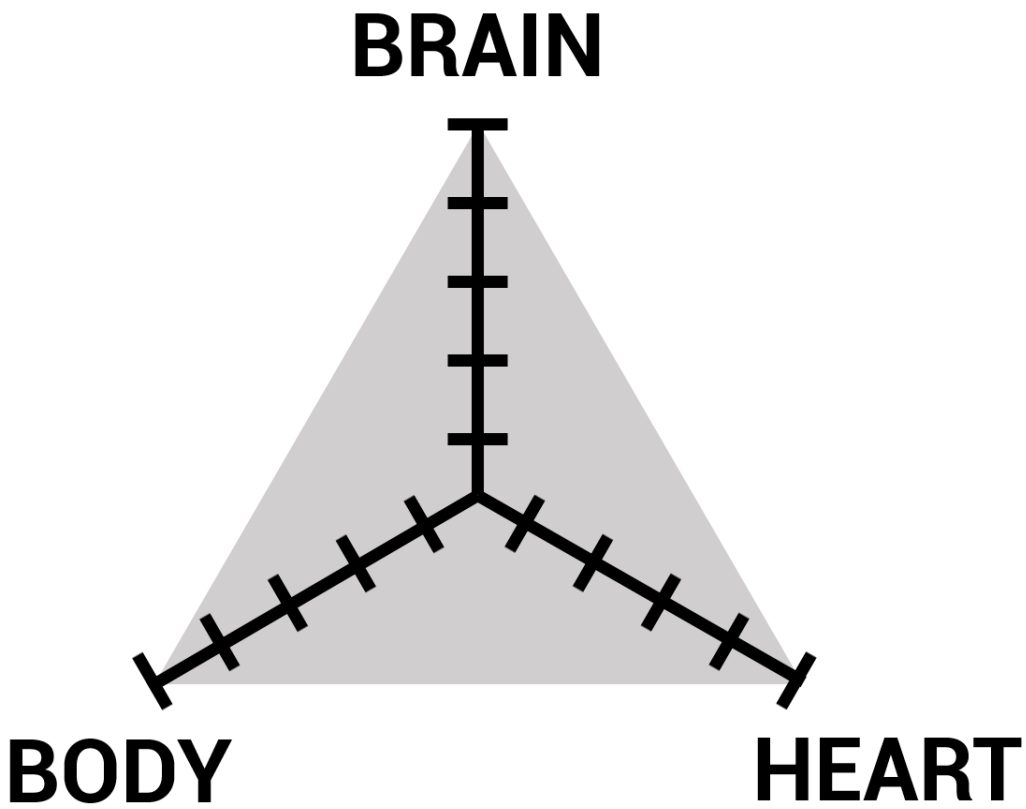
I – Competitive Dynamics of Opposition Games

1.1 – Preemptive Definitions

By the very nature of the competitive spirit (which pushes the players to always improve and deepen their understanding of a game), opposition games have many dynamics and concepts that can be quite obscure to the uninitiated.

Before addressing the theory of the competition accessibility approach, it is necessary to define these notions.

Let's start with the most generalist ones. The fighting games genre has a nice metaphor that divides the practice and its players by differentiating poles of competences: the Body, the Heart and the Spirit. The Body represents the physical capacity: to have good reflex, dexterity, to be able to execute quickly and consistently a technique. The Mind represents the knowledge of the game, knowing the optimal solution to a game situation, knowing all the options available to the opponent at any time. Finally, the Heart represents the ability to understand the opponent, to put himself in his place and anticipate his next move in order to be able to counter it.
This model is basic yet universal and it gives us a good base to start analyzing.



The model is gradient, one can lean towards the body and be less focused on the heart, but no one is an absolute in a single category.

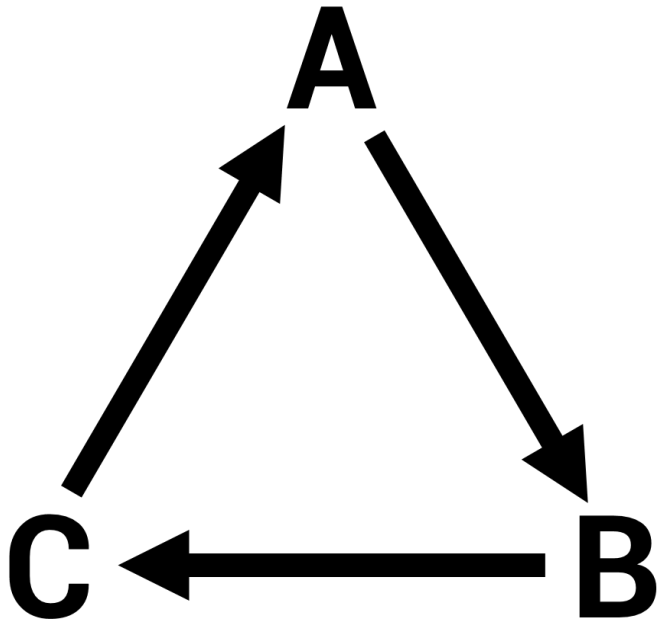
If opposition games require by definition interactions between players, it happens more than usual that these games present (and more often than not) situations where a player is tested on his own ability, without any interactions from the other players. Aiming well in a shooter game, pressing a button at the right timing to chain hit in a fighting game, knowing the right solution to a specific problem, etc. So many situations where other players do not have their words to say and where only the player concerned is put in front of his own capabilities. Pure antithesis of opposition games because situations where the player plays alone, these workshops of skills can test the knowledge of the player and more often his "physical" skills. We talk about Uncontested Skills (by the other players) and these skills results from pure training.

When such skills are physical, they can be tested and gauged completely outside the scope of the game and can also be reused as such in other settings. In the same way, these physical uncontested skills can be trained outside the limits of the game and often have to be trained that way so that the player is the most effective possible in his progression. Finally, these skills are limited by nature (some are born with a taller body than most, etc.), but also on more theoretical level (we can assume no human can run as fast as the speed of sound, etc.).
To be more specific, it is the speed and the dexterity of the fingers for the video games, the physical performance on different aspects for the sports, but also the speed of the reflexes or the capacity of memorization.
A term often used in opposition games where physical uncontested skills predominate is the "execution" skill and this is the one we will use to designate this skill category. The games from which this appellation of execution comes from (mainly fighting games) are generally based on advanced techniques that can only be used in game if the player is able to execute them sufficiently consistently and quickly enough. Being able to use these techniques is often vital in these games, so their execution is at the center of the players' attention.

In fighting games, the controller is an important issue related to execution. If the Arcade Stick is seen as the "serious" controller as it is optimized for these games, many high-level players have already proven that it was not a determining factor by showing results with various other controllers (like French Street Fighter player Olivier "Luffy" Hay using a PlayStation 1 controller). This same problem can be found with PC shooting games with questions around the mouse, the keyboard or even the headphones.

