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Conceptual Modeling: Foundations and Applications

Essays in Honor of John Mylopoulos

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John Mylopoulos

Preface

John Mylopoulos has made ground-breaking contributions to three areas of computer science: artificial intelligence, information systems and software engineering.

His contributions have been celebrated on multiple occasions. First, Misha Missikoff organized a one-day symposium on conceptual modeling on June 17, 2003, in Velden, Austria, to celebrate John's 60th birthday. Second, John Tsotsos led the organization of a day of celebrations on June 27th, 2009 in Toronto, Canada, on the occasion of John's retirement from the Department of Computer Science of the University of Toronto.

This book grew out of our desire to honor and thank John by presenting him at the Toronto reunion with a volume that reflects his belief that conceptual modeling is becoming a fundamental skill that will be a necessary tool for all future computer scientists. The papers in this book are written by leading figures in technical areas that intersect with conceptual modeling, as well as by John's closest collaborators. We are pleased to present this collection of papers that we believe are of lasting significance and could also be used to support a course on conceptual modeling. We are extremely grateful to the eminent authors, who have contributed such high-quality material.

We have organized the chapters into several sections. Within each section, the chapters are ordered alphabetically by the surname of the first author. The section on foundations contains material on ontologies and knowledge representation, which we see as the technical grounding on which CM research builds – a pattern that John Mylopoulos himself has repeatedly followed, starting from semantic networks in the 1970's, through Reiter's solution to the frame problem, to the recent work of McIlraith on preferences in planning. The four sections on software and requirements engineering, information systems, information integration, and web and services, represent the chief current application domains for conceptual modeling¹. Finally, the section on implementations discusses projects that build tools to support conceptual modeling. We note that the above divisions are by no means perfect, and several chapters could easily have been placed in more than one section.

Once again, we wish to express our gratitude to the authors, who have found time in their busy schedules to write these valuable chapters. We also wish to thank the referees, both authors and non-authors, who offered useful comments towards improving the material. We are grateful to the members of our Senior Advisory Committee, composed of Norm Badler, Sol Greenspan, Hector

¹ We point to the article by Roussopoulos and Karagianis for a history of some of the high points of the field.

Levesque, Nick Roussopoulos, John Tsotsos and Matthias Jarke, who provided us with sage advice and useful guidance at several crucial stages of this endeavor.

April 2009

Alex Borgida
Vinay Chaudhri
Paolo Giorgini
Eric Yu

Enkomion²

John Mylopoulos was born in Greece in 1943, and went to the United States to complete his B.Eng and M.Eng in Electrical Engineering at Brown University, and then do his PhD studies at Princeton University, under the direction of Theodosius Pavlidis, finishing in 1970.

John then joined the Department of Computer Science at the University of Toronto as an Assistant Professor, and he remained on the faculty there until his retirement in June 2009. In 2001, John joined as a visiting professor, and then in 2005 as Distinguished Professor, the University of Trento, in Trento, Italy.

Throughout his career John has had the unwavering support of his wife, Chryss, and they have raised two wonderful children, Maria and Myrto, who have followed their parents' footsteps into academia.

John is widely recognized as a visionary thinker. His insights, which cover the breadth of computer science, are much sought after. His keynotes are prescient and much-anticipated for a glimpse at the next big idea.

With great generosity, John has helped numerous young researchers get established, mentoring students and postdoctoral fellows. He has helped new departments and research groups gain prominence on the world stage.

He is a builder of communities and has worked tirelessly to bring people from diverse areas together in joint projects, creating much-needed synergy.

On a personal level, he is a role model: he is approachable, gentle, amiable and an eternal optimist, in other words, exactly the kind of person one would like to work with. His productivity is legendary. His leadership style is low-key but extremely effective.

Rather than provide a complete bibliography of all his publications and honors (which can be found online), or list all the many scientific contributions of John, we have chosen to offer three representative glimpses of his *opus*.

First, the following is a list of some of the projects that John undertook with his students and collaborators, and which were deemed sufficiently worthy for a Greek name (always starting with a "T") – John is very proud of his heritage:

- TORUS: Natural-language access to databases, which required the representation of the semantics of the data, and hence first led us to conceptual models of relational tables using semantic networks.
- TAXIS: Programming language for data-intensive applications which supported classes of objects, transactions, constraints, exceptions and workflows, all orthogonally organized in sub-class hierarchies with property inheritance.

² This is the original Greek source of the English word "encomium", meaning "celebration".

