Taking the Grind Out of Multiplayer:
Rewarding More Than Just Numbers for Playing Multiplayer Games

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**Abstract:**

This project explores what alternatives there are to experience points based reward systems, in video game multiplayer reward systems and whether a new reward system can achieve the same merits as experience points based systems but also fix its flaws as well. This is achieved by researching experience points based reward systems and its alternatives in board games and video games, as well as supporting topics, for example Pavlovian conditioning (Pavlov, 1902 cited in Cleg and Mackean, 2004, p. 521). This research is then used to design a new reward system that is applied to an existing game and tested by human participants to measure the new system’s effectiveness at meeting the project’s aims. It was found that the new system was preferred by participants over experience points based reward systems but some conditioning elements were less successful. Ultimately the new system met most of the project’s goals, but did achieve the same short term rewards as experience points based reward systems. As the project reached completion a recent video game, *Mass Effect 3* (EA, 2012), used a hybrid reward system that solves this issue, showing the new system was on the right track.
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1 - Introduction:

1.1 – An Introduction to Reward Systems and XP-Based Reward Systems.

In recent years, multiplayer has become an essential component of computer games, maintaining high player counts online. Keeping players actively engaged in multiplayer games has required creating a persistence system to reinforce gameplay. These systems are known as reward systems: a system where a player’s participation and actions in-game results in short and long term rewards. These systems have a number of goals: they must keep the player wanting to play multiplayer games; they must reward the player’s investment of time into the game; and they must allow players to feel a sense of progression though their own play style. New players must be allowed to have a fair chance against those further in the system (if it’s a competitive multiplayer game).

In many contemporary video games, the multiplayer component often uses a reward system that resolves around accumulating “experience points” (referred to as “XP” from here on) which at certain thresholds (figure 1) provides players access to new abilities (known commonly as “gaining a character level” or simply “levelling up”). XP is typically rewarded or reduced for performing an action in-game such as killing an enemy, healing/killing a teammate or successfully pickpocketing an item from a Non-Playable Character (NPC).

![Figure 1 - Post-match reward screen from Battlefield 3 (2011) (the player's username is withheld)](image)

that shows XP earned and how much to next level up.

The use of XP and character levels as a reward system is believed by some authors, such as Adams (2010: 468), to date back to board games and tabletop role playing games (RPGs) because character levels made book-keeping easier by simplifying a player’s total experience (their XP) to a more manageable value. These games were typically played over multiple play-sessions and so XP and character levels were carried over between games, creating one of the earliest forms of XP based reward systems.
As tabletop RPGs, notably *Dungeons and Dragons* (TSR, 1974), grew in popularity, so did interest in digital versions of these games. XP based reward systems were adopted into computerised role playing games (CRPGs) (Adams, 2010) such as *Final Fantasy* (Square Enix, 1987) and later into massively multiplayer online role playing games (MMORPGs) like *World of Warcraft* (Blizzard Entertainment, 2004) and non-RPG games such as first person shooter (FPS) games like *Battlefield 3* (EA, 2011).

XP based reward systems provide several advantages. Firstly, they reward players immediately for performing actions that benefit the player, their team and/or the game as whole, such as assisting teammates in taking down an enemy, by displaying the rewarded amount of XP and the associated action performed. This creates a positive feedback loop that demonstrates elements of classical/Pavlovian conditioning (Brooker et al., 2008) where players develop conditioned reflexes that reinforce the rewarded behaviours. For example, the player will instinctively heal a wounded teammate because they know they’ll be rewarded for the effort. Secondly, the character level thresholds and their associated unlockable items and abilities give players a clear goal to aim for in the system, giving the player more drive to keep playing. The XP required to reach a new character level ensures the player must invest time to unlock rewards. Lastly, XP based reward systems are cheap to implement requiring only a set of code for the actions that award XP, creating a variable to store accumulated XP in and triggers for unlocking abilities relative to XP gained.

However XP reward systems do have major flaws: players whom are a significantly higher character level than other players, particularly new players, are usually more powerful or better equipped. This is justifiable because those players have earned their higher character level and are entitled to the rewards but from the newer player’s perspective they can feel overwhelmed and out-gunned as players with items and abilities much better than their own perform better against them which can lead to the newer players discontinuing playing the game.

As a player levels up, the amount of XP required to level up also increases. This inevitably reaches the point that reaching the next character level can take a larger amount of time than a player is willing to invest. This leads to the player altering their play-style in a way that gains XP in the most efficient method possible, a practice known as “XP Farming” or “XP Grinding” (Scott Rogers, 2010). This practice is often tedious and repetitive which degrades the player’s experience over time.

To solve this issue, a new system must be created that rewards the player’s investment in a game but does not require incentivising using XP, gives new players a fair chance against veteran players, removes/minimises the need to grind or farm.