While the execution skills can be completely removed from the context of the game, the knowledge that a player has on a game is necessarily related to it, although some may collapse from one game to another within a common genre. This knowledge is both an awareness and an understanding of the rules of the game and the different elements that consist of it, but also the dynamics of play that arise from it.
It is a player's knowledge of a game that is the seat of his "sense of the game", as in, his way of perceiving and understanding the game, which in turn forms his "play style", that is to say his way of playing it. The “sense of the game" of a player changes as he progresses and accumulates experience, thus changing his way of seeing the game. It is not uncommon for a player's sense of the game to drastically change when he resumes the game after a short or a long break, the time spent outside the game and the proactive effort to resume his old reflexes changing his point of view.
However, it is important to discern the theoretical knowledge of a player and his ability to apply them in practice as it then falls into the framework of the execution. Thus, a player can know the counter to a specific move and not be able to apply it or simply remember it in time without this indicating a deficit from the point of view of his knowledge of the game. These limitations of the possibilities (related to the player's own abilities) as well as the knowledge of these limitations themselves influence the player's playing style. This play style is personal to the player, in that it depends of his game sense as well as his own limitations.

The knowledge also includes the states of the meta-game[3]. Meta-game knowledge is about the way a game is played at a point in time. In other words, what's in vogue in how the game is played. It is formed of contents, play styles, techniques and others which are privileged by the players because considered "strong" at the moment. A meta-game state is influenced by the players understanding of the game, by the way the game is played at a high level (which inspires the lower levels), but also by the previous states of the meta-game (cyclical aspect of the meta-game: the predominance of A brings the counter B which brings the counter C to B which brings itself back to A whom counter C), as well as by effects of fashion, and obviously potential changes made to the game by the developers.



The popularity of strategy A increases the frequency of the counter strategy B and decreases the frequency of the countered strategy C, and so on.

To be interested in the meta-game is to be aware of what the players tend to do predominantly, which makes it possible to prepare for it. It is also to hear about the latest discoveries which avoids having to reinvent the wheel.
It is important to note that knowledge can "expire". In the case of the knowledge of the rules of the game and the dynamics, it happens in case of modifications made by the developers. But it is the knowledge of the meta-game that is most subject to this phenomenon of use-by date, as a state of the meta-game is rarely stable over a long period of time even without interventions by the developers. Thus, one fact is only valid at a point in time, and may be erroneous at another.

Finally, there remains the psychological skills which maintains the most intimate connection with the game, while being much more reusable than the knowledge of the game. These skills encompass both the relation of a player to himself and his relationship to his opponent.
The relation of a player to himself is the Mind: how one's moods and emotions affect his sense of the game, play style and his performance, but also how a player is able to influence his own mental condition.

[3] Often abbreviated as "Meta". It can sometimes be read that Meta is the acronym for Most Efficient Tactics Available. This is actually a case of retro acronym, Meta being simply a Greek prefix meaning "beyond", "about".

Much broader, the relation that a player maintains to his adversary encompasses several concepts. This relation can exists within the game as well as at a meta-game level. However, a meta-game relationship can exist in any multi-player game, including performance games. This is because the interactions are made outside of the game (feeling pressure when facing an opponent assumed to be stronger, provoking the opponent to influence his morale, etc.). Thus, we will focus on the relationship maintained through the game (which is unique to confrontation games).
However, this relationship only exists if there is information that is hidden from one player and held by the other. This hidden information can take many forms, but the important point is that the player is not aware of this information when making a decision related to it. For games with simultaneous phases[4], the hidden information may simply be the fact that the player is not aware of what his opponent has decided simultaneously. Therefore, being able to guess this hidden information becomes crucial in the decision making.
This is where the "Mindgame" notion comes in. The mindgame can be described as the "Psychological War" between two opponents in a game. When two players interact with each other through their decisions (the foundation of the opposition games), they communicate. The actions of each players in the game betray a lot of information: the level of a player by the techniques that he can or cannot perform, a state of stress if a player fails the execution of a technique, a more defensive or aggressive play style, the proof of a lack of experience by the absence of a specific reaction to an action, etc. Each action of the adversary comes together to draw a portrait of the individual we face. The mindgame refers to this mental battle that takes place over the game where each player tries to understand and adapt to the other faster than his opponent and to predict what will be the next decision he will make.
Psychological warfare puts two main skills to the test: the ability to analyze an action (a fact) and the ability to draw a profile of the opponent from these facts.
The ability to analyze an action is important to get the most out of it and is closely related to the player's knowledge. Indeed, the more the player knows about the game and the more he will be able to understand the motivations of a player in a decision. Thus, if an opponent whiffs a stroke, one can guess that the opponent expected an approach and sought to preemptively counter it. But one can get much more information if one knows that the specific move the opponent employed is specifically used against jumping approaches and that as such, the opponent expected this kind of approach.
If the analytical capacity is practiced in a very conscious way, the ability to draw a profile out of it is much more unconscious, probably in that it requires to synthesize a large amount of information. By pooling the data obtained from the analysis of the actions, the player can form an image of his opponent, giving himself impressions that would allow him to sense the actions the opponent could perform. However, in the infinite complexity of human psychology, it cannot be more than impressions and educated guess. It is therefore in situations where the options of his opponent are limited that a player is most likely to get an action forecast on which he can capitalize.

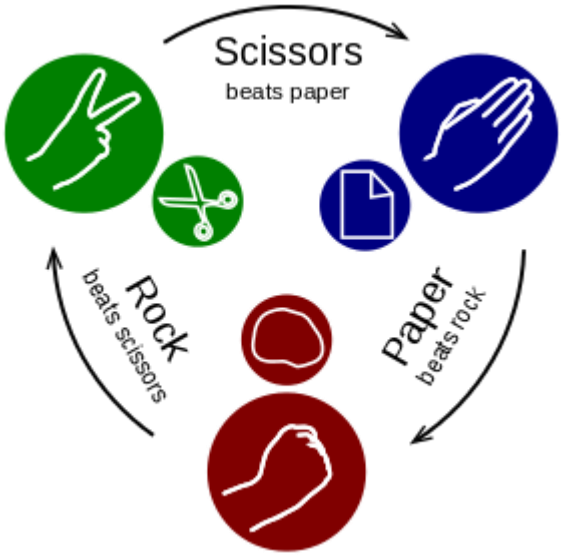
However, all this mindgame exists on a predicate, the existence of "viable" choices within a game. If the player's need for interaction necessarily creates choices and possibilities (as simple as "How long before clicking on the button? "), this is far from implying that these choices are all viable, especially within the perspective of "winning" in an opposition game.

[4] Such phases of simultaneous decision making are also called « double-blind guessing situation ».

Indeed, if certain choices are better than others, then there is no real decision: in order to win, these "choices" must be picked. This a dominant strategy case. In the presence of a dominant strategy, players have no choice but to follow this strategy in order to maximize their winning, even if it means ending up in a tie. One of the most famous examples of this kind of design is *Tic-tac-toe* where the dominant strategy is to take the center and prevent the opposing player from completing his row. If both players apply their dominant strategy without errors, all their matches will end in a tie.

The Film WarGames (1983) draws an elegant comparison between Tic-tac-toe and Nuclear Warfare concluding that these are strange games since the only winning move is to not play.

To preserve the fun aspect of a game, it is therefore necessary to avoid the presence of a dominant strategy. One of the most used solutions is the principle of mutual counter-strategy, a principle that is often referred to by the name of RPS system (for *Rock-Paper-Scissors*). In *Rock-Paper-Scissors*, the player has three possible strategies (choices) that each counter a different strategy. Thus, the Rock beats the Scissors, the Scissors beats the Paper and the Paper beats the Rock. In games with this kind of system, the interest may be to find a strategy that opposes the strategy of the opponent, or to guess ahead the strategy of the opponent to use the adapted counter-strategy.



