



# UNIVERSITY OF MARYLAND

PROFESSOR DORON LEVY  
DEPARTMENT OF MATHEMATICS  
AND CENTER FOR SCIENTIFIC COMPUTATION AND  
MATHEMATICAL MODELING - CSCAMM

Department of Mathematics  
College Park, Maryland 20742-4015  
TEL: 301.405.5140  
FAX: 301.314.6674  
dlevy@math.umd.edu

August 15, 2016

Re: Referee Report on Tereza Bártlová's Ph.D. Thesis

Dear Thesis Committee,

I would like to express my very strong endorsement of the Ph.D. thesis of Tereza Bártlová that was submitted to the Faculty of Mathematics and Physics at Charles University in Prague.

The thesis provides a comprehensive study of the history and current state of recreational mathematics. The thesis consists of five papers:

1) *T. Bártlová, History of recreational mathematics* (prepared for publication, 2016).

This paper investigates the history of recreational mathematics, focusing on the development of problems throughout history. This is a very comprehensive manuscript that covers topics starting with mathematical problems that were investigated by ancient civilizations, through contemporary problems (including problems that were popularized by the Simpsons TV series). This paper on its own, has the potential of turning into a classic source on the topic. In addition to a detailed explanation of the mathematical problems, their results, and their history, this paper provides very innovative connections between some of the recreational math problems and topics from pure and applied mathematics.

2) *T. Bártlová: A Romance in many dimensions* (Proc. 4<sup>th</sup> Recreational Math. Colloq., 2016).

This paper is dedicated to Edwin Abbott, the author of "Flatland". Flatland, a 19<sup>th</sup> century novel, was written to introduce laymen to geometry. Building on the transition from two dimensions to three space dimensions, Abbott simulated a discussion on a similar transition from three to four dimensions. In addition to the mathematical depth of the book, Flatland includes also many references to the Victorian society of the time. In her paper, Bártlová studies various aspects related to Flatland and its author: including mathematical, educational, satirical, and connections to his contemporaries, such as Lewis Carroll. This paper is a must read for all fans of Flatland.

3) *T. Bártlová, Martin Gardner's Mathemagical Life* (Rec. Math, 2014).

This paper provides a critical review of Martin Gardner, the spirit behind the flourishing of recreational mathematics in the second half of the twentieth century. As Bártlová comments in the summary to her article: "He [Martin Gardner] managed to get freed from expected patterns of thoughts, broke seemingly-solid laws, and discovered unexpected connections and revelations." In this paper, Bártlová analyzes Gardner precisely as should be done: a visionary, a pioneer, and as Douglas Hofstadter noted: "... one of the great intellects produced in this country in the 20<sup>th</sup> century."

4) *T. Bártlová, Where are (pseudo)science fool's hoax articles in April from?* (submitted, 2016).

This paper focuses on the topic of mathematical hoaxes. Quoting from the preface to this article: “The aim of the article is to show that sometimes we have to take authors of the articles with a little humor and mainly rely on our own wits.” This article, indeed, provides a refreshing view regarding some of the entertainment value in recreational math. Humor is used as a motivating tool for raising the public interest in math.

5) *T. Bártlová, New ways in teaching of mathematics* (submitted, 2016).

This paper provides ideas as of how to transform math education using recreational mathematics. In my view it is excellent that Bártlová does not stop after the fourth paper, but continues with this one, exploring ways by which recreational math can be used to increase the interest of the general public in mathematical sciences.

In some circles, recreational mathematics may be considered to be less rigorous and less important than “serious” mathematics. For me, reading this thesis reminds me over and over the beauty of mathematics, which is precisely why I chose to become a mathematician at the first place. In summary, I find this thesis to be of an outstanding quality, and I am pleased to strongly endorse it.

Sincerely,

A handwritten signature in blue ink that reads "Doron Levy". The signature is fluid and cursive, with the first name "Doron" and last name "Levy" clearly distinguishable.

Doron Levy, Ph.D.  
Distinguished Scholar Teacher  
Fellow of the Guggenheim Foundation  
Professor of Mathematics  
University of Maryland, College Park