1.2 – Alternative Reward Systems:

Despite XP-based reward systems frequent use in video games, there have been a few video games that have deviated from that system. The key feature of these systems is their removal of XP in favour of rewarding players using a different mechanic or altering the way XP is used once collected to address some issues in XP-based reward systems. These systems will act as a basis and inspiration for the new system.
1.2.1 – Loot Drop Based Reward Systems:

One of the oldest alternatives to rewarding players with XP is loot drop based reward systems. Loot based reward systems revolve around the majority of the player’s power deriving from the items they have equipped. These items are acquired via instances, known as a “loot drop,” where a player is rewarded by giving them a random item of varying rarity, such as opening a chest and receiving a common, uncommon or rare weapon (figure 2). This directly rewards the player with something they can use themselves immediately, giving the player a reason to keep triggering loot drops and create a feel of anticipation and mystery when they trigger or are about the trigger the loot drop. Loot drop based reward systems don’t reward the player per action like XP based reward systems but instead offer the promise of a random chance of receiving a desirable item. This creates player motivations more directed towards long-term, potentially great, gains rather than being awarded small amounts of XP on a moment by moment basis.

![Figure 2 – Examples of items the player can receive as loot drops in Borderlands (2009).](image)

One modern example that used this successfully is the multiplayer co-operative game Borderlands (2K Games, 2009). In Borderlands, players trigger loot drops by opening loot chests and are randomly dropped from more powerful enemies. These chests and enemies are only found around the world and on quests, these reinforce that players must complete quests and explore to become more powerful and provide a clear incentive to do so.

Another example, Team Fortress 2 (TF2) (Valve, 2007), uses loot drops in a different fashion called the “item drop system”. In TF2, loot drops are triggered by the player’s total cumulative weekly playtime (figure 3). When a player first loads up TF2, the game’s item server chooses a random
amount of time the player must play before they can receive a loot drop. Once the player plays for that amount of time, they are given a random unlockable item and the item server randomly chooses a new amount of playtime to play to and the cycle continues. The player is not told how long before they receive their next item drop. This system rewards playtime while allowing total freedom of how to spend it because as long as the player plays he/she will always be rewarded eventually.

![Relationship between time and number of item drops](image)

**Figure 3 – Graph displaying the relationship between time and the number of item drops in TF2** (Moussekateer, 2011).

A major downside to TF2’s item drop system is the idea of “idling”. This is where one or more players join a server to simply chat or leave their character standing there (being idle) and doing something else in the real world. This is not an ideal use of the system but does not place idling players at an advantage over non-idling players as they are still subject to being in-game for a period of time to get items. The exception is idling on a server where players are actively playing. In this case the idling player is detrimental to their team by not playing and taking a player slot that could be used by someone who wants to play.

### 1.2.2 – Crafting Based Reward Systems:

Another alternative is using “crafting” as a reward system. “Crafting” is a player initiated action of combining one or more resources to create a quantity of a more desirable resource or item (figure 4). The formula for creating a particular resource/item is called a “crafting recipe”. This system is similar to loot drop based reward systems as the player’s strength is based around their equipped items. Unlike loot based reward systems, items are created by the players themselves by seeking out the component resources, such as wood and iron, and crafting them together into useful items, like a powerful sword. This gives players an understandable goal: to become more powerful, the player must gather resources and craft them into items and incentivises exploration of the game world. Players are usually initially unaware of what crafting recipes are available; creating a sense of discovery to finding out what can and can’t be crafted. TF2’s item drop system also allows duplicate or unwanted rewards to be crafted into more desirable items. Two successful games centred around crafting based reward systems are Minecraft (Mojang, 2011) and Terraria (Re-Logic, 2011).
1.2.3 – Unlock Point Based Reward Systems:

A variation on XP based reward systems is the unlock point based reward system. Typically in XP based reward systems, when a player levels up they will usually receive a fixed reward for that level up. In unlock based reward systems, when the player levels up the player is given an “unlock point”. This unlock point can be used to unlock any individual reward in the game. This provides the player with greater freedom over what they are rewarded with and so each reward becomes more meaningful initially. As players can choose the items they want, there is a point where the player has all the rewards they want and so getting another unlock point immediately loses value to the player. Recent examples include *Gotham City Imposters* (Warner Bros. Interactive Entertainment, 2012) and *Brink* (Bethesda Softworks, 2011) which allow players to unlock weapons, attachments and support items with unlock points. It should be noted that *Gotham City Imposters* also allows players to unlock items by paying real money for them, bypassing the reward system entirely. While this mechanic and its effects are interesting, the use of real money to catalyse progression is not in the scope of this report because it extends into business models rather than game mechanics.
1.3 – Supporting Topics:

Outside of the games industry, there are subjects that provide additional concepts that can be used to create additional reward system mechanics not discussed already. Animal learning behaviour, for instance, provides many concepts that translate into human psychology. One concept is habituation. This is non-associative learning where a repeated application of stimulus results in decreased responsiveness (Brooker et. al., 2008). This causes the animal to learn not to respond to repeated stimuli that is harmless or unrewarding, for example a flock of pigeons may be scared away by a “gunshot” bird scaring device when it’s first installed, but later the birds feed peacefully despite the noises. This relates to reward systems as a player may become habituated if they receive rewards frequently and they lack value. XP and crafting based reward system have this problem in particular because XP can be rewarded frequently within a single game and so players may not acknowledge it unless it is a particularly large amount of XP; and in crafting based reward systems players may become habituated towards resources they gather more frequently, or with less difficulty, than others. As a result, habituation represents something to reduce or avoid in a reward system and is a possible explanation of the lack of player enjoyment when XP grinding or farming.

