

Game Mutators for Restricting Play

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When creating a new rule set, game designers usually have one or two main concepts that they wish to translate into actual rules. Sometimes the interactions between rules provide too much scope for offence or defence that remove any sensible or interesting tactics, thus producing a boring or trivial game, even sometimes a broken game that needs redesigning. This article proposes different ways to restrict move flexibility in order to reach an appropriate balance that a good abstract game requires.

1 Introduction

THE concept of restricting move options within a game is not new. Many classical games include *ludemes*¹ that restrict piece movement with the goal of improving overall play. These can be strategic in nature, such as the *ko* rule in Go, or more tactical in nature, such as the bearing off restrictions in Backgammon.

Such restrictive rules can often be applied more generally to a variety of games, which leads to the concept of game *mutators*. This article describes, through example, how such mutators can be applied to solve design problems in games, by restricting piece movement to reduce or eliminate undesired behaviour.

1.1 Restricting Cycles in Go

The classic board game Go involves the simple *ko* rule which prohibits repeating the previous board position. This is usually sufficient to prevent cycles of moves that would otherwise ruin the game, and adds significant strategic depth to the game [1].

However, some unusual situations can still lead to cycles longer than two moves, so there exist stricter *superko* rules in some Go rule sets. *Situational superko* prohibits repeating any previous board state with the same player to move, while the even stricter *positional superko* prohibits repeating any previous board state, regardless of whose turn it is to play.

For example, Figure 1 shows a Go position in which this distinction between situational and positional superko matters, with White to move. If White plays at *a*, then Black can capture at *b*. With positional superko, White cannot recapture, so on Black's next move, Black could capture the

remaining two White stones to secure the corner. With situational superko, however, White can immediately recapture *b*, restoring the board state but with Black to move.²

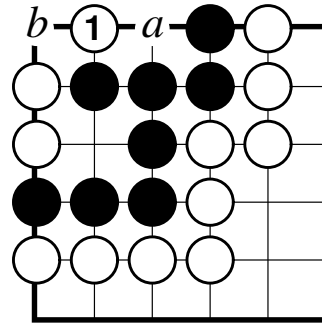


Figure 1. The specific superko rule matters.

1.2 Game Mutators

A *game mutator* is a rule, or set of connected simpler rules, that transforms a game into a new game.³ The distinction between a mutator and a *ludeme* is blurry, since neither concept is formalised. Herein, we understand game mutators to be *ludemes that function as generic game transformations*.

The mutator concept is well known in computer science. The idea of a simple procedure that can be applied to a framework to change its behaviour is widely used [2], and has particular importance in the construction of modular and expandable videogame engines. For example, the Unreal system uses a scripting language to specify game parameters and allows the creation of mutators that easily extend games in many ways (often called ‘modding’), thus adding new behaviour to game objects [3].

¹A *ludeme* is an element of play, a rule or idea that might be shared by different games.

²Position from Sensei's Library: <http://senseis.xmp.net/?Superko>

³<http://www.chessvariants.org/newideas.dir/mutators.html>