

Making it Spicy: Designing Competition in Cooperative games

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This paper examines the role of competition in cooperative games. Cooperative gaming faded in popularity in the late 90s¹. Players preferred competing against peers because it presented heightened engagement and bragging satisfaction (Rouse 238). However, several cultural and technological forces have brought cooperative play back in style. Improvements in enemy AI, desire for less violent games for children, the influence of the 'New Games' movement after the Vietnam war, and even the XBOX 360 live arcade are all ways in which new attention is being given to cooperation.

This paper draws examples from two cooperative games that span twenty years of gaming history: Gauntlet (Atari, 1985) and The Incredibles: Rise of the Underminer (PS2, Heavy-Iron, 2005) to show that competition and cooperation are not mutually exclusive. If integrated properly, competition can make cooperative games more engaging, spicy and realistic. This paper presents a definition of cooperation and examines how four key design elements— interface, character abilities, level design and collectibles—encourage competition.

DEFINITION – WHAT IT IS COOPERATION?

A cooperative game is **a video game in which players work together to win against the computer system in a non-zero sum relationship where group based incentive exceeds individual incentive**. Unpacking this definition, a cooperative game is not a deathmatch. It is not a purely competitive, head-to-head game where one player wins and the other loses. In cooperative games, direct competition occurs between the players against the computer system and not Player vs. Player.

This definition isn't always so neat. Many games on the market blur the lines between competition and cooperation. The following chart illustrates the spectrum. (The chart lists games I've played or observed. An interesting future study would attempt to map an entire list of games against this spectrum. See the [Shadow Panther](#) reference.)



In War of the Monsters, opponents fight to the death whereas in Shrek 3, the entire playable cast shares the loot and gets upgraded together. The diagram makes three important suggestions. First, it is impossible to compete without cooperation. Salen and Zimmerman make an argument that all games are cooperative, simply because players agree to be subject to the rules of the game (Salen 255). Second, cooperative games can have competition. Third, if a game has too much competition it is not a cooperative game. The see-saw between cooperation and competition is determined by the player’s willingness to cooperate. Willingness is driven by perceived reward. These conditions can be distilled into two simple relationships using incentive perspective as a basis (Smith 2005).

Incentive perspective
Determining when players will cooperate or compete.

cooperative game = (individual incentive < group incentive)

competitive game = (individual incentive > group incentive)

Incentive perspective states that in all games, players will work to maximize their benefit. Players will cooperate as long as their individual benefit does not exceed group benefit. When the individual incentive to win becomes as great or greater than the group incentive to win, people will work independently. However, when the goals and rewards of the game incentivize players to work together, cooperation ensues.

INTERFACE

Interfaces shape the competitive and cooperative environment players experience. In both the Incredibles: Rise of the Underminer (IROTU) and Gauntlet, players share one-screen. Sharing one screen actually enhances the collaborative feeling of the game. It forces the players to stay together.



At the end of each level in *The Incredibles: Rise of the Underminer*, players are provided feedback on their performance. The side by side layout of this interface encourages competition.

Ironically, the fact that players can’t go ahead and attack more enemies might increase the perception of scarcity in IROTU. Players are forced to negotiate who gets to kill what before moving on to the next batch of enemies. In Gauntlet, however, players can see most of the level at the start. Because Gauntlet’s interface

allows players to see more, there may be less intense pressure to share enemies.

In both games, individual player performance is tracked real-time but it's poorly integrated into the interface. For example, in IROTU, a tiny font lists player stats the top corners of the screen. In Gauntlet, performance information is held to the far right, off the screen. In both games, the HUD display has a very minimal effect on the experience of competition because of the size and placement. This is in contrast to a game like Dynasty Warriors 4 (PS2, KOEI, 2003) where the number kills is prominently displayed in large font.

The most prominent way competition is facilitated in IROTU is in the level completion screen where players see a breakdown of their performance in contrast to their partner. Depending on individual performance, players can select upgrades that reward their play. In summary four interface elements influence experience of competition: single-screen display, HUD, level results screens and upgrade menu.