Another concept is imprinting (Cleg and Mackean, 2004), which is where young animals form a permanent bond with a larger moving object that it first observes. This bond grows quickly especially when reinforced with rewards like food. To demonstrate this, the ethologist Konrad Lorenz (1930s cited in Cleg and Mackean, 2004, p. 521) performed an experiment on greylag geese. He took geese eggs and then divided them into 2 groups: those who saw the mother goose on hatching and those who saw Lorenz on hatching. The goslings followed whom they saw first. This relates to rewards systems because the first time a player receives a reward, the first impression of it will imprint on them, affecting whether they deem the reward satisfactory and whether to continue to explore it.

A similar concept is conditioning. This is where a person or creature forms an involuntary response that is positively or negatively associated with a stimulus not originally associated with the response. There are two main types of conditioning: classical/Pavlovian and operant conditioning. The difference between operant and classical conditioning is that operant conditioning modifies voluntary behaviour using the environment and classical conditioning modifies reflex behaviour via an event.

Classical conditioning utilises providing a reward directly after a conditioned stimulus to create a conditioned response. For example, Pavlov (1902 cited in Brooker et al., 2008, p. 1179 and Cleg and Mackean, 2004, p. 521) performed an experiment in which he conditioned dogs to salivate by ringing a bell before providing them with food. Eventually, food did not need to be provided in order to get dogs to salivate, only the bell needed to be rung. Pavlov called this a conditioned reflex.

Operant conditioning uses rewards to reinforce trial and error learning and create a conditioned reflex. This is best displayed using an operant conditioning chamber, also known as a Skinner box. This chamber contains a lever that dispenses food. A lab animal, usually a rat, would accidentally activate the lever, releasing the food. After several successful attempts to receive food, the lab animal is conditioned to use the lever if it is hungry. There is another lever linked to a grid that causes an electric shock to the lab animal once the lever is triggered, which acts as negative reinforcement for activating it.
Conditioning relates to reward systems because the use of operant and classical conditioning could be used to reinforce behaviours within a reward system. In particular the use of an audio cue (the bell) in Pavlov’s experiment could be repurposed as a prompt that pre-empts a reward being given in a TF2-style loot drop system, creating a feel of early anticipation before the reward is given. For conditioning to be successful in the long-term, it needs a “schedule of reinforcement” (Coon, 2005). This can be continuous or partial and affects the rate at which a reward is given. Partial reinforcement particularly creates an effect seen in slot machines where one payout after a large number of losses can be enough to keep player engagement.

The last concept is expectancy theory (Gray, 2007). This theory is based around learning through the expectation of being rewarded and three principles:

- “Conditioning is ineffective when the animal already has a good predictor.” (Kamin 1969 cited in Gray, 2007, p. 99).

This benefits a reward system because the potential promise of greater rewards should be used to encourage players to engage with it in the long term. The three principles could be interpreted as a specification for creating successful conditioning, although these principles are aimed at animal conditioning rather than human conditioning.

1.4 – Designing the New System:

One thing that is clear from the current alternative reward systems (see 1.3): XP should be replaced with a reward that is directly usable in gameplay (like a weapon or a crafting resource) and use non-linear horizontal progression. Non-linear horizontal progression means that as the player progresses in the system, they do not unlock rewards in a set order (non-linear) and the rewards unlocked are a variety of different options (horizontal) rather than more powerful versions of the initial items available to the player. Based on this, the alternative reward system that will form the foundation of the new reward system is the TF2 item drop system because it contains a non-linear structure and the focus on rewarding playtime conditions the player in a similar way to expectancy theory.

On the next page (figure 5) the item drop system has been simplified into a flow diagram to show the system’s gameplay loops clearly and visually to make applying additional mechanics easier to plan. Some mechanics are hidden from the player and are identified by the word“(Hidden)”.
The player starts the game.

The game chooses a random interval of time to reward the player. (Hidden).

The game stores the interval on a server with the player’s cumulative playtime data. (Hidden).

The player begins gameplay.

The player’s total playtime since first starting the game reaches the interval value. (Hidden).

The player receives a reward randomly from a list of potential rewards.

A new interval value is chosen at random to decide how long the player must play to receive the next reward. (Hidden).

Figure 5 – First version of the new system. This simplifies TF2’s item drop system into its basic mechanics.
After this the conditioning elements were added (figure 6). The item drop system already has parts of Pavlovian conditioning and expectancy theory within the gameplay loop that drives players to build up playtime at the expectation of a randomised reward. As these rewards are not given at a fixed interval, the system uses a partial reinforcement schedule with variable ratios and intervals. Once the player has played the majority of the time needed to earn a reward, an audio cue will sound to hint a reward will arrive soon, but no specific time is given. This audio cue is conditioned classically and once conditioned could prompt a player to play a little longer to get their next reward.

This flow diagram can be used to identify components in a game that can be used to apply the system to that game. There must be a way of measuring playtime as the system rewards that. This can be the number of turns completed in a turn-based game or the total hours played in a real-time game. The variable ratio and intervals of the rewards will need to be adjusted in the context of the game so that the rewards are not given too often but often enough to encourage continued play. The playtests can help identify this. There must be a gameplay reward, something the player can use to affect a game. This can be a permanent reward like a weapon or a consumable reward like a single use magic spell, but it must be something that the player finds immediate value in.

1.5 – Setting up the Playtests.

