

**David Wells: Games and Mathematics: Subtle  
Connections, Cambridge University Press, 2012,  
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REVIEWED BY MICHAEL BRENNAN

David Wells sets out to highlight the analogies between playing games and doing mathematics. In the Introduction he refers to three ways in which the mathematician does his/her work: “The mathematician as game-player observes and makes conjectures; the mathematician as scientist makes moves and spots possibilities; the mathematician as observer studies objects like the pieces in an abstract game of chess”. The reader will already detect the redundancy.

The book starts by describing in everyday language features of well-known games such as chess, Hex and Go (at which the author is a master), then features of well-known maths-puzzles — the Edouard Lucas puzzles are prominent — and some results from prime numbers, Euclidean geometry, sequences and series. The narrative points to an argument that since there are parallels between the types of thinking, the obstacle-surmounting and the strategies that the mathematician and the game-player use, then... what? The conclusion is unclear. Wells never gets to the point of saying that in playing games one is doing mathematics, and/or vice versa. Even if such an identification is true there is no way of knowing so from this book, because crucially the author does not define what he means by a game. The reader will deduce that there are objectives and strategies involved, but these are involved in crossing a street, or boiling an egg.

Ironically, modern game theory would be happy to include street-crossing and egg-boiling in its compass. David Wells however makes no mention of game theory. Its omission robs him of such concepts as cooperative and non-cooperative games, notions that might usefully be applied to professional mathematicians, their methods, rivalries, piggy-backing, and mutual inspiration. Wells’s book is reductionist

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in the way it attempts to squeeze mathematics into some notion of a “game”: “To play around with a problem, to ‘suck it and see’,... is the very essence of mathematics. It is no coincidence of course that *playing* [his italics] is just what game players do” (P. 74). There is much innuendo by word-association: “Euler combines his dazzling ability for pattern-spotting with his equal ability to play the game of mathematics brilliantly” (P. 84); “We could say that MacLane thinks of mathematics from the start as game-like.” (P.120); and there are chapters optimistically entitled “Game-like mathematics”, “Euclid and the rules of his geometrical game” and “Mathematics becomes games-like”, but the association is everywhere strained and comes to no meaningful insight.

Yet if all of this can be left to one side, there are some real merits to the book. Firstly however it should be said that the editing was too light-handed. Chapter 8 (“New concepts and new objects”) opens, incredibly, with a list of over 150 nouns and adjectives from a mathematical dictionary: all the way from “Abelian group” through “knot” to “Zorn’s lemma”, just to show that mathematicians use new names for new things. The author adds the comment that the list could be longer, since some of the nouns are associated with verbs and adjectives “as in any colloquial language”. Elsewhere, there are misnomers in the proof of Ceva’s theorem, a referenced arrow missing on Fig. 7.8, a misplaced  $P'$  in Figs. 14.5 and 14.5b; and Napoleon’s theorem is referred to, forty-five pages before we are told what it is. The lack of tightness gives an impression that the author was left somewhat to his devices. This may be because David Wells is, and has been for decades, an established scholar and author. He references twenty-three of his own publications in the book’s extensive and useful bibliography.

And there’s the rub. The book contains a wealth of material of mathematical interest. It is something of an Aladdin’s cave of mathematical topics, theorems and investigations from a wide range of subject areas and historical periods, and from a wide canon of mathematicians. It would thus be a good reference book on any college library shelf, where undergraduates could find springboards of interest for projects or small dissertations. Some Irish student might for example, investigate if the  $7 \times 7$  Hex board mentioned by Wells could be related to the  $7 \times 7$  gaming board of possible Viking origin found in a crannóg at Ballinderry, Co. Westmeath in 1932 and on

daily display in the National Museum.

In the meantime students will have to gloss over the author's persistence with an ill-formed plea that mathematics and games are of the same DNA. It may well be that they are, but this is not the book to secure a conviction.

(Note: The ISBN given is for the hardback. A paperback edition is available: ISBN: 978-1-107-69091-2.)

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