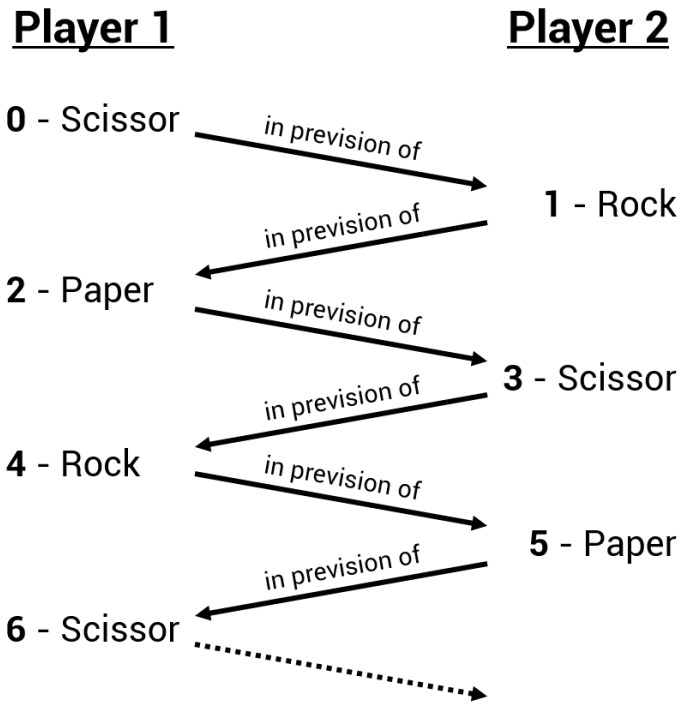
The rules of "Rock-Paper-Scissors".

A game that avoids the presence of a dominant strategy and offers an acceptable number of viable strategies to its players is considered "balanced". This should not be confused with the notion of "fairness" that qualifies games where both players are offered the same chances of winning throughout the match.

As part of the RPS system, the concept of "level of reads"[5] theorizes the reflection and logic around the principle of counter-strategy. The idea is: we associate a strategy with an initial level zero. Naturally, the opposing player will try to deploy a counter, thus raising by one the level of reads. This causes a reaction from the other player who will deploy a counter-counter, rising again a notch etc.
For example, suppose a player using an initial strategy A. He is at the level zero of reads. His opponent tries to adapt and uses the strategy B which counters the strategy A. The opponent goes up to the first level of reads. In response, the player adapts himself to his opponent and goes to the second level of reads by employing the strategy countering B, strategy C. Again, the opponent adapts and goes up to the third levels of reads with the strategy D which beats C. Beyond the third level, we stops counting and it goes back to the level zero, the level of reads being too high for the old degree zero to matters. However, a second, more prominent reason exists for this level limit.

[5] In game theory, we also speak of "k-Level Thinking" or "k-Step Thinking" or even "Cognitive Hierarchy Theory".

With this system, each player switches by two levels each time (level 0 and 2 for the player deploying the initial strategy 1 and 3 for the opponent). From the moment the players have consciousness of the counter system, they may evolve in levels in non-linear ways. Thus, the initial player can expect his strategy at the level 0 be countered by the strategy of level 1, and would therefore immediately deploy the level 2 strategy to counter his opponent on the spot. In the same fashion, the opponent can expect such thoughts from the initial player and would therefore immediately deploy the level 3 strategy as he expects the initial player to use the level 2 strategy to counter the level 1 strategy[6]. This can continue for quite some time, hence the existence of a limit which underlines the absurdity of such thinking[7]. At such a level of preemptive countering, the players can just as easily rely on randomness, especially since the system may risk looping after a certain level of counters (in Rock-Paper-Scissors for instance, the game loops from level 6, that is, the strategy of level 6 is the same as that of level 0)[8].



Being now aware of these concepts, it is time to develop a model that builds on them and that will serve as a basis for thinking about the theory of the competition accessibility approach.

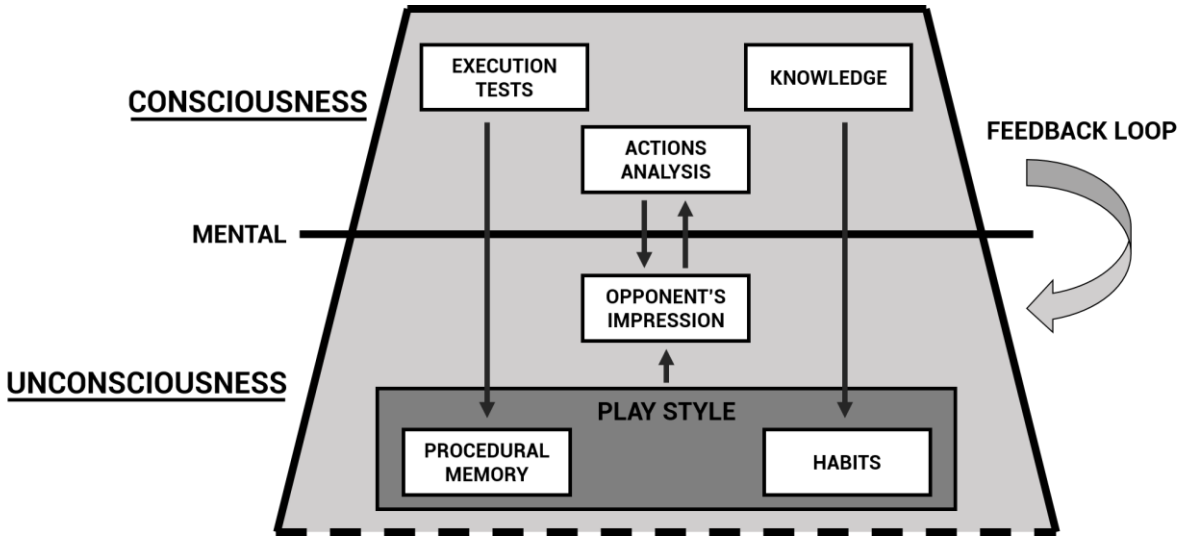
[6] According to the Cognitive Hierarchy Theory, a player chooses his strategy which corresponds to the level k of reads based on the assumption that the other player is at level k - 1. Since he is basing his guess on this assumption, he chooses a counter to the expected opponent's strategy and so in this system, the level k + 1 always beats the level k.

[7] The unexpected hanging paradox illustrates this absurdity. In this paradox and its variations, a character who has been promised a surprise in the week deduces that this surprise cannot happen on the last day of the week otherwise he would expect it. In the same way, he deduces the same for the penultimate day since the event cannot occur on the last day and so on for each day of the week. He concludes that the surprise cannot take place. Finally, the event occurs sometime in the week to the surprise of the character.

[8] This depends on the system, not all systems loop in such a way. For example, in the case of the Keynesian Beauty Contest, there is a maximum level of reads which also is a Nash Equilibrium. In the same way, one can imagine a system that does not loop but has no limit in the level of reads (for instance a game where two players choose at the same time an integer and the one having chosen the biggest wins).

1.2 – Model

The division of competences according to the three poles Execution - Knowledge - Psychology (Body - Spirit - Heart) does not however consider the way in which they are treated by the player. These skills can be the object of an active thinking process (conscious) or a feeling (unconscious).



