Finite semifields are generalisations of finite fields where the axiom of associativity for the multiplication is dropped. In other words, a semifield is an algebra with a one and without zero divisors for which the multiplication is not necessarily associative. They were introduced and studied by Dickson around 1900, and much later they turned out to play a central role in the theory of projective planes. There are many examples of finite semifields and they were extensively studied by A. A. Albert during the first half of the 20th century. It was Donald E. Knuth who named these algebras "semifields" in his PhD thesis "Finite semifields and projective planes" (1963). Semifields are still very relevant today with many applications (e.g. maximum rank distance codes, perfect nonlinear functions, generalised quadrangles). In the first part of this talk we will give some of the main results on semifields; in the second part we will focus on rank two commutative semifields (RTCS's), argue why they can be considered as the holy grail in the theory and explain our recent results in collaboration with Morgan Rodgers in which we classify 8-dimensional RTCS's.