CHARACTER ABILITIES

Designers tune character abilities to enable either competition or collaboration. Typically characters that possess different abilities would force interdependence and make a game more collaborative. However diversity doesn't always yield collaboration. In the case of IROTU, Mr. Incredible is able to do more damage, all things being equal, than Frozone. As a result, it can make the game feel unfair. An interesting phenomenon occurs when observing couples play Incredibles Rise of the Underminer (IROTU). By level three, Frozone and Mr. Incredible are arguing. The following was recorded during observation of a man and woman playing IROTU:

"I don't know when to kill and not kill. If I kill, you get mad at me. If I don't kill, you get mad at me. I don't have a lot of control over what I hit."
Woman, playing Mr. Incredible

"I got more points than she did, yet I don't have an upgrade. Mr. Incredible always gets the upgrade."
Man, playing Frozone

In the above quote the woman, playing as Mr. Incredible, drops her controller and folds her arms over her chest. She waits with a look of frustration while her partner defeats a few more enemies to raise his score. The 'magic circle' is definitely broken for her. By level five, the Male player observes that the game feels unbalanced. His lack of trust in the fairness of the game disrupts the 'magic circle' for him as well. Both players feel like they are competing unfairly against each other.

In Gauntlet, players have different abilities as well. The "Warrior is strongest in hand-to-hand combat, the Wizard has the strongest magic, the Valkyrie takes the least damage and the Elf is the fastest in movement" (Wikipedia). These differences may give some players an advantage. In a Gauntlet observation, the winning player (Valkyrie) had nearly 240,000 points and his partner, a Warrior, had only 84,000. The Valkyrie tended to enter rooms first and had access to potions that would do considerable damage. Despite differences in abilities, the leading player said he wasn't watching the score. His objective was to try to get as far as he could on a single 'quarter'.

At the start of the game the announcer instructs “Your weapon causes no damage to the other player, yet.” I imagine the game could dissolve into a competitive match as the characters gain the ability to do damage. As one player shares on a review of Gauntlet on Xbox Live “The game might start off as a serious co-op adventure, but it quickly devolves into a bunch of players shoving each other into enemies and conspiring against each other.” In summary diverse character ability can increase the value of collaboration since puzzles force you to work together. However, cooperation quickly dissolves if one player has an advantage or in an extreme case if players can do damage to each other.

LEVEL DESIGN

Level design can enhance the experience of competition in collaborative games. Levels bring together all the mechanics of the game. Examine the following:

- **Collectible placement** – Gauntlet varies the placement of collectibles. The first one in doesn’t always get an advantage. Sometimes the last one in will skirt around the skirmish to grab the treasure.
- **Enemy placement** – few enemies in the Incredibles Frozone were placed in such a way that gave Frozone an advantage. For example, only Frozone could destroy enemies on a spiked tower. Because the levels did not favor Frozone’s destruction abilities, it enhanced the imbalance between the characters and caused some competitive tension.
- **Enemy type** – in Gauntlet enemies like the Black Death could only be destroyed with a potion. Valkyrie did the most damage with potions. The presence of many of these enemies might unbalance the feeling of cooperation if players are rewarded for kills.
- **Level goal** – in a notable example the last level of Dynamite Cop (Sega 1999), a cooperative game, asks you and your buddy to fight each other for the president’s daughter. The entire game you were working together to rescue her and now the game forces only one player to win. In such a game Carrie Gouskos feature editor at Gamespot recalls winning the game was the “First time I made a boy cry.” The impact of losing after working together can cause a huge emotional impact. It can be argued that cooperative games like Dynamite Cop are not cooperative because it creates a win/lose scenario.



On the last level, Dynamite Cop forces players to fight each other to win the affection of the president's daughter.

These examples illustrate how pure level design can influence competition.

COLLECTIBLES

Collectibles are the chief way players experience immediate reward. In IROTU there are two individually awarded collectibles: supermoves and experience points. Supermoves allow players to destroy enemies *en masse*, while experience points purchase upgrades. The following illustration shows that a player working on his own gets more points than if he works with his partner.