The system will be tested by applying it to a board game to see if the system meets the aims and provides more, less or a different kind of satisfaction to players. Players with an understanding (but not necessarily mastery) of the board game are asked to play a board game with the new system in place, on top of the board game’s existing rules. Once the game is complete, the players are then interviewed to discuss what they liked/disliked about the system and its effect on the game. Based on feedback from the tests, the new system is iterated and tested again and again until completion.

A board game is used for testing because prototyping in a video game would be too time-consuming, from a technical standpoint, to implement and iterate. The board game to be used for testing is Chess. This was chosen because it is a largely skill based game, much like many multiplayer games, as well as being a simple enough game to make the effects of the new system on the game more easier to spot. It is also well known and understood so it makes it easier to find players to test the new system. As chess is turn-based (as opposed to real-time) instead of hours played triggering reward distribution, time played is represented by the number of turns completed by a player.

The rewards themselves are temporary advantages and disadvantages to the player or opponent in the form of cards because adding new types of playing pieces would be difficult to implement into a game that already uses a large variety of pieces. Reward cards are not permanent to prevent them from un-balancing the rules and fundamental gameplay of chess too much. The reward cards are inspired by “magic” and “trap” cards from the trading card game Yu-Gi-Oh (Konami Digital Entertainment, 1996), which are used by players to leverage an advantage in their favour or alter the dynamics of the game (figure 7/8), and the turn-based strategy game Valkyria Chronicles (SEGA Corporation, 2008), which uses abilities called “orders” to provide players with a temporary bonus, like improved attack power, at the cost of command points (an in-game resource spent on moving units in the player’s army).
The player starts the game.

The game chooses a random interval of time to reward the player. (Hidden).

The game stores the interval on a server with the player’s cumulative playtime data. (Hidden).

The player begins gameplay.

The player’s total cumulative playtime reaches 75% of the interval value. (Hidden).

The player hears a distinct sound.

The player continues gameplay.

The player’s total playtime since first starting the game reaches the interval value. (Hidden).

The player receives a reward randomly from a list of potential rewards.

A new interval value is chosen at random to decide how long the player must play to receive the next reward. (Hidden).

Figure 6 – Second version of the new system with a Pavlovian conditioning loop.
Reward cards are divided into “Order” and “Trap” cards. Order cards provide largely offensive and support benefits at a cost in turns, such as allowing certain pieces to be moved multiple times in a turn, and Trap cards are situational, usually instant use, defensive cards that can be used once the card holder’s opponent meets the criteria to trigger it, such as if a piece is about to be captured, a trap card can prevent that capture. These two types of cards present players with offensive and defensive opportunities that can make achieving checkmate easier and a worth-while reward they can immediately use.

Because the system will have elements hidden from the players, the researchers monitoring the tests will also be in charge of applying these hidden elements to the game (e.g. if a random chance can happen, they are to roll a dice to determine if it occurs). If the system was part of a video game rather than a physical board game, these hidden elements would be handled by the game’s programming code or an external server owned by the game’s developer. Difficulties were found with finding participants. Participants needed to be between 18-30 years old with knowledge of the rules of chess. Against probable likelihood, the local university did not have a chess or similar board game club/society. This means the sample of participants is limited to 20 people and so quantitive data may not be scientifically conclusive. Qualitative data holds more value in this case as it will still provides insight into why participants liked/disliked aspects of the system.

1.6 - The Aims:

- To create an alternative reward system that could be applied to a multiplayer (co-operative or competitive) game which does not directly reward players with experience points or similar abstracts.
- Ensure the new system addresses the failings of XP-based reward systems, while achieving its merits as well.
2 - Methodology:

The new system will be tested through by the following method:

**Step 1:** The researcher sets up a room with 2 chairs and a small table between them, as well as a standard chess board on the table.

**Step 2:** The researcher should read both the rules for participating players (Appendix 7.1.1) and the game master rules for the researcher (Appendix 7.1.2) to familiarise themselves with how the new system works in the context of chess and their role as game master. If only one researcher is present he/she is to both observe the game as well as act as the game master. If multiple researchers are present, one focuses on being the game master while the remaining researchers observe.

**Step 3:** Invite 2 participants into the room and re-hand out the participant information sheet and double-check each participant has signed the consent form, as per ARU ethics guidelines.

**Step 4:** Allow the participants to begin playing chess and follow the new systems rules as per appendix 7.1.1 and 7.1.2.

**Step 5:** Observing researchers should note any positive or negative comments/queries about the chess game and aspects of the new system and can respond to participant queries as per appendix 7.1.2.

**Step 6:** Once each hour of play, allow the participants and researchers to rest, have a drink/food or use the toilet. This is to prevent the participants or researchers becoming fatigued. Game master notes and observation notes should not be left unattended for data security and validity reasons.

**Step 7:** Once a player reaches checkmate, the game ends. The researchers should now informally interview the participants as a group to find out what they thought of the new reward system. Because this is an informal interview, researchers should begin with the following questions, and then branch out based on the participants’ feedback to explore their reasoning behind their answers:

- What do you think the “ding/dong” sound signified and why?
  - This question checks whether the conditioned behaviour was successful or not and why.

- Did the addition of the new rules and reward system add value to the game of chess and why?
  - This question finds out if the new system adds any value to the game from the player’s perspective.

- Did/would you intentionally extend the game-time to gain more order/trap cards?
  - This checks if idling was performed by participants intentionally and the group nature of the interview should mean the other participant will identify if this practice is unfair or bad sportsmanship.