This iceberg like structure seeks to represent the thinking process of a competitive opposition game player. The upper part represents the conscious part of the thinking process, while the lower part represents the unconscious part. While the unconscious part has a very important capacity of computation, it is not the case of the conscious part which is very limited in the number of element which it can treat at the same time. However the unconscious part is not very flexible, working mainly on prior learning while the conscious part is much more polyvalent.

Thus, when a player is confronted with a situation testing his execution or his knowledge, he uses his conscious thinking. With time, the knowledge he uses is transformed into habits while the skills required to succeed an execution test enter the procedural memory[9]. This makes it possible to think of performing a technique in the heat of the action rather than having to think consciously of all the necessary sequence to realize the technique.

It should be underlined that the registration of execution tests into procedural memory and knowledge into habits does not ensure their validity. While a natural mechanism makes a player tend to retain only the elements for which he receives a positive feedback, this system can be foiled in several ways. Thus, confusing signals sent by the game can cause a player to create habits and procedural memory actually erroneous[10]. In the same way, changes made to the game (knowledge use-by date) or a change in level of play may call into question the validity of the procedural memory and habits of a player.

[9] The procedural memory is part of the implicit memory (or unconscious memory, opposed to the explicit memory as it does not involve the conscious). The procedural memory deals with the motor skills, the know-how, the usual gestures, etc. It is very reliable and keeps memories even if they have not been used for a long time.

[10] For instance in Boxing, this could be starting on bad bases by learning an incorrect posture to deliver a punch. Such an "error" would have to be corrected later by the player if he wished to continue to progress.

It is these habits and the elements that have been recorded in the procedural memory (and which are therefore easily usable without loading the conscious part) that form the play style of a player.
If a player were to concentrate (conscious thinking) on an element external to the game while he played, his way of playing would change and it would be his play style which would stand out (close to an autopilot mode or freewheeling). Since his conscious thinking part would be busy, he would rely solely on his prior learning and habits. However, in such a state, his gameplay will lack an important essence: the ability to adapt to the opponent.
When the conscious thinking part does not have to focus on carrying out the execution tests (because they are registered in the player's procedural memory) or to interrogate the knowledge to know what the player should do (because he has formed habits), it is then free to analyze the actions of the opponent and thus influence the overall impression that the player has of him, but also to analyze the player's own gameplay and adapt it to the opponent (feedback of the conscious part on the unconscious part). It also allows the conscious part to deal with unexpected and new situations or to use the player's overall impression of the opponent to try to predict the next opponent's decision in a given situation.

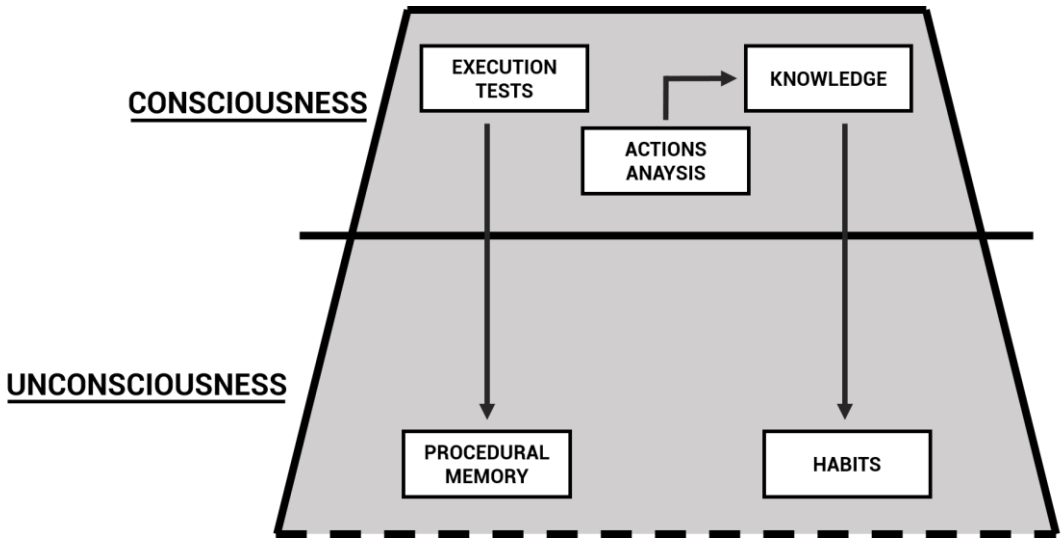


Diagram of the thinking process of a player learning a game.

When a player is learning, he focuses on building habits as well as developing his procedural memory related to the game. The analysis of actions are limited to his own actions in order to develop his knowledge through empirical processes.
In a way, the player is busy fighting the game and himself. He doesn't really have the time to try to understand his opponent even though this is the unique trait of opposition games.

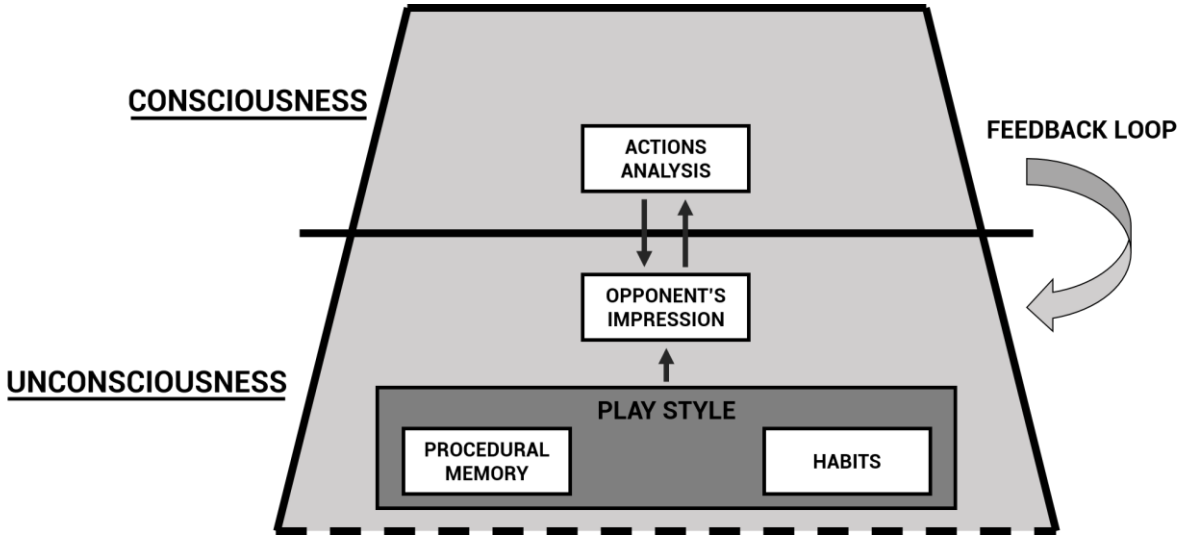


Diagram of the thinking process of a player having mastered a game.

Conversely, when the player has mastered the game and is therefore not learning, he does not need to think about the execution test or what he has to do since he has already built habits and procedural memory. He can therefore fully focus on analyzing his own actions and his opponent ones in order to adapt his gameplay accordingly and focus on the mindgame.
This is the reason behind the famous difficulty for some intermediate players to play against players of lower level. A mid-level player already has developed knowledge and procedural memory and therefore has a thought pattern that is close to a player who has mastered the game while the beginner level player is still in a pattern closer to that of the learning player. While the intermediate player is focused on his opponent and trying to understand his sense of play, the beginner level player hardly takes his opponent into account and rather focuses on the game as such. This can greatly destabilize an intermediate player as he cannot understand how his opponent thinks since he makes decisions that seem absurd. In this kind of situation, it is then necessary to stop focusing on the opponent, and rather go back to the basics to focus on playing solidly.