COLLECTIBLES (CONT'D)

Is teamwork rewarded?

Differing experience point rewards for defeating two drillbots

	Points Rewarded	
	Frozone	Mr. Incredible
working together	5xp	5xp
working alone	0xp	10xp
Total gained:	5xp	15xp

Mr. Incredible is rewarded for acting alone.



Screenshot of a drillbot enemy. Frozone often performs setups by freezing an enemy which Mr. Incredible then smashes. While both players split the experience point reward, working alone is more profitable.

Interestingly, players may not perceive they are being penalized for working together. Because the font is so tiny players aren't aware of the point disincentive. Simple point disincentives like these could encourage competition in collaborative games.

Halo 2 (Microsoft 2004) demonstrates, it is possible to have individual collectibles without increasing competition. The following table contrasts several games use of collectibles and the effect on competition.

Table showing the relationship between collectibles and competition in five cooperative games

Game	Individual Collectibles	Individual reward	Individual Recognition	Comp between Players
Halo 2	Yes	No	No	No
Gauntlet	Yes	Yes	Yes	Yes
Incredibles Rise of the Underminer	Yes	Yes	Yes	Yes
Shrek 3	No	No	No	No
Dynasty Warriors 4	Yes	Yes	Yes	Yes

In Halo 2 co-operative mode players can collect weapons individually. However players are not rewarded or recognized for individual performance. In fact, at the end of the level no feedback is given at all, players simply advance.

Gauntlet, on the other end, rewards and recognizes players for everything. The reward in Gauntlet is the ability to stay alive and not spend quarters. Partners are stopped short of decimating each other because they want to keep playing. If Gauntlet introduced a place to purchase upgrades like IROTU, competition would get fiercer.



Screenshot of Halo 2 split screen two player mode. While weapon pickups are available, competition is minimized because players aren't rewarded individually.

Gauntlet adds another layer of complexity because all collectibles are not equally powerful useful to all players. Players must definitely communicate. During my observation, the Valkyrie collected the potions because it's most powerful if used by the Valkyrie. Interestingly, the player that uses the potion gets a higher frag count which increases their points.

CONCLUSION

Competition adds an extra layer to the cooperative gaming experience. It effectively turns up the heat making the game more spicy, emotional and realistic. Competition adds some of the tensions and dramas real teams experience. This paper has examined how designers can control the tension by manipulating interface, character abilities, level layout and collectibles. The following are summarize suggestions presented in this paper.



Mild Competition

Heating Up the Incredibles

The Incredibles: Rise of the Underminer could have been optimized for both collaboration and competition if more careful thought had been given to the design, specifically:

- Interfaces should clearly indicate point distribution so the game isn't perceived as arbitrary
- Levels should not greatly advantage one player's abilities; players need to perceive a fair, level playing field



Very Competitive

Heating Up Gauntlet

Gauntlet is already a competitive game. Players indicated that they don't notice the score. If designers want players to increase competition they might:

- Allow players to trade in their points for tools or upgrades. Players will pay attention to the status if the amount of individual reward increases
- Compare the scores in-between levels or have the announcer say who is winning.



No Competition

Cooling off Competition

If designers want to decrease the tension cooperative games, they might:

- Tie all incentives to group-based performance
- Eliminate individual scores and comparisons
- Upgrade entire party together
- Provide only group based feedback on performance
- Increase number of enemies that must be destroyed as a team
- Use single screen and not split screen.
- Give each player their own types of collectibles. Make a collectible useless to the other player.
- Have system divide all loot evenly between all players
- Provide extra point incentives for working together

In sum, if the game is too spicy, decrease individual incentive. If the game is too chill, increase individual incentive. At all times though, the game should feel fair and impartial. Careful attention must be paid to the balance of character abilities and level design. In the end players choose how competitive they want to be. They add extra meaning to the game through negotiations they make with their peers. The suggestions presented in this document supported by incentive perspective theory provide a toolset to create engaging cooperative games.

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