- How useful were the order/trap cards compared to XP based rewards?
  - This identifies if the order/trap cards affected gameplay and whether they are a better alternative to XP as a reward.
- How satisfying were the order/trap cards compared to XP based rewards?
  - This identifies if the order/trap cards improved the player’s experience and whether they are a better alternative to XP as a reward.

- Would you like to play again at a later date?
  - This identifies if the participants enjoyed the game enough to play again and willingness to take part in a future playtest.

- Would you like to play again right now?
  - This checks if the new system made the game fun/addictive enough to play again immediately.

**Step 8:** Once the interview is complete, the researchers must thank the participants for coming, remind them they can still withdraw any data they’ve provided for any reason, offer refreshments and the opportunity to take part again.

**Step 9:** The researchers can now test another pair of participants or pack up the equipment and collect together their findings.
3 - Results:

The playtests were performed with 20 participants who were all male students aged between 18 to 30, forming 10 pairs of players. Below are the comments, interview results of the playtests and observations by researchers, as well as iterative changes to the system between rounds of testing.

Round of Testing: 1

- Mid-playtest comments:
  - 2 participants queried the use of multiple cards in one turn. It was allowed.
  - 2 participants liked the way the cards offer a mixed of quick, small advantage and more costly/situational cards.
  - 3 participants queried whether a card’s effect took effect at the start or end of a turn. It was the start of the turn.
  - 7 participants showed their opponents what they were rewarded with.
  - 1 participant queried about the use of the card “Blades of the Rogue” (Appendix 7.1.3) due to limited knowledge of how the chess rule En Passant worked.
  - 3 participants enjoyed using the card “Guardsman’s Reflex” (Appendix 7.1.3) to counter their opponent’s use of Guardsman’s Reflex.
  - 1 participant queried the multiple use of the card “Barricade” to surround the king with barriers. It is within the rules to do so. This strategy never occurred in this round of playtesting.

- Interview results:
  - What do you think the “ding/dong” sound signified and why?
    - Participants were unable to identify that the sounds were linked to the rewarding of cards. They found association from it to events and achievements within the immediately prior turn, like taking a high-value piece.
  - Did the addition of the new rules and reward system add value to the game of chess and why?
    - Participants consistently found the new rules and cards improved the gameplay of chess. Reasons why included: creating more opportunities and strategic possibilities, radical change to tactics but “not so it is not chess”, the possibility for players to create their own cards, some cards allow control of key elements of the game (like control over the game’s pace). Some participants pointed out that there needs to be more cards to counter other cards or “double-edged swords” that help and hinder the card holder so players targeted by reward cards can have a chance to block it. One participant suggested a card that allows pawns move backwards and cards with more permanent effects.
  - Did/would you intentionally extend the game-time to gain more order/trap cards?
- Less than a quarter of participants admitted to making moves to use turns to get more cards. One participant justified the behaviour as something that happens in games of chess anyway to drag them out a game to a stalemate, and getting a card could prompt a player to resume actively playing rather than pursuing a stalemate.

- How useful were the order/trap cards compared to XP based rewards?
  - Participants responded similarly to the reasons why the new rules and reward system added value, such as creating opportunities and opening possibilities and control of elements of the games.

- How satisfying were the order/trap cards compared to XP based rewards?
  - Participants universally liked being directly rewarded with something they could use rather than XP, which one participant described as “bland”.

- Would you like to play again at a later date?
  - All participants were willing to play another game at a later date. All participants were invited back for the second round of playtests.

- Would you like to play again right now?
  - Only 2 participants expressed they would be willing to play the game again immediately.

- Observations:
  - The first ten turns occurred quickly and then players began to take more time with their moves.

  - The use of “Guardsman’s Reflex” (Appendix 7.1.3) to counter another player’s use of Guardsman’s Reflex causes players to openly laugh and smile.

  - Both players received roughly the same amount of rewards with a variation of +/- 2 rewards given. Rewards were not always given to a player on the same turn as their opponent.

- Changes to system based on feedback:
The ding/dong audio cue is moved to the turn just before a reward is given to see if that creates the desired conditioned behaviour. Participants who have already taken part in a playtest are told to disregard any associations about the ding/dong sound they have made due to this change and are allowed to take one card from their previous playtest into their next playtest as per appendix 7.1. The reward cards are unchanged as participants have made it the cards have value and for testing purposes that is the important part rather than balancing the cards.

Round of Testing: 2

- Mid-playtest comments:
  - Nothing that wasn’t expressed in the first round of testing.

- Interview results:
  - What do you think the “ding/dong” sound signified and why?
- Participants continued to be unable to link the sound cues to the rewards. It is still associated with actions within the turns.

- Did the addition of the new rules and reward system add value to the game of chess and why?
  - As all participants had previously taken part in a playtest and the cards were unchanged, all responses to this question were the same as the first round of testing.

- Did/would you intentionally extend the game-time to gain more order/trap cards?
  - As all participants had previously taken part in a playtest and the cards were unchanged, all responses to this question were the same as the first round of testing.

- How useful were the order/trap cards compared to XP based rewards?
  - As all participants had previously taken part in a playtest and the cards were unchanged, all responses to this question were the same as the first round of testing. One participant noted that the choice of the single reward card to take into subsequent games was an interesting choice and made the opening part of games more interesting.

