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## “Beam Me ‘Round, Scotty!’: Studying Asymmetry and Interdependence in a Prototype Cooperative Game

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### Abstract

In “Beam Me ‘Round, Scotty!”, pairs of players engage with asymmetric gameplay mechanics and interfaces (e.g. leading vs. support, action vs. strategy, gamepad vs. mouse interaction) in a cooperative adventure to escape a hostile alien world. “*Beam Me ‘Round, Scotty!*” presents a multi-faceted play experience designed to bridge differences in player skills, styles, and interests. By introducing deliberate interdependence through asymmetry, different types of players can come together and have fun overcoming obstacles, defeating enemies, and escaping the alien planet via their unique contributions.

### Author Keywords

Asymmetric games; cooperative games; player typology;

### ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

### Introduction

In the modern gaming landscape, the sheer variety of play experiences and game genres (both niche and mainstream) provides modern game players with more



[Figure 1] Kirk evades rolling lava boulders while Scotty plans a teleport jump.

choice in what they can play than ever before. Different kinds of players prefer different genres, different interfaces, and different challenges at different times. Much work has gone into attempts to classify players into different typologies [1][2] and differing models have emerged to describe the evolving preferences of players over time.

While these typologies can help game designers focus their projects towards specialized tastes, challenges often arise when games attempt to bridge their appeal. For example, action gamers, while reveling in high-speed, reflex-based challenges, can become bored when faced with the slower-paced, planning-centric challenges of strategy or simulation games. Casual puzzle game players can begin to feel overwhelmed with the complexity of role-playing games or Massively Multiplayer Online worlds that require significant time investment in learning game mechanics, rules, and interfaces.

These mismatches are often highlighted within any individual player's circle of social relationships where it is often the case that not everyone enjoys the same kinds of games. When heterogeneous groups of players want to play together (e.g. grandparents with grandchildren, action gamers with strategy gamers, etc.), it can be difficult to find a shared play experience that everyone can meaningfully contribute to and engage with fully.

### **Asymmetric Gameplay**

In order to accommodate heterogeneous player groups, traditional approaches have relied on *balancing* [3][4][5]: where differences among players are normalized with techniques such as “rubber banding”

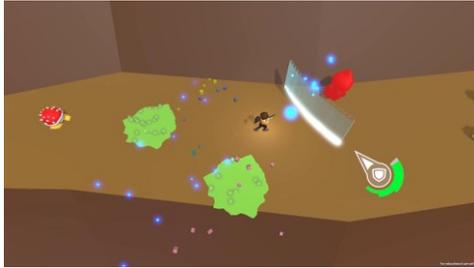
(struggling players are given artificial speed, item, or ability boosts), point multipliers, or hidden handicaps. However, research has shown that some forms of balancing can have detrimental effects on different players' enjoyment. [5] Relatively skilled players may feel cheated by the game's systems and relatively unskilled players may not feel that they have earned their victories.

Instead, our research focuses on *deliberately* asymmetric games: multi-faceted games that provide different kinds of players with different challenges, different interfaces, and different opportunities to contribute their unique expertise towards a rich, shared experience. [6] In addition to potentially appealing to multiple types of player preferences, asymmetric games may also help connect players of different physical and mental capabilities. [7]

A number of critically acclaimed commercial games already exhibit asymmetry in the form of differing player abilities (e.g. Nintendo's *Super Mario Galaxy*, Dice's *Battlefield* series of online war games, Chris Hecker's *Spy Party*, Unknown World's *Natural Selection*). With the growing sophistication of new hardware technologies, more novel asymmetries (of interface, information, time commitment) are beginning to emerge. (E.g. Microsoft's *Smartglass* companion app, Nintendo Wii U's handheld tablet controller).

### **Beam Me `Round, Scotty!**

In an earlier paper [8], we proposed the conceptual outline of an asymmetric cooperative game which could be used as a test platform to explore the effects of different forms of asymmetry on different player types. We have subsequently spent substantial time developing



[Figure 2] Scotty draws shield walls to block Kirk from incoming alien slime shots.

*Beam Me 'Round, Scotty! (BMRS)* into a playable prototype game and we discuss concrete gameplay examples below.