If the thought pattern evolves according to the level of mastery of the player, it also evolves according to his mental state. Indeed, depending on the players, the "bar" serving as a boundary between the conscious and unconscious part can be moved in one direction or the other.

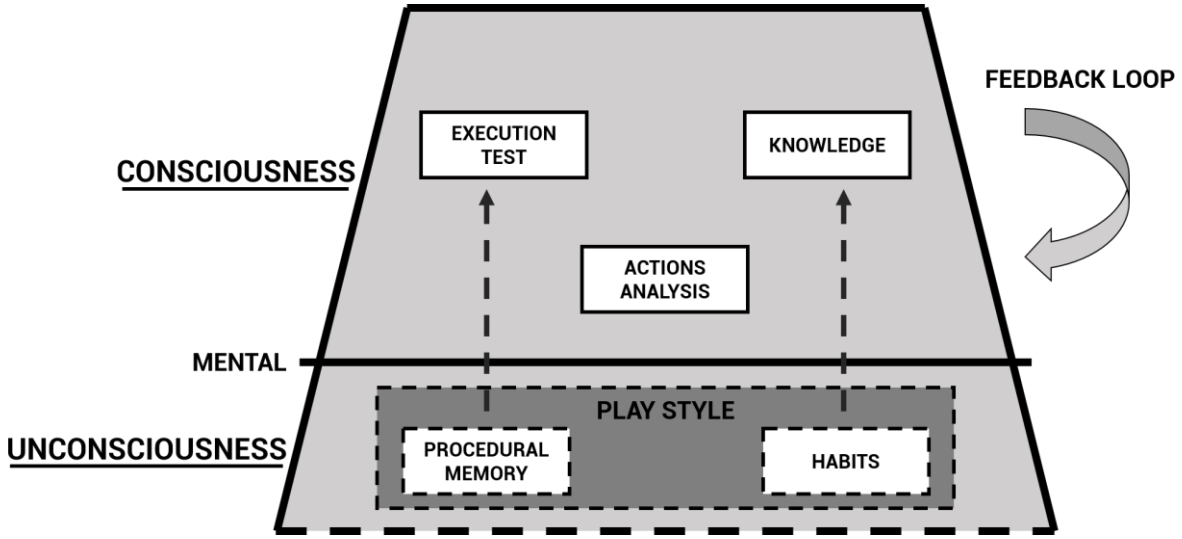


Diagram of the thought process of a player "whom thinks too much".

The first profile is that of the player "whom thinks too much". In stressful situations, these types of players put pressure on themselves, thinking to themselves that they must not make mistakes and have to focus. However, by seeking too much to do well, such a player starts questioning all his fundamentals. By focusing so much on the execution's success of elements that are already acquired, the execution passes from an unconscious treatment to a conscious treatment which has two negative effects. First, it loads the conscious part and second, it deconstructs the execution process to the point of wondering how it was done in the first place. In the case of knowledge, we know this phenomenon quite well under the name of the "first impression" ("Always trust your first impression"). From the moment one begins to question his first impression, one has the feeling of not knowing anymore what is the correct answer, to then often realize later that his first impression was the right one. On the procedural memory side, this can be compared to focusing on your breathing or any other unconscious process such as walking (you do not know how to get out of "manual mode" anymore) or the Yips phenomenon[11] well-known in the world of sports. But the more technical term is "dyspraxia", that is to say an alteration of the ability to automatically execute specific movements which then requires to perform each gesture manually.
While the analysis of the actions is still being maintained in such a state, the player concentrates only on his own actions, which loops back to being one of the causes of the problem.
In summary, by trying to do well to be "worthy" of his opponent or to claim victory against a difficult opponent, the player starts to question his basics and spend most of his time trying to catch up with his own gameplay rather than watching his opponent's one.

[11] The Yips phenomenon results in a loss of refined motor movements due to a connection problem between the image sent by the brain and its execution at the motor level. This phenomenon generally affects athletes (or other tradesmen depending on physical dexterity such as musicians for example) and is induced by psychological causes.

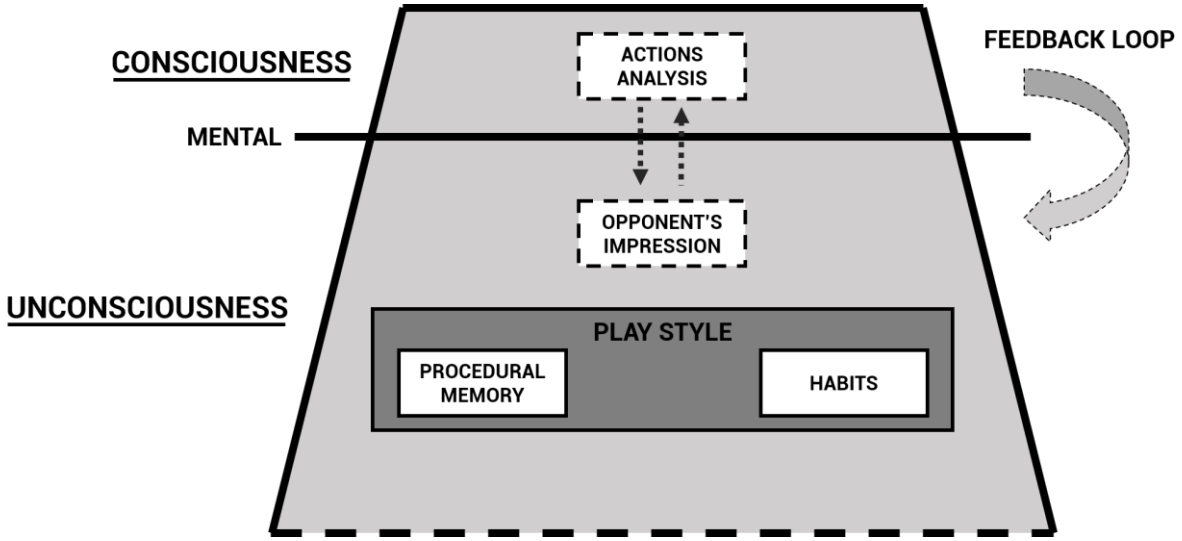


Diagram of a thinking process of a player whom cannot focus on the game.

In contrast, there is also the archetype of the player who cannot focus on the game. Under stress, the player can develop parasitic thoughts that occupy his conscious part (fear of losing, frustration, etc.) or simply make it more difficult to concentrate, thus rendering the player more susceptible to external stimuli (spectators, ambient noise, etc.).
In game, the player relies entirely on the habits of his play style (autopilot mode). If new situations arise, he will not be able to adapt to them or learn from them. The availability of his conscious thinking part being very limited, he will only make a weak analysis of his actions and of those of his opponent. Feedbacks on the player's own gameplay will also be limited, being received in a more unconscious than conscious way.