- How satisfying were the order/trap cards compared to XP based rewards?
  - As all participants had previously taken part in a playtest and the cards were unchanged, all responses to this question were the same as the first round of testing.

- Would you like to play again at a later date?
  - As all participants had previously taken part in a playtest, all responses to this question were the same as the first round of testing.

- Would you like to play again right now?
  - As all participants had previously taken part in a playtest and the cards were unchanged, all responses to this question were the same as the first round of testing. 2 participants expressed that the length of the chess games makes consecutive games tiring.

- Observations:

- Cards that are carried over to this playtest from the previous playtest are used early in the game.
4 - Discussion:

The interview results show that the “ding/dong” audio cue conditioning failed. Participants failed consistently to link the sound to rewards being given. There are two reasons why this could have occurred. First, the conditioned stimulus (the “ding/dong”) must not have occurred close enough to the unconditioned stimulus (being rewarded) as per Lieberman’s principle of expectancy theory (section 1.3). Second, it may be that the conditioned stimulus did not have enough context for the association to become conditioned. A potentially better conditioned stimulus may be a message (audio or on-screen text) that hints that a reward will be given at an unspecified time, for example “a reward will be dropped soon,” because it is more clear it is related to the rewards system.

The interview results showed that the new system improved over XP based reward system. This is because participants indicated that the new system’s rewards were more useful, satisfying and positively affected the game’s mechanics without devolving the basic gameplay of chess.

An unusual behaviour found was that 7 participants showed their opponent the cards they were awarded. There was no penalty or incentive for doing this in the rules. These instances may have been an attempt to unsettle or impress their opponent by showing them a particularly effective reward card for that time. The use of one reward card to counter another was greatly enjoyed by participants. This should be added as a feature of the system as anything that appeals to players is one more thing to add to their experience.

Idling, which was identified as an issue with TF2’s item drop system in section 1.2.1, by intentionally using turns to get more reward cards occurred in a minority with only 25% of participants admitting to doing it. This means that idling has a presence in the new system but is not a majority influence. One participant noted the idling behaviour happens in games of chess anyway to drag out a game to a stalemate and getting a card could prompt a player to resume actively playing rather than pursuing a stalemate.

Participants showed they were willing to play the game with the new system repetitively, but not necessarily in consecutive sessions. This shows the new system is not addictive but is still entertaining enough to play again.

As a side note, the use of magic/trap card-like game modifiers did, from observations, improve the level of gameplay of the games of chess, with more sudden and unexpected changes as players used cards to turn a situation around for themselves. This sort of mechanic would be invaluable for a game designer looking to create a new board game or video game based on the mechanics of chess with a unique selling point. This was not explored in greater detail as it was not in the scope of the project but is an area that requires further study.
5 - Conclusion:

The new system is a strong alternative to XP-based reward systems by providing gameplay affecting rewards based on investing time that can be spent in any fashion the player chooses. It has accomplished some aspects of my aims (section 1.6). The system doesn’t use XP or similar, as per the first aim, but as the system was only applied to one game it cannot be deemed conclusively successful in the first aim with any game. It does however represent one instance of where the new system can be enjoyable to players and shows that players do find a more substantial reward than XP an improvement to their multiplayer experience.

In terms of the second aim, the new system addresses the major flaws. Players who have lots of rewards are only benefited by choice and so new players have a more even chance against experienced players. Rewards can be acquired by idling, which can be interpreted as similar to XP farming, although this process does not yield more instances of being rewarded but requires less player interaction. The new system has made limited achievements in replicating the merits of XP based reward systems. The promise of playtime resulting in rewards gives players a goal but it is not as clear as a fixed reward from a XP based reward system and the new system does not a short term reward for specific player actions like XP based reward systems do.

Finally, as the playtest data was being collected, the new system and XP based reward systems may have been made invalid by the multiplayer component of the recent release (at the time) of Mass Effect 3 (EA, 2012). In Mass Effect 3’s multiplayer, the progression system combines loot drops, unlock points and XP based reward systems into one hybrid system. As a player completes multiplayer games, they earn XP for actions like killing enemies and earn in-game money for completing bonus objectives like capturing nodes scattered around the map. XP is used to level up the player’s character that in turn earns unlock points, which are spent on upgrading player abilities. In-game money is used to purchase different packs of items, where the contents of the item pack are randomly chosen with each purchase. Players can receive weapons, weapons attachments, consumable power-ups and extra playable characters through this, with a greater chance of receiving a rare item relative to how expensive the item pack is. This blend of reward system types allows players to choose which area of the system to focus on based on the reward they want, while giving instant gratification and rewards for individual actions in-game which creates a good mix of short term and long term rewards that neither the new system nor XP based reward systems achieve on their own. This shows that while the hybrid system achieves the project’s goals better than the proposed new system, it shows the research was a valid direction to explore.

5.1 – Further Study:

Because of time constraints, only one board game was used. Further study could be made to explore how the new system affects other board games and/or applying it to an existing video game. This would better triangulate the results to see if they are consistent or not. Research could be made to find out if there is a way to encourage players to play multiplayer games without requiring a reward system. For instance, Counter Strike (Valve, 2000) does not use a persistent reward system but does allow players to unlock rewards for the match they are currently playing. Comparing the new system or other existing reward systems directly with Mass Effect 3’s hybrid reward system is another
avenue of further research. As mentioned in the discussion (section 4), the application of magic/trap cards to chess produced improved gameplay and should be explored to see how this could expand the tactics and strategy of chess and similar turn-based strategy games.

