Tomas Petricek — Selected Publications

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- **Tomas Petricek**. Cultures of Programming: The Development of Programming Concepts and Methodologies. 351 pages, Cambridge Unviersity Press (in press), 2025

  The monograph develops a novel framework for understanding the development of concepts and methodologies that programmers rely on in their work. It documents key episodes from the history of programming, interprets them in a new way and provides a rigorous basis for folklore notions such as hacker culture. The book compiles research conducted over the last 6 years, which already attracted interest, including an invited industry keynote at CodeMesh 2020 and invited talk at Spring Meeting of the Association for Symbolic Logic and Meeting of the Pacific Division of the American Philosophical Association (ASL/APA) 2023.

- Joel Jakubovic, Jonathan Edwards and **Tomas Petricek**. Technical Dimensions of Programming Systems. The Art, Science, and Engineering of Programming, vol. 7, issue 3, no. 13, 10.22152/programming-journal.org/2023/7/13, 2023

  This recent paper, already with 16 citations (4 Scopus), makes explicit the distinction between programming languages and programming systems. It provides a conceptual framework for studying programming systems, addressing the need of an emerging research community. The framework has already been employed to describe novel programming systems developed by researchers in France, United Kingdom, United States and Germany. The associated online catalogue (tomasp.net/techdims) was accessed 10k+ times.

- **Tomas Petricek**, Don Syme and Gustavo Guerra. Types from Data: Making Structured Data First-class Citizens in F#. PLDI '16: Proceedings of the 37th ACM SIGPLAN Conference on Programming Language Design and Implementation, pp. 477-490, 10.1145/2908080.2908115, 2016

  The paper presents a practical method for integrating external information sources into statically typed programming languages. Published in CORE A*-rated PLDI conference, it provides theoretical foundations for a widely adopted F# library developed by the authors and industry contributors. The paper formalizes the library introducing a novel notion of relative safety. In addition to a wide-spread industrial adoption (over 6.0M downloads; 102 OSS contributors), the work has been awarded the PLDI Distinguished Paper award and was selected as one of three ACM SIGPLAN Research Highlight papers for 2018.

- **Tomas Petricek** and Don Syme. The F# Computation Expression Zoo. PADL 2014: Proceedings of the 16th International Symposium on Practical Aspects of Declarative Languages, vol. 8324, pp. 33-48, 10.1007/978-3-319-04132-2_3, 2014

  The paper presents a canonical description of computation expressions, an influential F# language feature developed earlier by the authors. F# computation expressions have been widely adopted by the industry for asynchronous and concurrent programming. The theoretical development in this paper directly inspired the design of corresponding langauge constructs in C#, TypeScript and mroe recently JavaScript. Although the main impact of this work is industrial, the paper also had impact on the programming language research community with 38 citations (13 Scopus) thanks to its novel unification of monadic abstractions.

- **Tomas Petricek**, Dominic Orchard and Alan Mycroft. Coeffects: A Calculus of Context Dependent Computation. ICFP '14: Proceedings of the 19th ACM SIGPLAN International Conference on Functional Programming, pp. 123-135, 10.1145/2628136.2628160, 2014

  This paper gives a wide-ranging development of coeffects, introduced a year before in a shorter paper by the authors. This longer paper appeared at the CORE A-rated ICFP conference and presents a unified and rigorous treatment of coeffects. It promulgated the idea of coeffects in the functional programming community and has 130+ citations (64 Scopus, 39 WoS) and influenced the design of Scala and the Hack language developed by Meta. The notion of coeffects has since been the topic of several grants in the UK, France, US, and Iceland. The associated interactive essay (http://tomasp.net/coeffects), which provides an accessible introduction to the work, received over 30k unique visits.