While it is difficult to use the game to limit the effect of the mind on the performance of a player, we can draw conclusions from this model on the differences between a player who has mastered a game and a beginner. The most important point is the availability of the conscious part. By not having to "think about the game", the masterful player can fully focus on his opponent and thus return to the primary aspect of the opposition games: a field allowing a player to measure himself to another player. Conversely, the novice player is still looking for his marks and still needs to "think about the game". By training, he will increasingly delegate to his unconscious to get closer to the shape of the masterful player.
It is around these fundamental differences of appreciation of the game that the competition accessibility approach is built.

1.3 – Accessibility Approach

The essence of opposition games is in the interactions with the opponent. While measuring oneself to the other can be a pure comparison of skill when it passes through the knowledge or execution tests, mindgame elements take it to whole new dimension when the game allows it (incomplete information games[12]).

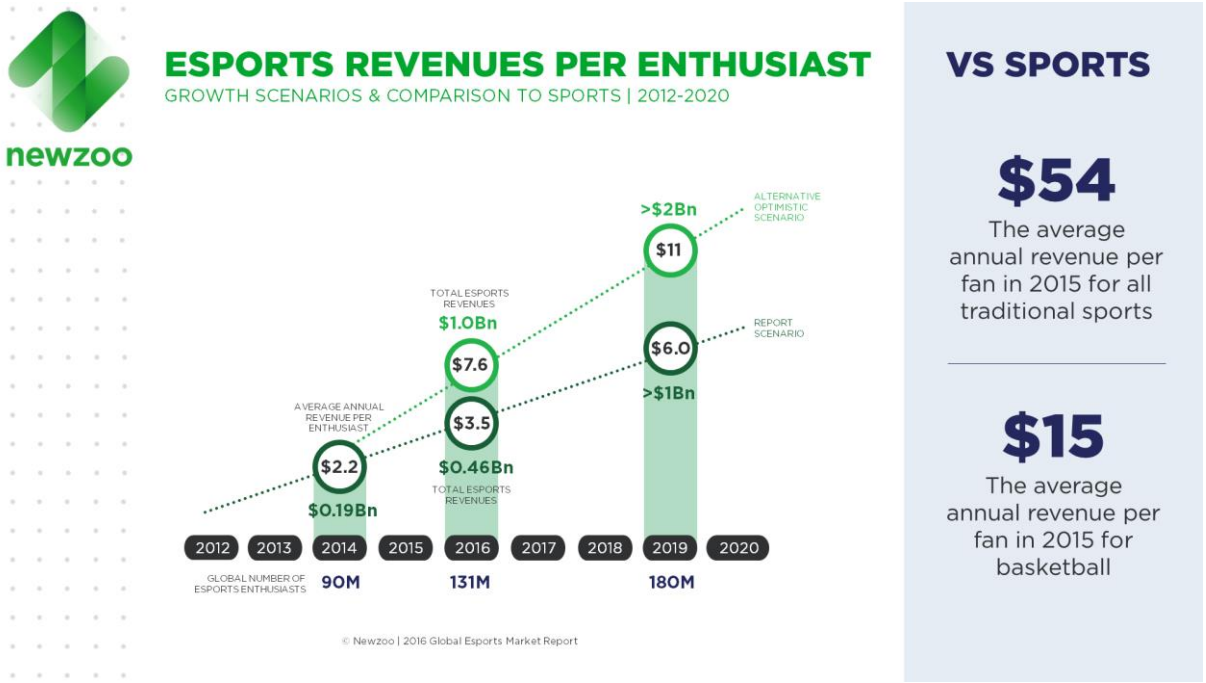
On the theoretical level, when two masterful players compete, their level of knowledge alone is not enough to determine a winner. Indeed, the knowledge that can be obtained on a game is finished at a given time (only at a given time as the amount of knowledge available on a game can increase over time through discoveries or the evolution of the game's meta-game) and it was defined above that knowledge did not include the ability to make use of it.
It is possible to use the execution level to gauge two masterful players, but this requires that the game has necessary execution limit that exceed the fuzziness of the "achievable by anyone who has trained for it", or simply that there is no necessary execution limit. To develop this idea of the necessary execution limit, let's imagine a game where the players are rewarded if they finish a puzzle in less than five minutes (a Rubik's Cube for example). Then, the necessary execution limit is five minutes since one is not rewarded any more by finishing the puzzle even faster (which is by the way attainable for anyone having trained a little). If on the other hand the players are rewarded more as their time get shorter without any limit (or with an unrealistic limit like “one second”) then we touch their own physical limit.
Thus, in games with a limit of necessary execution achievable by anyone, masterful players cannot be separated by their level of execution since they are supposed to have reached the theoretical limits of the game. Conversely in a game without limit of necessary execution (or with unrealistic limits), two masterful players can be gauged by their execution. Since they are in theoretical mastery of the game, they are supposed to have reached their own physical limit dictated by genetics, so we compare them by their genome.
Finally, in the games that allow it (incomplete information games), players can of course be gauged by the mindgame aspect, and we can also mention the effects of the mental which applies to all games.

If considering that in a game without limit of necessary execution, two players in theoretical mastery are evaluated on their genome can appear cliché, it is not so far removed from the reality. Although not part of the opposition games, the importance of genes in performance sports is now a well-accepted reality that appears all the more strongly with globalization and the progress of science (performance optimization, measure against doping, etc.). Similarly, we speak of "genius" of Chess, a term that underline this distinction with people with "normal" cognitive abilities.
However, while the pursuit of performance is something perfectly acceptable and can be a source of motivation for some, these "natural limits" are elitist nonetheless. A game without necessary execution limits is therefore to be banned as part of the accessibility approach, especially as the mindgame can be used instead as a battlefield for the players.

[12] Strictly speaking, we talk about a game with incomplete information in game theory as long as a player has an uncertainty about his or his opponents' abilities, which may be due to information that is unknown to both players, for instance elements of chance. For simplicity, we will speak here of incomplete information game only in the context of information held by a player and hidden from the other players.

Thus, if at a level of theoretical mastery of the knowledge of the game, and of the execution abilities; neither can be used to gauge two players (taking as a basis necessary execution limited game), then it all comes down to the mindgame. By being the only real element that requires the presence of at least two players, the mindgame fulfills the role of gauging tool perfectly. Opponent's reading, adaptation, destabilization[13], conditioning[14], are as many ways of interacting and communicating with the opponent through the game.
But if at a mastery level it is really the mindgame aspect that matters, what justifies it to be otherwise at a lower level? If a minimum of phase of adaptation and learning is necessary to enter the game, why should it be that once this minimal phase passed, that the players must continue to focus on their knowledge and their execution before being able to devote themselves fully to the mindgame? The result of such practices is games where the mid-level gaming experience is drastically different from the high-level gaming experience, because players do not have the same concerns. As part of the accessibility approach, anyone should be able to reach the theoretical limits of knowledge and execution of the game, it is therefore a difference of learning level and dedicated time[15] that differentiates the players having reached the limits of the game and the players who have yet to reach them.
We are nevertheless entitled to wonder if at a level where only mindgame is left, if the game is still interesting. To answer that, a small thought experiment is necessary. Whether the game has necessary execution limits or not, players tend toward these performance limits (whether imposed by play or by nature) as they progress. So when a player tends towards his limit of execution, he can sometimes find himself injured or favored according to his birth, but he ends up having only one element left to work on: the mindgame. Thus, in incomplete information opposition games, the higher the level, the more players tend to give importance to mindgame.
In addition to this, the world of e-sport remains undeveloped compared to that of sports. Few games can currently insure some of their player to live off them and all the players invested in the high level of those games sure cannot[16]. Moreover, becoming good at a game requires dedicating a lot of time into it. If we consider that the pecuniary factor concerns only a small part of the community of high-level players and that the lure of gain is not a serious motivation, it is therefore passion that is the prime factor.