6 - References:

6.1 – Books


6.2 - Pictures


SwordsofRevealingLightDPYG-EN-C-1E.jpg. [image online] Available at: <http://images3.wikia.nocookie.net/__cb20100725023948/yugioh/images/6/6a/SwordsofRevealingLightDPYG-EN-C-1E.jpg> [Accessed 10 April 2012].

6.3 – Physical Games


6.4 – Video Games

_Battlefield 3._ 2011. [video game] DICE. Sweden: EA.


6.5 – Online Sources


7 - Appendices:

7.1 – Playtest Instructions.

7.1.1 – Rules For Participant Players.

All rules from chess remain in addition to the following:

1. A person performs the role of Game Master (GM). A GM keeps track of the game’s progress and awards the players a single random order/trap card when certain conditions are met. This means 3 people are required to play (2 players and 1 GM). For the purposes of playtesting, the researcher will be the GM.

2. When certain conditions are met, a player will receive an order/trap card. These cards allow players to temporarily alter the game mechanics and are used up on use. Once their effect is over, return the card to the GM. Players don’t have to show their opponent what the card is until it’s used.

3. Cards not used by the game’s end can kept and used in future games, however only 1 card may be available to you at the start of a game. For the purposes of the playtest, the researcher will note down what cards participants have not used and provide it to each participant so they may use those cards in future playtests.

4. Rules on Order/Trap Cards have priority over the rules of chess. Rules on Trap Cards have priority over the rules on Order Cards.

5. Order Cards are used (unless the card states otherwise) during any part of the card holder’s turn. They allow the card holder to access unique advantages (such as new abilities for pieces) often at the cost of the following turn. Others provide a bonus over multiple turns. Order Cards are used by announcing their use to your opponent, showing the card to their opponent and the GM, and following the rules on the card. An example can be found below (left).

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Player can place one barricade token on any empty space on their horizontal half of the board. Either player’s pieces can’t pass over barricades, except knights.</td>
<td>If the player has less than 50% of pieces (excluding the king) and the King is placed in check or checkmate then the king may be moved to any unoccupied space that doesn’t place it in check on the player’s horizontal half of the board.</td>
</tr>
<tr>
<td>- Last 3 turns.</td>
<td>- Instant use.</td>
</tr>
<tr>
<td>- Costs 1 turn to use.</td>
<td>- Costs 1 turn to use.</td>
</tr>
</tbody>
</table>
6. **Trap Cards** are similar to Order cards, only they can only be used if the conditions on the card are met. This may be during either player’s turn depending on the card. E.g. Siege Escape Plan (see above right) is used in the card holder’s turn. These cards are used to counter certain tactics, abilities or Order Cards. Trap Cards are used, once the conditions for the card are met, announcing their use to your opponent, showing it to their opponent and the GM, and following the rules on the card.

7. Players do not have to use Trap Cards on the 1st instance the conditions are met, but they can only be used the instant the conditions are met.

8. Turn costs on Order/Trap Cards **only apply to the card holder**.

9. **Terminology of Order/Trap cards:**
   - The card holder is referred to as “the player” on the cards.
   - The card holder’s opponent is referred as the “opponent”, “other player” or “enemy”.
   - Each player’s pieces are referred to as being on their “team” or “side” (In the case of “side”, this only applies if it is not followed by geographical terms like “side of the board”).
   - 1 turn is from the start of one player’s move to the next time they are allowed to move, i.e. 1 turn includes the player and their opponent’s turn. Turn costs on Order/Trap Cards only apply to the card holder.

7.1.2 – **Game Master Rules For the Researcher.**

   Game Masters are referred to as “GM” from here on.

   The GM will require a notation device, e.g. a pen and paper or a laptop with the program Notepad and should read this and the Player Ruleset.

   A turn is defined as “from the start of one player’s move to the next time they are allowed to move, i.e. 1 turn includes the player and their opponent’s turn. Turn costs on Order/Trap Cards only apply to the card holder”.

   A person performs the role of Game Master (GM). A GM keeps track of the game’s progress and awards the players a single random order/trap card when certain conditions are met. This means 3 people are required to play (2 players and 1 GM). **For the purposes of playtesting, the researcher will be the GM.**

   A GM is a neutral party and cannot help either players, but can settle disputes between both players over rules.

   **GM Order of Play:**
1. Before the game begins, shuffle the Order/Trap cards into a deck (all face down) and roll two 6 sided dice. **Do not let either player see the results.** Re-roll if they do. These represent the turns each player must have completed initially to receive a random order/trap card from the top of the deck (the two dice represent each player). If a dice rolls less than 3 re-roll that dice. Note the roll numbers and the player they apply to down (**don’t let players see them!**).

2. Allow play to begin.

3. Keep track of how many turns a player has had (**keep hidden from players**). When 75% of the turns required for a player have passed, make a distinct (but non-offensive) sound toward the corresponding player (e.g. if the white team player completes 3 of 4 required turns, say “DING!” to him/her). Keep this sound consistent for this particular player.

