OBITUARY

Professor Stef Tijs (1937–2023)

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Stef Tijs passed away on June 13, 2023. His scientific heritage includes almost 300 publications, among which a number of books, and 35 PhD students in the area of game theory. Stef has been productive over a period of 35 years from 1975 onwards—during the last decade of his life he was no longer scientifically active due to mental health problems.

Stef set off with a bachelor degree in chemistry but then switched to his true love, mathematics, and obtained a cum laude master degree in this field in 1963. He then moved from Utrecht to Nijmegen, where he received his PhD based on a thesis about infinite and semi-infinite matrix and bimatrix games (Tijs 1975). His first journal publication in game theory was on strategic equivalence and domination in transferable utility games (Tijs 1976). He left Nijmegen and went to Tilburg in 1991.

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Besides a prolific researcher, Stef Tijs was an enthusiastic teacher, who wrote many course books, in particular on basic mathematics and on game theory, social choice theory, and mathematical economics for university students, but also on mathematics for secondary school students according to the so-called "Wageningse Methode," which strives to be a playful and practical way to teach and learn mathematics. Many of Stef's PhD students were initially attracted to game theory also by his performance as a teacher. We still recall Stef's vivid lectures and presentations. With pride he would demonstrate his ability to write on the blackboard with both hands simultaneously, thereby each time producing two coherent lines in one turn. And he was also good at making jokes: after Olga Bondareva, in one of her first presentations outside the former Soviet Union, had claimed Russian priority for many results in game theory, Stef added her name to every paper that he cited in his presentation at the same conference.

Stef's publications cover almost every subfield of game theory, but with some emphasis, certainly later on, on cooperative games. A concept, introduced by Stef and still regularly studied, is the τ-value, a solution for cooperative games with transferable utility: as Stef used to explain, the name of this concept refers to the second letter of his first name (Tijs 1981). Since, as Stef rightfully argued, any decent solution concept should be backed up by axioms—think of the Nash bargaining solution or the Shapley value—he provided such an axiomatization in Tijs (1987).

As mentioned, Stef's research covers most areas of game theory: cooperative and noncooperative games, arbitration games, stochastic games, bargaining, fair division, bankruptcy problems, Bayesian games, fuzzy games, and more. Gradually, his research tended to show a focus on cooperative games derived from specific economic or operations research problems, see Tijs and Driessen (1986) and Curiel et al. (1989) as early examples of this.

Stef was eager to do research and to publish the results—the latter, however, not at any cost. For instance, his work with Bezalel Peleg on axiomatizing the Nash equilibrium concept via a consistency principle (Peleg and Tijs 1996) was withdrawn from Econometrica since the authors did not agree with the demanded changes. Typically, Stef was foremost interested in exploring new problems, more than in spending much energy on embellishing existing results. His work, with over 100 coauthors, has been published in more than 30 journals, ranging from International Journal of Game Theory and Games and Economic Behavior to Management Science and Mathematical Programming.

The vast majority of Stef's PhD students in game theory stayed in academics, and many of them, including the authors of this obituary, are still active in game theory and related topics. Stef can truly be regarded as the "godfather" of game theory in The Netherlands. He was the first to teach game theory and social choice theory in The Netherlands, and he started a regular seminar series, called "Game Theory Day", when Lloyd Shapley visited Nijmegen in 1983. Other regular visitors at that time were T. Parthasarathy (ISI Delhi), TES Raghavan (Chicago), and M. Maschler (Hebrew University, Jerusalem). In particular these game theory days offered an excellent opportunity to young PhD researchers to meet and discuss ideas with (inter)national experts, also while enjoying a joint spicy Indonesian dinner.

Both on the occasion of his 50th and his 65th birthday, books in his honor and containing mainly work of his students were published (Peters and Vrieze 1987; Borm and Peters 2002; see also Borm et al. 2005). Moreover, through Stef's initiative, the Dutch game theory community started to participate in the game theory meetings organized in Italy and later also in Spain, since 2005 called SING (Spain Italy Netherlands meeting on Game theory) and now called European Meeting on Game Theory but still with SING as an acronym. Stef Tijs also held positions at Maastricht University and at the University of Genova, and received an honorary doctorate from the Miguel Hernandez University in Elche, Spain, in 2000. In 2003 he received a royal distinction ("Ridder in de Orde van de Nederlandse Leeuw").

Although, due to his health problems, Stef withdrew from the scientific community already more than 10 years ago, he is still actively present in our minds through his cooperative attitude and scientific generosity, and will continue to be so in the foreseeable future.

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