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Citation
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With the discovery of a completely new mathematical object and the development of powerful new techniques in set theory, Stevo Todorcevic has become one of the world's leading logicians. Through the application of set theory, he has made striking contributions to topology and analysis. He is the author of eight mathematics books, one of which garnered the 2013-2014 Schoenfield prize of the Association for Symbolic Logic. He is the 2012 winner of the prestigious CRM-Fields-PIMS prize, Canada's premier mathematics award.

Detailed appraisal
The discovery of an entirely new mathematical object is a rare event that is always accompanied by a major advance in our understanding of mathematics and an extended period of exciting progress. It is with this in mind that we celebrate Stevo Todorcevic for his discovery of rho functions and the various applications they have found.

The truly new objects discovered in set theory are so few that they can easily be listed by century. The late nineteenth century was, of course, the era of Cantor's discovery of the cardinals and the Cantor set. The early twentieth century witnessed Hausdorff's gap, Aronszajn's tree, Goedel's constructible universe, while the end of the century produced Shelah's PCF structures and Todorcevic's rho functions.

These rho functions were initially used by Todorcevic to establish the strongest possible negative partition relation. The classical result in this direction, which can be explained with reference to colouring the edges of the complete graph G whose vertices are the elements of the smallest uncountable cardinal number, had been obtained by Sierpinski in 1933. He coloured the edges of G with 2 colours in
such a way that each colour appears on some edge of any uncountable subgraph of G. Half a century later, Galvin and Shelah had increased the number of colours from 2 to 3 and, at the time, improving 3 to 4 seemed beyond any available methods. And, indeed, it was. It needed the use of his newly discovered rho functions for Todorcevic to increase 3, not just to 4, but all the way up to the maximum conceivable number -- the smallest uncountable cardinal. This was one of the results for which he was invited to the Berlin ICM. (The International Congress of Mathematicians, or ICM, which meets every four years, is the most prestigious occasion at which a mathematician can be asked to speak.)

The rho functions have since found many uses and continue to do so. Todorcevic's former student, Justin Moore, presented an invited talk at the most recent ICM on his solution of the 50 year old problem of constructing an L-space. The space was constructed by an ingenious melding of rho functions with number theory. Argyros and Todorcevic used rho function type constructions to produce non-separable Banach spaces answering long standing open questions. Just recently Todorcevic used his rho functions to answer the question of Laver of whether the class of Aronszajn trees is well quasi ordered under order and meet preserving embeddings.

However, it would be wrong to leave the impression that Todorcevic's reputation rests on the rho functions alone. While Stevo Todorcevic's influence in set theory and infi nitary combinatorics

(i.e., the combinatorics of infinite sets) places him among the very elite of researchers in these areas over the past century, his influence on other areas of mathematics such as geometric Banach space theory, topological dynamics, and set theoretic topology is no less remarkable.

Perhaps the first result of Todorcevic to get the set theoretic world to pay attention was his negative solution to the S-space problem. In the early eighties it was assumed that an absolute construction would eventually be found for these strange spaces that had been found to occur in various unexpected contexts and under various hypotheses. Todorcevic was probably the first researcher to develop a
profound understanding of Shelah's newly developed notion of proper forcing. He used this insight to create a forcing strategy that has now become a staple of forcing constructions. Indeed, it is so much a part of set theoretic culture that it often appears without reference to its origins. This is a phenomenon that is not uncommon with Stevo's work and, because of it, the close to 1400 citations of his 150 papers, while impressive in mathematics, do not accurately reflect his actual influence.

More recent work includes the solution in 2002, with Paul Larson, of a 1948 problem of M. Katetov. While the intrinsic interest of the problem itself appeals to a group of researchers, the very deep methods applied to solve the problem have sparked tremendous interest and are the current focus of intense research.

The more recent paper Fra"iss'e limits, Ramsey theory, and topological dynamics of automorphism groups (together with Pestov and Kechris) has also attracted attention from various quarters. The key idea is to use finite Ramsey theoretic constructions to provide a uniform method for producing extremely amenable groups, groups of which there were only a few isolated examples before this work. As a point of comparison, a recent week-long workshop held as part of the Fields semester on asymptotic geometric analysis seemed to be devoted to nothing but the ramifications of this paper.

Even more recently, the 2006 solution of a 20 year old problem of Davis and Johnson used a natural Baire category assumption to get that every non-separable Banach space must contain an uncountable biorthogonal system. This builds on the body of work in geometric Banach space theory by Todorcevic already mentioned in connection with rho functions and in addition on his vast improvement of results of Bourgain, Fremlin, and Talagrand on Baire class one function representations of the unit ball of a Banach space.

Dr. Todorcevic has been a brilliantly creative and productive mathematician for almost forty years, and is now clearly a world leader in set theory and its applications to pure mathematics.