

Context influence vs efficiency in establishing conventions: Communities do it better

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Abstract

The emergence of communicative conventions in human groups is believed to be governed by both local forces of salience and precedence, and global forces pointing to a convergence onto the most frequently encountered alternative (Garrod and Doherty, 1994). In the present study we tried to answer two questions: 1) what is the influence of context over the establishment of conventions? And 2) are communities as sensitive to that influence as pairs? Using a maze game task, we compared communities and pairs of participants in two different contexts: a regular context, where the maze layout is closer to a grid, and an irregular context, where the layout resembles an irregular shape. We predicted that regular layouts would cue the use of more abstract description schemes to refer to locations in the maze, while irregular layouts would cue the use of more concrete schemes. Our results show that participants in the irregular context were more likely to use concrete description schemes in the first game in both pairs and communities, but while pairs of participants maintained this choice over the following games, communities moved towards the more efficient abstract description schemes. These results show that the influence of context can be overcome by communities, and that the most frequently encountered initial scheme is not necessarily kept if there are more efficient alternatives available.

1 Introduction

We investigated the effect of the context in which communication takes place on the nature of the emerging conventions, comparing pairs versus communities of players in a maze game task. Pairs of participants, communicating over a chat interface (Healey and Mills, 2006; Mills, 2014), had to jointly identify and locate tangram figures distributed in a maze. Both participants in

each pair had the same maze structure but the figures were placed in different positions. The task forced them to describe and agree on the positions of the tangrams. We tested whether differences in the regularity of the maze would prompt participants to use different description schemes to refer to locations in the maze. We predicted that more regular (i.e. grid-like) maze would cue the use of abstract description schemes which make use of the grid-like appearance of the maze (i.e. by referring to positions in terms of row and column numbers), while more irregular mazes (characterized by e.g. irregular protrusions) would cue the use of more concrete description schemes relying on salient features of the mazes as reference points. Moreover, we predicted that, as abstract schemes are more efficient in both regular and irregular contexts, communities would tend to move towards the use of abstract schemes, while pairs would be bounded by salience and precedence to the schemes they used in the first rounds.

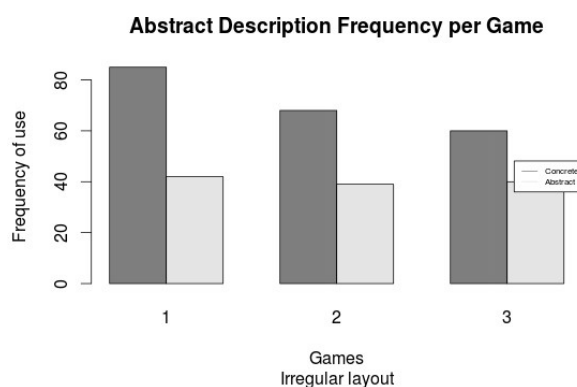
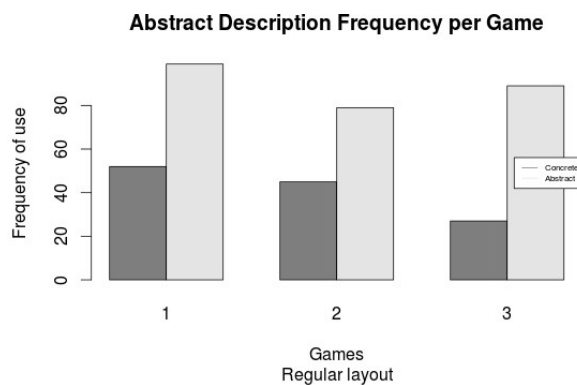
2 Methods and procedure

14 pairs and 8 four-people groups played over a chat interface for 3 games each. In the pairs setting, pairs of participants played together for 3 games, while in the communities setting, participants played with a different member of the groups in each of the 3 games, forming an emergent community. Each maze was based on a 7x7 grid and contained a similar number of squares. We developed a measure of maze regularity, based on mean square density, to select two samples of regular and irregular mazes. Pairs/groups would play on either a regular or an irregular maze for 3 games. On each maze, players had to identify and describe the position of 6 tangram figures. The figures were the same

for all pairs and groups. Once both players had identified and selected the position of a chosen figure in each other's mazes, the figure disappeared, and they moved to the next figure until all figures were gone.

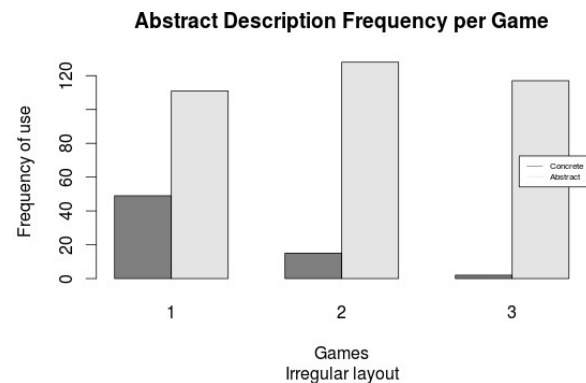
3 Results

Regular mazes resulted in the use of more abstract description schemes, and irregular mazes were associated with concrete description schemes: in the first game, the probability of using an abstract description was significantly higher for pairs in a regular layout than for pairs in an irregular layout, across both pairs and communities conditions (pairs were 0.5 times more likely to use an abstract description in a regular layout, compared to irregular, in the pairs condition, and 0.77 times in the communities condition). However, pairs showed a similar difference in games 2 and 3, which shows that they maintained their description schemes across games.



Communities, on the other hand, showed the predicted behaviour, with groups in different layouts using different description schemes over the first game, but converging over the abstract description schemes over the second and third games. The difference between conditions was

significant for the first game (regular vs irregular layout), use of abstract description schemes, but became neutralised through the games, with no significant difference between conditions by game 3.



4 Discussion

These results suggest that context affects participants' choice of reference scheme, with regular contexts cueing the use of abstract schemes, and concrete, maze-specific schemes being preferred in irregular contexts; but that this selection is only maintained in pair-wise settings. Communities, on the other hand, move away from concrete schemes –even in the more salient irregular layout– towards abstract, more efficient schemes, as participants interact with different partners. This increased efficiency in communities shows how a 'better' alternative can become established as convention even when it was not the most salient option in a given context.

References

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