4. When 75% of the turns required for the other player have passed, make a similar (non-offensive) but distinct from the one used at [5.] sound toward the corresponding player (e.g. following from the example in [5.], if the black team player completes 4 of 5 required turns, say “DONG!” to him/her). Keep this sound consistent for this particular player.

5. Whenever either player meets their required number of turns completed, award them one card from the top of the order/trap card deck. Do not let the recipient’s opponent see what the card is.

6. Whenever a player receives an order/trap card, re-roll a 6-sided dice to decide how many turns that player must complete to gain another order/trap card. If the dice rolls less than 3 re-roll that dice. Note this down. **Don’t let the players see the dice roll or the note written down. If this occurs, re-roll.**

7. Repeat steps [3.] to [6.] as play occurs.

**Other Rules.**

- GMs can halt play at any time to catch up with events of play (in the event player make their moves too quickly), perform the distinct sound to a player and/or give out order/trap cards as per step [4.] and [5.]. This is to aid GMs in implementing their Order of Play. GMs can’t halt games for no reason.
- There is no limit on the number of cards a player can receive in a game, but they can only receive 1 card per turns completed threshold is reached.
### 7.1.3 – Examples of Order and Trap Cards.

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Player can place one barricade token on any empty space on their horizontal half of the board. Either player’s pieces can’t pass over barricades, except knights.</td>
<td>Player chooses a pawn and announces it will ascend to be a queen. If the pawn is still in play after 3 turns, it becomes a queen. If the ascended queen places the enemy king in check, it is not counted until the next turn. Cannot be used if the player already has more queens than their opponent.</td>
</tr>
<tr>
<td>- Lasts 3 turns.</td>
<td>- Lasts until game end.</td>
</tr>
<tr>
<td>- Costs 1 turn to use.</td>
<td>- Costs 0 turns to use.</td>
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<table>
<thead>
<tr>
<th>Order: Blade of the Rogue.</th>
<th>Trap: The Lionheart’s Last Stand.</th>
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<tbody>
<tr>
<td>All pawns on the player’s team may perform an En Passant capture on enemy pawns, even if the enemy pawn has moved already previously. Only one pawn can do this in a turn.</td>
<td>For 1 turn, the player’s king may move like a queen and can check. If the player’s king places the opposing king in check, then the opposing king can’t move for 1 turn. If the check isn’t broken by the end of that turn, then a coin flip decides which king is checkmated. If check isn’t achieved or the check is broken, the player’s king can’t move for 3 turns.</td>
</tr>
<tr>
<td>- Lasts 2 turns.</td>
<td>- Lasts 2 turns.</td>
</tr>
<tr>
<td>- Costs 0 turn to use.</td>
<td>- Costs 1 turn to use.</td>
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<tbody>
<tr>
<td>If the player has less than 50% of pieces (excluding the king) and the King is placed in check or checkmate then the king may be moved to any unoccupied space that doesn’t place it in check on the player’s horizontal half of the board.</td>
<td>Pieces on either side cannot move across the 2 rows in the middle of the board. Pieces in this area also can’t move or capture until the order is over.</td>
</tr>
<tr>
<td>- Instant use.</td>
<td>- Lasts 4 turns.</td>
</tr>
<tr>
<td>- Costs 1 turn to use.</td>
<td>- Costs 0 turn to use.</td>
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<tr>
<td>If the opposing player uses Order: Border Patrol, the player may end the order early at any point while the order is active. This doesn’t count as a move if the order is ended during the player’s turns.</td>
<td>Player moves any 3 pawns 3 spaces toward opponent’s side of the board. Any pieces (either player’s) in the way are instantly captured permanently until the game end. Excludes kings.</td>
</tr>
<tr>
<td>- Instant use.</td>
<td>- Lasts 1 turn.</td>
</tr>
<tr>
<td>- Costs 0 turn to use.</td>
<td>- Costs 1 turn to use.</td>
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<tbody>
<tr>
<td>Remove 1 piece from play. On next turn receive 3 random pieces your opponent has captured and place them in any vacant space on the row closest to you. If not enough space is available, use the next closest row and so on. Opponent must have at least 3 pieces captured to be able to use this order.</td>
<td>Player can move a Rook, Knight or Bishop twice in a turn.</td>
</tr>
<tr>
<td>- Lasts 2 turn.</td>
<td>- Lasts 1 turn.</td>
</tr>
<tr>
<td>- Costs 0 turn to use.</td>
<td>- Costs 1 turn to use.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Trap: Guardsman’s Reflex.</th>
<th>Trap: Snakeheart’s Spy Network.</th>
</tr>
</thead>
<tbody>
<tr>
<td>If one of the player’s pieces is about to be captured, the capture is stopped and the attacking piece is knocked back to the space it was previously on.</td>
<td>If your opponent uses Trap: The Lionheart’s Last Stand and the player’s king are placed in check by the opposing king, then the player may move any (non-king) piece to block the check.</td>
</tr>
<tr>
<td>- Instant Use.</td>
<td>- Instant Use.</td>
</tr>
<tr>
<td>- Costs 0 turn to use.</td>
<td>- Costs 1 turn to use.</td>
</tr>
</tbody>
</table>
Order: Familiar Territory.

For 3 turns, if either player’s pieces are on a space that matches the colour of the piece on it then they cannot be captured or placed in check/checkmate.

- Lasts 3 turns.
- Costs 0 turns to use.