- TELOS: Representation language for knowledge of many different kinds of software engineering stakeholders, including application domain and development domain, which exploited meta-classes, and treated properties as objects.
- TROPOS: Applying the ideas of early requirements (goal orientation, agent dependence) to the entire range of software development, and expanding its scope to many topics, including security and evolution.

Second, in order to show that John not only worked in multiple areas but was in fact recognized in each of them as a leading figure, we mention three honors:

- Artificial Intelligence: Fellow of the American Association for Artificial Intelligence (1993).
- Databases: Elected President of the Very Large Databases Endowment (1998-01, 2002-05), which oversees the VLDB conference and journal.
- Software and Requirements Engineering: Co-Editor-in-Chief of the Requirements Engineering Journal (2000-2008).

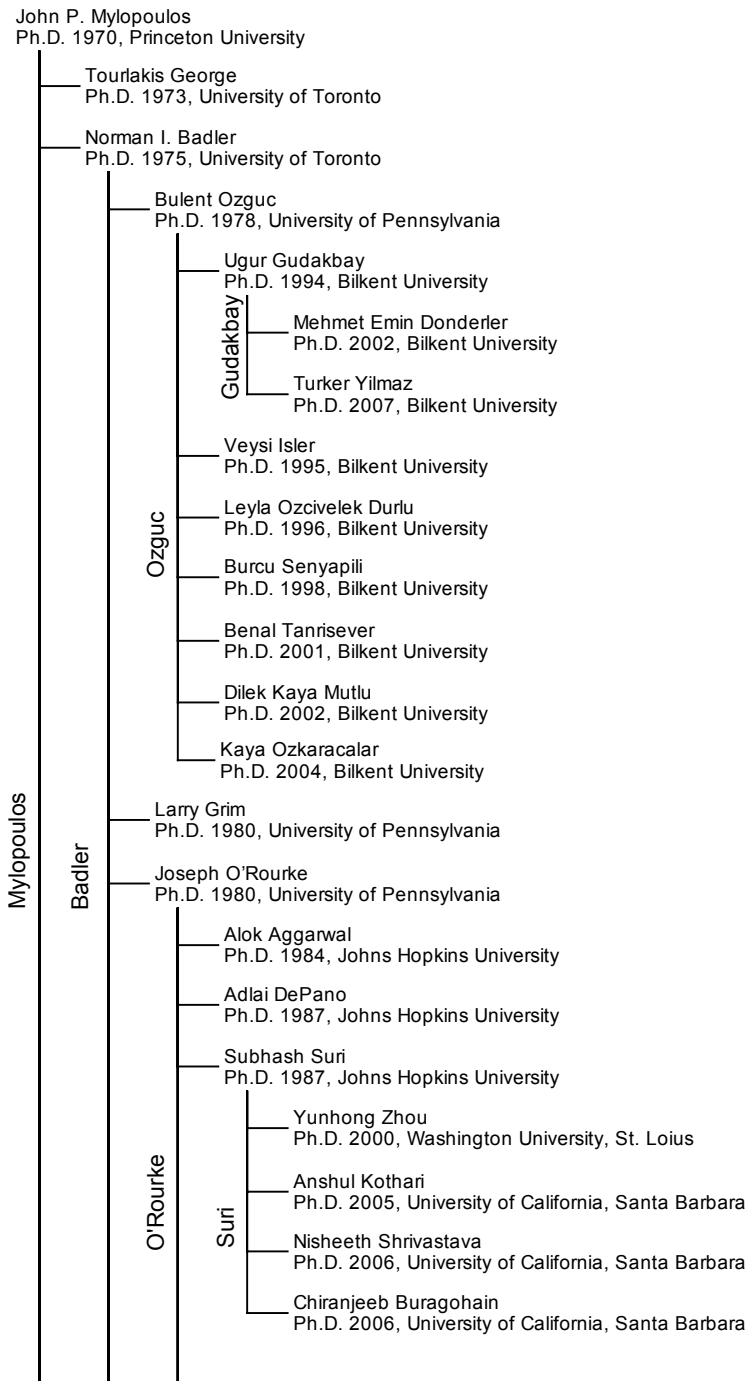
In addition, John was elected in 2007 a Fellow of the Royal Society of Canada, Academy of Sciences, Division of Applied Sciences and Engineering.

