ANOTHER QUEER EXTENSION OF MARTIN GARDNER'S TWO-CHILD PROBLEM: THE FACEBOOK EDITION

Sandra J Hall, Katryne Dubeau and Egan J Chernoff
University of Saskatchewan, Canada
sandra.hall@usask.ca

EDUCATIONAL CONTRIBUTION

As an addendum to Recalculating for the Real World [Paper presentation] (Dubeau et al., 2023), we considered other ways of extending famous probability problems for the purpose of 2SLGBTQ+ inclusion in mathematics curricula. While we found success in adding non-binary as a gender identity to Martin Gardner's Two-Child Problem to enhance the mathematics and generate discourse in the classroom about the 2SLGBTQ+ community, we quickly established that this approach would not work for other probability problems. As explained in the above paper presentation, the Monty Hall problem presented multiple complications regarding use of language and far too many assumptions that had to be made regarding the host's knowledge and a contestant's willingness to share personal information with said host. Reflecting on this failure, we were forced to reconsider what we were attempting to achieve and how it could potentially benefit not only applied probability, but the inclusion of the 2SLGBTQ+ community in current curricula.

THE ORIGINAL PURPOSE OF THE MARTIN GARDNER PROBLEM

The question first appeared in a 1959 Scientific American issue, specifically, Martin Gardner's Mathematical Games column. The key word here is 'games' – the purpose of which was to puzzle, perplex and entertain. Interestingly, the counterintuitive nature of this particular problem has led to years of debate. As Nick McKeown (Stanford faculty) describes, "we humans just haven't evolved to solve this kind of problem" (Antonick, 2012). How can this be? Essentially, the Two-Child problem points out our naïve heuristics in regard to applied probability; the educated guess is likely the wrong one, which, of course, is what made this problem famous in the first place.

WE HAVE CHOSEN NOT TO PURSUE THIS LINE OF THINKING

After recognizing the blunder the Monty Hall problem created, we returned to Martin Gardner's Two-Child problem, intent on adding Facebook's seventy-two listed gender identities as potential identity options. While we were excited to apply this extension to Martin Gardner's work, it became apparent early on that there was no way this would work in a mathematics classroom as the numbers were untenable. Considering the original purpose of the game, we recalled that it was meant to puzzle or trick, not infuriate with overly complicated math. Adding seventy-two gender possibilities to the problem made it impossible to find a solution using mental math's and took it too far from the game's original intent. Although we waxed on poetically about 're-calculating for the real world', when we actually applied real-world information, the mathematics and social connotations did not pan out.

REFERENCES

Antonick, G. (2012, October 22). Martin Gardner: The two child problem. *The New York Times.* https://archive.nytimes.com/wordplay.blogs.nytimes.com/2012/10/22/two-child/

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