

# “Beam Me ‘Round, Scotty!’: Exploring the Effect of Interdependence in Asymmetric Cooperative Games

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## ABSTRACT

In this paper, we explore *interdependence through asymmetry* as a possible game design tool for enriching player experience. We describe a prototype game we developed called “Beam Me ‘Round, Scotty!” which alternately tightly or loosely couples the cooperation of two heterogeneous groups of players in an action-oriented science fiction survival game. Future studies will examine the effects of interdependence on player experience and explore whether deliberately symbiotic player relationships can serve as a shortcut to enhanced socialization between players.

## Author Keywords

Cooperative games; game design; asymmetric games; interdependence; symbiotic play.

## ACM Classification Keywords

H.5.2 [User Interfaces]: Evaluation/Methodology

## INTRODUCTION

It has been argued that many online multi-player games are often much less social than originally estimated. Despite the potential millions of other players sharing the same online world, individualistic and egocentric play remains typical and interaction with other players can often be fleeting, anonymous, and unnecessary for success [3].

In contrast, traditional tabletop games, party games, and recreational sports exhibit much richer socialization and bonding between participants; even during impromptu “pick-up” games between strangers in public. Players negotiate custom “house rules”, assume unique roles within the group (leader, narrator, banker, goalie), jockey with and taunt each other playfully, and rejoice and commiserate with each other during victory and defeat.

This disconnect between the inherent togetherness of traditional games and the unexpected aloofness of many multi-player video games is underscored by research showing that

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gamers are happier, perform better, and play longer when playing with friends they know personally [4] and whose interactions are tightly coupled with their own [2]. Designers could thus emphasize cooperative play, which has been shown to quickly overcome social barriers and lead to more prosocial behavior, even between strangers [6].

In our current work, we propose that by creating reciprocal imbalances between game players in a cooperative play scenario, our fundamental human motivation to belong to productive groups [1] can jumpstart the desire to cooperate in video game play and act as a shortcut to improved socialization and bonding between players.

We explore this interdependence through asymmetry as a design tool in video games for enriching player experience and leading to unique forms of engagement and enjoyment for heterogeneous groups of players.

Although some commercial video games exhibit rich asymmetry and cooperation (e.g. Unknown Worlds’ *Natural Selection*, Ubisoft’s *Watch Dogs*, Nintendo’s *Super Mario Galaxy*), differences across titles in interface, content, pacing, and aesthetic make comparison with more symmetric games difficult. Instead, we have developed our own prototype game which affords control of these confounding factors and modification of only those game design elements which most directly impact interdependence.

## PROTOTYPE GAME

Called “Beam Me ‘Round, Scotty!” (BMRS), our prototype game is modelled on the science fiction scenario of a starship crew exploring an alien planet while their space-ship remains in orbit. All players observe a single communal display that shows a small area of the planet’s surface from an overhead perspective, the player characters exploring it, and the status of the starship.

## The Away Team

The majority of players assume the role of the intrepid “Away Team” that has travelled down to the planet’s surface to explore dangerous alien ruins in search of artefacts and treasure. Each game session, the Away Team is quickly set upon by violent native creatures that they must fight off using their handheld blaster pistols. If an Away Team character takes too much damage from enemies, they fall to the ground incapacitated and must wait for medical assistance from their teammates.

Away Team players can move their on-screen characters around the game world and fire their weapons in any direction using individual smartphone devices as handheld controllers. Each device affords the display of personalized character information such as colour, health, and score, as well as vibration and audible feedback when their in-game character is injured.

With the need for fast reflexes and the threat of becoming incapacitated, playing as an Away Team member is designed to appeal to action-oriented players with a desire for high-tension combat and fast, agile action [5].

### Scotty

One other player assumes the role of the starship's plucky engineer "Scotty" who observes the game world from an overhead perspective and can use the starship's various systems to support his or her teammates on the planet's surface. Using a mouse and keyboard, Scotty can send down supplies such as health kits and ammunition, create temporary shield walls to protect the Away Team, and teleport teammates out of (and into) danger.