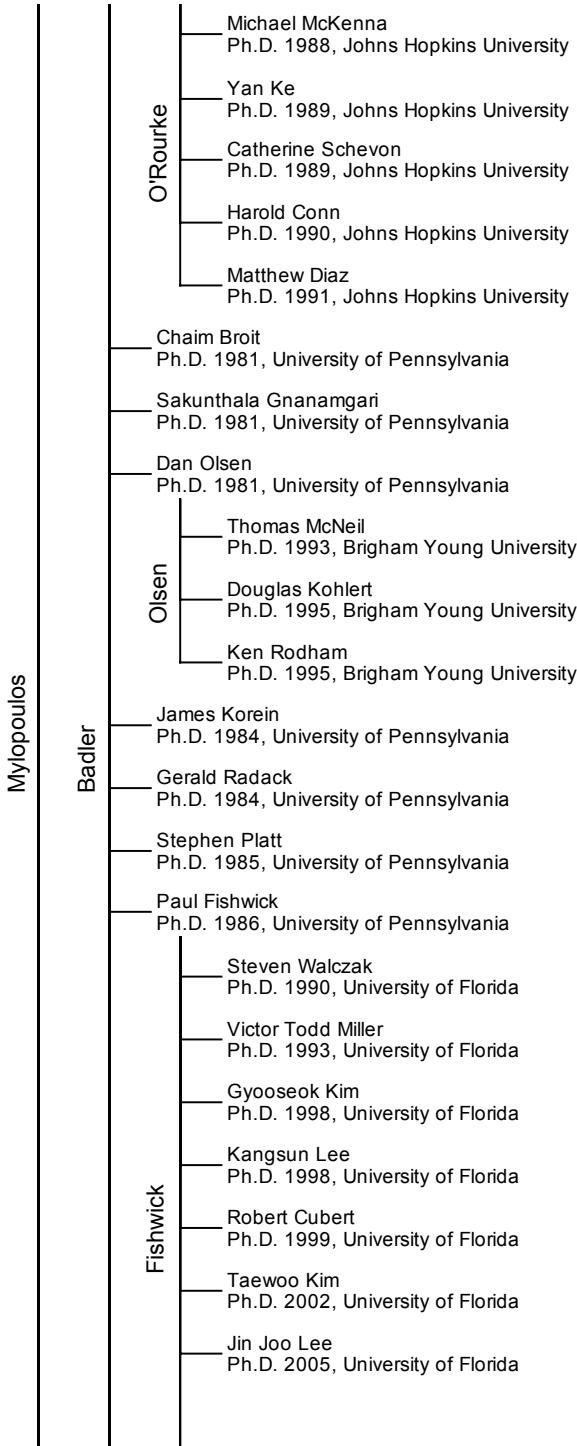
Finally, we provide the following genealogic tree of John's PhD students, and their "descendants", as of April 2009, as a testimony to both his skills as an advisor and in selecting some outstanding PhD students.