[13] Methods meant to attack the emotional state of the opponent (seeking to provoke fear, humiliation, anger, helplessness or other...) to influence his gameplay at a qualitative level or in his play style (playing more risky or conversely less risky).
[14] Methods meant to induce the opponent to perform certain specific actions.
[15] Technically, time = competence ratio is wrong, first of all because the learning speed for the same subject depends on one person to another and then because time spent does not mean that learning was achieved (see 'The Expert Mind' article by Philip E. Ross on the subject). However, a minimum of time must still be invested in learning. On the other hand, it can be assumed that with reasonable limits of necessary execution and knowledge, anyone seeking to learn can reach such limits if he devotes enough time into it. So even though the time-to-competence relationship is not proportional, competency still translates in a time investment.
[16] Providing figures on what professional e-sports players (or more broadly, high-level players going to big tournaments) really earn is a difficult exercise. First, the scenes are not similar between games and second, e-sports organizations are reluctant to communicate the pay of their players. One can only imagine a part of their salary based on their winnings in tournaments which is not representative since as time goes on, players are more and more sponsored. However, many pro players testify that they never imagined they could make a living off playing video-games before they got there and that originally, making money was never their goal.



By comparing economic weight and popularity, the website Newzoo shows that there is still a long way to go to make e-sport a serious economic rival to traditional sports.

Thus, it is unreasonable to think that a game played on a level where only the mindgame really matters becomes irrelevant, since the players at this level of gameplay are among the players who have devoted the most time in it, mainly by passion.

Therefore, the competition accessibility approach has the duty to accelerate the evolution process of going from a novice player to a masterful player. This means lowering the necessary execution limits as well as required knowledge capital. With such measures, players are less likely to fight "against the game" and more against their opponent. By facilitating the arrival to a state of mastery of the game, it also enhances the overall level of the players without lowering the level of the players having already mastered the game as the execution and knowledge are not winning factors at this level.

Yet to be discussed, we need to talk a bit about randomness; since strictly speaking, the random is also a dimension that allows to separate players, the problem being that it is not through their skills. Randomness can be the subject of emulation of competence related to execution and / or knowledge, such as statistical evaluation and more generally an ability to predict and manage the different possibilities arising from random elements. However, we are talking here about randomness in that it can arbitrarily give advantages to a player, in the pure aspect of the "coin toss".

While randomness within a game has definitely many attractions (including diversifying situations, avoiding repetition, creating waiting and surprise, ...), it poses many problems in the event that a possibility is more desirable than another for a player. In such a case, the player can either obtain this desirable possibility (giving him an edge), or obtain another, with all the nuances it carries. For example, let us suppose that at the beginning of a match, a player randomly gets one of 10 possible weapons. If a weapon proves to be more powerful than the others, the player will have more chance of winning the matches when he obtains this weapon. Therefore, he will want to get this weapon every time, but he doesn't have his say on that. In truth, beyond a pure statistical advantage, it is sufficient if these weapons were different enough. As balanced as they may be, a player will naturally have a preference for some of them, by his affinities and his play style.
As such, what randomness causes is a lack of representation within a match. Indeed, if a player obtains the weapon he wanted, he would then be in an advantageous position to win the match while conversely, he would have been in a worse position if the randomness had provided him another weapon.

We must therefore refer to the law of large numbers in order to regain representation. In statistics, the law of large numbers expresses that the characteristics of a random sample approximate the statistical characteristics of a population with an accuracy that increases with the size of the sample. By reciprocal, it is necessary to use a sufficiently large sample so that it can be considered as representative of the population from which it is drawn.
If we take our example, a player A, less good than a player B could triumph over a few games if he has "luck" and he gets the weapon he wants in every game. However, if these players play 100 games together, player B will largely triumph over player A. Indeed, if player A will be able to have an advantage within the matches where he gets the weapon he wants, on 100 games he will be obliged to play many matches without, in which player B will naturally have an advantage by their level difference. And as we increase the sample, that is to say the number of game played, the closer we get to a result representative of the level of the player A compared to the player B.

But this issue of representability is far from being confined to random elements within a game. It is actually the hazards in general that are concerned, which has implications in terms of execution and mindgame. We thus speak more widely of the uncertainty in outcome in the context of an action.
First, the execution. As we briefly mentioned on it during the definition, the notion of execution includes that of "consistency", that is to say the ability to perform a technique without failing. The idea is that to be able to rely on a technique, one must reduce to the least possible the probability of failing its execution; else it could end up creating disadvantageous situations in the game. It is therefore necessary to train in order to improve the consistency of a technique. However the more complex a technique is and the less it is possible to make it consistent. During a game, the outcome can be played on a single decisive situation involving a technique, provided that this technique offers the victory to the player if he succeeds, or on the contrary defeat if he fails.
In such a case, we get exactly the same problem as with the random elements, because there is an outcome that is more desirable than another. One can argue that in the case of consistency, unlike the random elements, the player is in control and can through training improve "his chances". However, while it is indeed possible to make the potential of failure negligible for a simple technique, it is not as easy for more complex techniques, not to mention that the risk zero does not exist.

In addition, a player does not fail a technique deliberately. Therefore, he has no decisional freedom on the outcome he gets when he tries to execute a technique: he is uncertain about the success or failure of what he has undertaken, all at most he can tip the scale. A player ends up just as frustrated with losing a match on a technique that he fails one time out of 100 that losing a match on a random element playing against him with the same probability of happening.
For the mindgame, we basically fall into the same problems as consistency, only with a much lower possibility of getting close to 100% success. Psychology is a fuzzy science. As such, a player able to predict the actions of his opponent with 70% success is already in an excellent position to win, but he cannot do anything if the next three actions that his opponent do, fall in the 30% margin of error.
Finally, the physical and / or mental state is a hazard easy to grasp.

Now, while it is possible to remove the random elements out of a game, it is impossible to separate the notion of consistency from that of execution, psychology will always be an imprecise science and anyone has a bad day once in a while.
And although it is simply possible to apply the law of large numbers to take into account many games to declare who is the best between two players, this poses many problems.
First of all, there is time problems. If a match in a game lasts five minutes, doing 100 matches will take more than 8 hours. Moreover, problems of elegance. To consider that it is the result of several matches that counts and not just one, is a structure that comes over the game. It is somewhat unpleasant to state that a single game is not enough to gauge two players even though judging players is precisely the purpose of opposition games.

This is where our approach really split with the casualization approach. Indeed, in games which aren't aimed for the competition, the fact that any player can potentially win is a rather widespread practice and it is often one of the reasons why elements of randomness have been integrated into the game in the first place. Giving the opportunity to anyone to have a chance to stand on the podium is seen as a necessary element to the amusement of all without being seen as problematic that a better player wins more often in the long run. Games like *Mario Kart* or the *Super Smash Bros.* series are great example that uses randomness through mechanics of objects and power-up (mechanics that are generally disabled when these games are played with a competitive purpose).

