One fascinating area of game design is the construction of cooperative multiplayer experiences. Cooperative games can be seen in contrast to zero-sum games, in which a positive outcome for one player negatively affects all other players in some way. The most common hallmark of a zero-sum game is a game in which one player wins and everyone else loses. Checkers, Chess, Monopoly, Pong, Street Fighter, Mario Kart, and the Quake-style deathmatch are all examples of zero-sum games. A cooperative game allows utility, which is a numerical representation of the relative goodness of a game's state or outcome, to be shared among multiple game players. Contrary to popular belief and the age-old question “Who's winning?”, cooperative video games are far more prolific than their direct competition counterparts, and have been since the rise of home video game consoles.

My earliest gaming memories involve two-player games on the Nintendo Entertainment System with my father or childhood friends. Many popular NES games, such as Super Mario Bros. 3, Contra, Teenage Mutant Ninja Turtles II, Double Dragon, and Ice Climber encouraged players to team up and tackle the game's challenges together. However, many of these games tested players by incorporating elements of internal competition within the cooperative structure, such as limited power-up and health regeneration resources. These resources can be shared or selfishly hoarded. Many games also allowed players to use their partner's limited continues to reenter the game without express consent from the owner. These internal competitions tested many friendships and added an extra layer of trust and strategy to the cooperative formula.

Most modern multiplayer games, excluding MMOs, are shooting matches that take place over the Internet. The online deathmatch is a major selling point of installments in many popular series, such as Halo, Call of Duty, Battlefield, Unreal, Gears of War, and Counter-Strike. One game that focuses extensively on cooperative game mechanics is Valve's Team Fortress 2. Visually, TF2 stands apart from other games with its cartoon style and unique character designs based on the art of Norman Rockwell and his contemporaries. Mechanically, TF2 distances itself from other shooters with its central mechanic of well-defined character classes that allow unique team structures to arise in response to circumstances over the course of a game. Since each TF2 player is free to switch between nine distinct classes, each with their own unique strengths and weaknesses, a group of skilled players are able to dynamically adapt their team to fit any situation.

Another modern Valve series, Left 4 Dead, allows up to four players to work in tandem to survive a zombie uprising. This game is unique due to its AI Director, which is capable of dynamically modifying the game difficulty based on the performance of the players in the game. The Director is in charge of spawning enemies, health packs, and weapons, as well as modifying the game level and choosing what types of enemies the players will face. The
Director can also monitor user actions, and is capable of rewarding player cooperation with health packs and strong weapons, and punishing selfish behavior with stronger enemies and less helpful items.

Left 4 Dead and its director have met positive feedback, and I find it encouraging that a major game title exists whose gameplay experience is controlled by an artificial agent. I think many interesting things can be done with an agent of this type. For example, the Director could be placed in a game where it intentionally creates conflicts of the type that arise in the early cooperative NES games over limited resources. The Director could create a type of prisoner's dilemma where cooperation is not explicitly the best option, and trust must be established and maintained in order for players to work together. This would allow a layer of social interaction and repeated games to overlay the core gameplay mechanics in order to take advantage of the strength of multiplayer games: interaction with other players.