Scotty's abilities are limited by a gradually replenishing pool of energy generated by the starship. The rate of energy regeneration can be set before the game begins to generate alternately strong or loose coupling between player teams. Rapid energy regeneration allows the Scotty player to make fairly reckless use of their powers with little consequence. A more limited rate of regeneration forces the Scotty player to make more judicious choices on when and where to spend their energy lest their teammates be left without support at a critical moment.

Scotty's abilities are designed to cater to a more collaborative and support-oriented player who prefers lower-stress, strategic thinking and "big picture" challenges [5]. Since the surface-dwelling alien enemies do not have any means by which to attack the starship, there is no immediate threat to the Scotty player. They cannot fail the game directly and their continuously replenishing pool of energy always allows them to contribute to the party of players, given sufficient patience.

### INTERDEPENDENCE AND SYMBIOSIS

The degree of symbiosis between Scotty and the Away Team players can be modified through a number of game mechanic design parameters.

In the "Loose Coupling" condition, the interdependence between the Away Team and Scotty can be essentially eliminated by, for example, allowing the Away Team players to collect their own healing power-ups on the surface of the planet. If the Away Team's weapons are sufficiently powerful such that the Away Team can manage to survive on their own through skillful game play, the Scotty character becomes a helpful but not mission-critical contributor to the group play session.

Alternatively, in the "Tight Coupling" condition, the Away Team can *require* Scotty's intervention in order to heal their wounds and rearm their weapons. Similarly, Scotty could *require* the Away Team to collect 'energy modules' on the planet's surface in order to recharge the starship's abilities or to activate localized 'stabilizer beacons' on the planet surface before Scotty is able to help the Away Team within a limited proximity of the active beacon.

An even more tightly-coupled three-way relationship can be introduced whereby injured players must first be 'diagnosed' by Scotty before being 'treated' by another member of the Away Team. In order to revive the player, their smartphone screen (displaying a QR code) must be appropriately scanned by another player who is physically nearby both in-game and in the real world.

### FUTURE WORK

Using "Beam Me 'Round, Scotty!'" as an experimental platform, we plan to study the effects of interdependence and asymmetry on player experience in different gameplay contexts: both online and offline and between strangers and existing friends. We hypothesize that well-designed asymmetric game mechanics can generate unique challenge and symbiosis between players, improving engagement and socialization. We also anticipate that poorly designed or excessive interdependence between players can be frustrating and detrimental to player experience. Ultimately, we hope to generate a set of design recommendations and guidelines for successfully incorporating interdependence and asymmetry into other practitioners' game designs.

### REFERENCES

1. Baumeister, R., & Leary, M.. "The need to belong: desire for interpersonal attachments as a fundamental human motivation." *Psychological bulletin*, 117.3: 4. APA 1995
2. Beznosyk, A., Quax, P., Lamotte, W., & Coninx, K., "The effect of closely-coupled interaction on player experience in casual games". *In Proc. ICEC '12*, pp. 243-255. Springer Berlin Heidelberg
3. Ducheneaut, N., Yee, N., Nickell, E., & Moore, R. J. "Alone together?: exploring the social dynamics of massively multiplayer online games". *In Proc. CHI '06*, pp. 407-416. ACM
4. Mason, W., & Clauset, A. "Friends ftw! friendship and competition in halo: Reach". *In Proc CSCW '13*. pp. 375-386. ACM 2013
5. Stewart, B. "The Four Bartle Types." *Gamasutra*. [www.gamasutra.com](http://www.gamasutra.com), 1 Sept. 2011. Web. 14 July 2014.
6. Velez, John A., et al. "Ingroup versus outgroup conflict in the context of violent video game play: The effect of cooperation on increased helping and decreased aggression." *Communication Research* 2012: 0093650212456202. SAGE