"Juggling Balls"

Morren, Liam; Bednar, Peter; Hay, Nicola

Published in:
[Host publication title missing]

2006

"Juggling Balls"

Liam Morren, Peter Bednar and Nicola Hay
University of Portsmouth
Email: peter.bednar@port.ac.uk

Introduction

'*Juggling balls*' is a multiplayer game that was developed in the form of a Java Applet. The game was developed as part of a software-engineering project (Morren, 2006). The software itself was designed for the needs of an ongoing research project. The foundation ideas and further development was drawing on a research project which focuses on visualisation in relation to individual emergence in a context of double bind/abusive relationships (Hay, 2001).

The project included work on Bateson's "*Infinite dance of changing coalitions*" (Bateson, 1972; pp 240-242) which deals with ways in which schizophrenic families interact within double bind or abusive relationships (Hay, 2001). Hay had created sets of animations to illustrate these ideas. In one sequence, these display a number of balls juggling on screen, with different colours (red, green and blue) and effects, symbolizing individual '*dancers'*. Some of the animations show how coalitions in relationships may change over time (Hay, 2001).

Use of balls and colours in these animations were intended to convey an idea of having abstract, non-threatening forms in the application. People using the program would then have no distractions, e.g. knowing who the other players might be. Another set of animations illustrates Bateson's "*Infinite dance of changing coalitions*", itself a translation of Von Neumann and Morgenstern's game theory, using three coloured areas (red, green and blue) and three shapes (red, green and yellow). The shapes move in and out of the different coloured areas, showing how coalitions are always changing. Using these ideas, the software was designed and implemented using an evolutionary prototype method. This has allowed the client to view and add input throughout the life of the project. The game tries to simulate, in an abstract way, how double bind relationships might work between the people involved, and to some extent how involved they are.

Operation of the Game

The game works using the abstract ideas created in Hay's initial animations, described above. There are three players, symbolised by coloured balls (red, green and blue) which can be controlled in the game area by the players using the mouse and keyboard. Throughout the life of the game white balls then appear on the screen in random locations and move in random directions of their own accord. Players can shoot projectiles from their coloured ball by pressing the left mouse button. When a collision occurs between a player's projectile and a white ball, both are destroyed and the black screen is painted at that location with a blended circle of that player's colour.

Players create coalitions by moving into regions of the screen coloured with the other players' colours. The colour a player moves into denotes the player with whom a relationship is created. To make this coalition meaningful, players shoot the white balls while in their partner's region. When a player hits a ball while in another's colour region, he will score points for that player instead of himself, and at the same

time penalise another player's score. In this way, the game only supports formation of a coalition with only one player at a time, which in turn will upset the other player and should after a while alter the relationship as in Bateson's theory (Bateson, 1972). A player will score points for himself by hitting balls while in his own colour region, effectively having a coalition with himself.

While it is possible to win the game by shooting as many balls as you can in the given amount of time, it would be more beneficial to make coalitions with the other players based on their scores. If one player is catching up with you and the other player is far behind, you might want to make a relationship with the low scoring player. This will lower the score of the player who is catching up with you, and raise the lower player's score without affecting your own. Hence, it helps you to stay in the lead. Coalitions also help the players with low scores, by bringing the highest player's score closer to their own, helping them to get back in the lead.

As the screen fills with colour, it also might become hard for a player to score for himself, in which case, he will be forced to make coalitions with other players. However, he might not even be aware that he is doing so, as build-ups of different colours make it hard to distinguish which regions belong to whom.

Points scored are shown on the screen, together with a bar graph showing the percentages of scores for each player, to help judge who is winning. When the allocated playing time has finished, the screen switches to another screen showing statistics about the game. This includes a graph to show the percentages of the screen coloured in each of the three players' colours, to show how much activity has occurred between players. There are also sections for each player, giving individual statistics, including point scores, player positions, and for each player the points given or penalties to other players' scores, and the percentage help given to each player. This last figure depends on the points given to them, balanced against how much they scored themselves, showing how significant interactions with them were.

Conclusion

The game closely simulates the interaction symbolized within Bateson's "*Infinite dance of changing coalitions*". In particular, it shows that there are many alternative solutions to the system. Individuals may go through many iterations in order to find one that is preferable, to help them gain an advantage and win. In the context of Hay's research, this game might form the basis of a prototype. Such simulations might be seen to provide a useful vehicle for individuals to explore, through analogy, aspects of family organisation.

References

Bateson G. (1972). *Steps to an Ecology of Mind*. University of Chicago Press, Chicago.

Hay N. (2001). *Visualisation of game metaphor* Accessed May 2006 at: http://www.envf.port.ac.uk/illustration/images/vlsh/infdance/infin1.htm

Morren L. (2006). *Juggling Balls*. Unpublished final year dissertation. School of Computing, University of Portsmouth, UK.