In *BMRS*, one player, using a handheld dual-joystick gamepad, plays as fictional star captain, Joanna T. Kirk, in an action-oriented “twin stick shooter” role. After her shuttle craft crash lands on an alien planet, Kirk players must use speed, reflex, and manual dexterity to navigate their on-screen character through hazardous environments while simultaneously aiming and shooting at approaching hostile enemies. The Kirk role is designed to appeal to traditionally action-oriented players with higher skill requirements and high risk, high reward consequences.

The second player assumes the role of “Scotty”, a plucky starship engineer still aboard the players’ primary vessel in orbit above the alien planet. Using a simpler mouse interface, Scotty employs a variety of the ship’s systems to aid Kirk on the planet’s surface and help her find a means of escape. Scotty’s abilities include a) a healing beam that can restore Kirk’s vitality, b) an electric shock which can stun enemies or power-up derelict machinery found in the game world, c) torpedoes that can clear away obstructing debris from Kirk’s path and damage enemies, d) a shield wall which block enemies’ shots but allowing Kirk to safely fire through, and e) a short range teleport ability that allows Scotty to drag-and-drop Kirk out of danger and over to previously inaccessible locations. Each ability draws from a common pool of energy (which slowly replenishes itself over time) so Scotty must be careful how and when they use their powers lest Kirk be left caught in a dangerous situation.

The Scotty role is designed to appeal to more support-oriented strategic players as they decide how best to use the ship’s limited resources. Because there are no direct threats to the orbiting starship itself, Scotty’s role is also designed to be less stressful; with lower consequences for poor performance and a more casual pace.

Player studies consist of a series of carefully designed challenge scenarios; each exploring a specific form of interdependence and cooperation between Kirk and Scotty. In some areas for example, Kirk is able to progress relatively self-sufficiently by relying on her blaster to dispatch basic enemies. Here, the degree of interdependence is relatively low. In other areas, hazards such as steaming geysers or lava pools require Scotty to intervene by blocking the jets with a shield wall or teleporting Kirk past danger. Here, interdependence is relatively high but straightforward. Some areas of the planet feature inhibitor fields which alter Kirk or Scotty’s abilities: for example, forcing Kirk to holster her blaster and carry a beacon item which super-charges Scotty’s potency in a local area. In this way, the traditional interdependence can be inverted and Scotty must rely on Kirk to position the beacon effectively in order for the pair to succeed.

## Research

By developing our own game, we maintain fine grained control over its mechanics and aesthetics and can change any aspect of the play experience based on observed player behaviour or emergent research questions.

During preliminary play sessions, we have observed unique patterns emerging based on the skill of each player in their assigned role as well as the *relative* skill level of their play partner. For example, when highly skilled Kirk



[Figure 3] Scotty clears a path for Kirk through a maze by launching torpedoes from the orbiting starship.

players are paired with relatively lower skilled Scotty players, Kirk tends to assume a leadership role; dictating to the more passive Scotty when and where to use Scotty's abilities. Alternatively, equally skilled Kirk/Scotty pairs tends toward more dynamic give-and-take leadership interactions where Kirk and Scotty alternate who dictates immediate objectives and how they intend to overcome given challenges.

Our current goal is to determine effective methodologies of studying player interactions in these asymmetric gameplay settings and how best to incorporate historical research from fields such as situational awareness, collaborative work/learning, and player satisfaction. In our currently planned study, play sessions will consist of alternating stages of gameplay and player experience questionnaires followed by semi-structured interviews. Both the player's interaction with each other and the game screen will be video recorded and a fine grain log of all in-game actions will be recorded by the game itself.

Future experiments will include different game mechanic manipulations. For example, how does the interaction dynamic change when Kirk can heal herself? How do leadership negotiations change if Kirk must actively consent to being teleported rather than Scotty being able to transport Kirk unilaterally? We also plan to study cooperative dynamics when asymmetry is introduced in team size: How does the Scotty player's experience change when there are multiple "Kirk"s to monitor and aid?

### Conclusion

While we do not think any individual asymmetric game will appeal to all player types universally, we argue that by embracing heterogeneity, rather than attempting to

normalize it, game designers can create uniquely engaging asymmetric experiences that bridge specific combinations of player types and lead to more deeply engaging play experiences between players.

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