In the Mario Kart racing game series, crates are scattered on the circuits. When a player goes through a crate, he gets a random item based on his ranking in the race. In the last positions, the player can get the blue shell, an iconic object to the franchise that goes off to explode the current 1st player in the race as a remote-guided missile. This is one of the many mechanics that create variance in the results of a race.

The competition accessibility approach aims precisely for the opposite. Time is a luxury that not everyone can afford and the goal of an opposition games is to declare a winner, so there is no reason to go a roundabout way.
A first step is to simply reduce the number of hazardous elements in the game as well as to promote consistency by reducing the necessary execution limit. However, these two dimensions may be attractive to some, and this has no effect on the mindgame inaccuracy.
A second step is to apply the law of large numbers internally by multiplying the situations prone to hazards. If a match is decided on a single situation open to hazards (for instance a match of *Rock-Paper-Scissor*), then the outcome of the match isn't really representative. However, if a match consists of hundreds of situations open to hazards, we can then observe a law of large numbers effect, the extremes canceling each other's. For example: decreeing that a match of *Rock-Paper-Scissor* consists of 100 rounds. Of course, explained this way one can wonder what is the difference with disputing 100 matches. But the idea is to design the game while keeping in mind this problem and hence to include many small situations where the hazards are scattered. Designed like this, we can reduce the time a match takes much more than if it is decided afterward that playing several games is required to have the outcome of a match.

Finally, key situations are to be avoided as much as possible since it is a design that can completely invalidate the approach of the internal law of large numbers. Indeed, if the game is divided into many prone-to-randomness situations but that some are more important than others, then we return to the previous situation where only a very limited number of situations open to hazards really decide the outcome of a match. This is a complicated directive because the window of opportunity principle is a very interesting design, although it naturally creates this kind of bias. We must therefore seek to go as far as possible in this direction and avoid at all costs “game deciding" situations (situations with extreme consequences).

In summary, the accessibility approach advocates highlighting the mindgame aspect found in incomplete information games, at all levels of practice, which involves lowering the importance of the aspects of knowledge and execution.
In addition, the approach also advocates a form of elegance seeking to make do without external structures as much as possible by integrating them into its design in the first place to allow matches to be representative without their help.

Conclusion:

The accessibility approach is characterized by a will to emphasize the exclusive competences challenged in the opposition games: those of mindgame which puts directly the players face to face. This involves a subtractive design process aimed at the execution and knowledge tests that, while interesting, are not peculiar to the genre of the opposition games and may be distracting. The objective of the competition accessibility approach is to globally broaden the target of the games to which it is applied in order to answer the current problems in terms of return on investment but also and especially to find their place on the market.
In this fashion, the competition accessibility approach can be compared to the casualization process of the 2000s in that the latter had precisely these objectives, simply applied to different kinds of games. At the time, the casualization approach had been poorly received from established player communities, especially by fear that it would affect the games depth. This was however not its goal, rather aiming at reducing the complexity of these games. It brought to light that one could not solely simplify a game without trying to keep its depth, because such games would lose interest and would not necessarily find their audience. Conversely, the process has changed the industry by establishing sets of "good practices".
A good example of a game that has benefited from this casualization approach is *Super Mario Galaxy*, released in 2007 contemporary to the approach. The desire to open to a much wider audience has led developers at Nintendo to take significant turns compared to the previous two *Mario* series 3D opuses: *Super Mario 64* and *Super Mario Sunshine*. Thus, the exploration, an element presents in these two opuses but not perfectly mastered in *Super Mario 64* and source of problems in *Super Mario Sunshine*, was abandoned in *Super Mario Galaxy* in favor of more linear levels. However, these levels were much more polished in terms of player experience and would set up specifically designed situations to reward the player visually and emotionally. Another important difference is the decision not to continue the gameplay additions of *Super Mario Sunshine* (including F.L.U.D.D., the water pump which Mario is equipped with in this opus) but to return to the basics of *Super Mario 64* to simplify the controls and the possibilities of the player; instead passing the novelty by the level elements and situations in which the player would find himself.

In the same way, the competitive accessibility approach does not want to touch the depth of the games, but their complexity. And it hopes, by having the developers take into account the problems it raises, to be the driving force behind an improvement of the media as a whole.
The approach advocates that the developers take actions starting from the concept phase to be able to deal with the root causes of the problems it raises. This is the most effective and sustainable solution in the long term, but not all issues require such a level of action. In addition, some games cannot afford to overly change their concept, either because it is already in place or because the developers must meet the expectations of a community of players. Thus, the competition accessibility approach can also be applied to the details and especially during the balancing phase, which can play a large part in the final feeling of a game. The approach also includes sets of good practices that the developers are encouraged to follow in order to avoid problems during the development (or post-launch of the game).

Finally, the competition accessibility approach should not be applied blindly. It has to be the fruit of a thorough reflection of the developers and its degree of intensity of application must depend on their intentions and of parameters and compromises such as the target the game is aimed at, its potential place in the market or the economic system that it adopts (for instance, in the case of uneven playfield games).

While some new games which find their place in the competitive game market seem to start to use the accessibility approach, these games still remain basic in how they apply it compared to the theory or to other games that did not necessarily find their place. The next step is to see games which rationalize this competition accessibility, succeed in making a breakthrough in the market. Compared to "classic" games, the turnover of competition games in fashion is much slower, because these games are made to last and because a competitive community takes time to set up so the players take time before switching to other titles (but also because the industry of "classic" games is currently in a very fast-paced production model, the offer being very important for the market). As a result, the effects of the competition accessibility approach will take time to really be felt on the entire market. However, in view of the recent successes of Blizzard, it is a safe bet that it is at the center of the discussions of developers and will probably be refined and deepened in the upcoming hit games. Moreover, current competitive games all having a more or less important monitoring by the developers, it is likely that we will see changes be made in the upcoming years to keep track with the market and to not fall out of fashion too soon.

Therefore, the competition accessibility approach is still a leap of faith in terms of application to the market in an extreme way, but through its prism, it gives the vision of a future that current games seem to be engaged into.

Bibliography:

Many of the theories advanced here come from empirical reflections. However, a certain number of actors had an impact on this reflection:

David Sirlin:
True reference in competition oriented Game Design, Game Designer David Sirlin (who worked on *Street Fighter II Turbo HD Remix*) contributed much to my thinking by his articles (on his current site and his old blog), his Game Design podcasts as well as the very games he designed.

Keith Burgun:
Although my opinions diverge with those of Game Designer Keith Burgun (notably author of the book *Clockwork Game Design*), I was interested in his work by his similar approach of a need for simplification of the designs of competitive game, but also for some of his rather unique and original points of view on some particular design elements.

Core-A Gaming:
Youtube channel produced by Gerald "mintcheerios" Lee and dedicated to fighting games and their community (often called FGC for Fighting Game Community). It features analytic videos with interesting reflections on issues related to fighting games and more generally to competition.

The Expert Mind by Philip E. Ross:
A 2006 article published in the journal Scientific American on the learning process of the brain and how it differs from one person to another and from one subject to another.

The Art of Game Design by Jesse Schell:
Although I did not consult his book during the writing process, my reflection is the outcome of permanent questioning on the subject as well as on Game Design more broadly. There is no doubt that the complete and accessible book of Jesse Schell influenced my vision of Game Design when I read it a few years ago, giving me a first picture of the theorizing that was possible to do about Game Design.