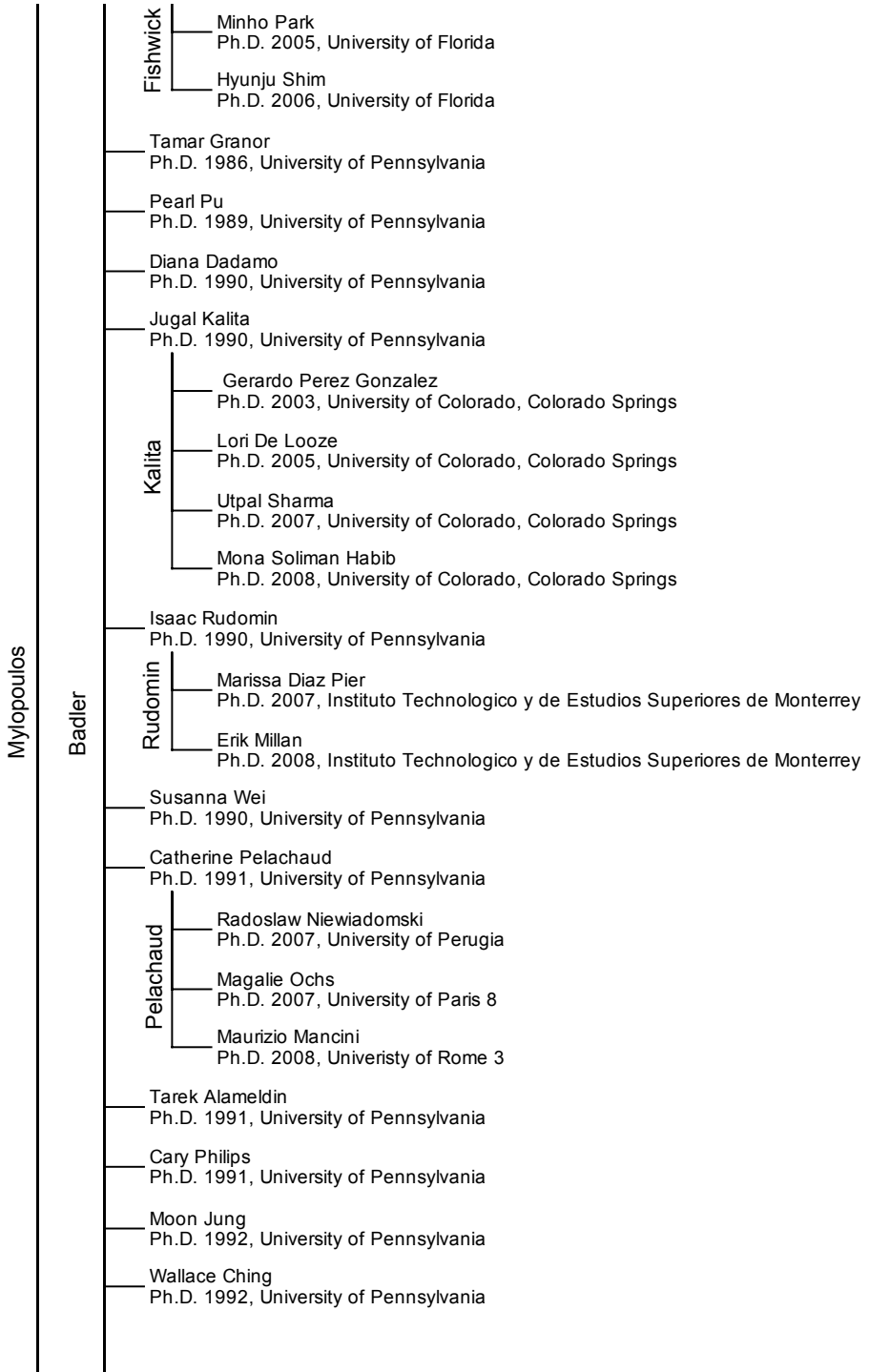
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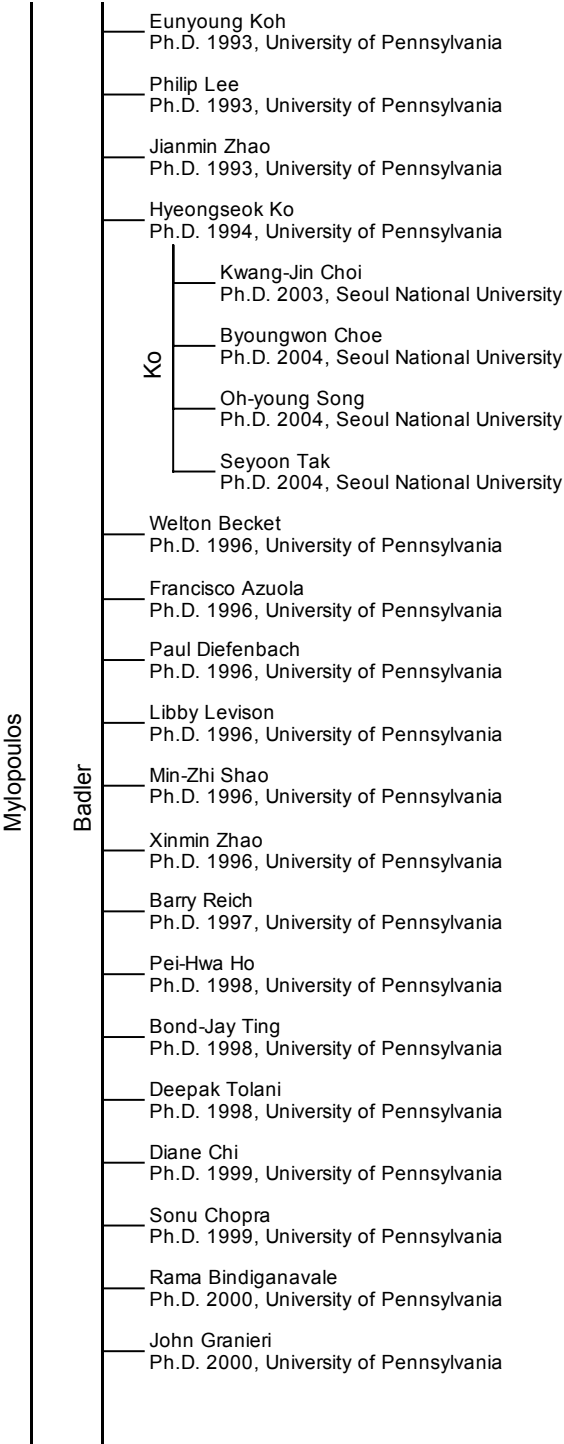
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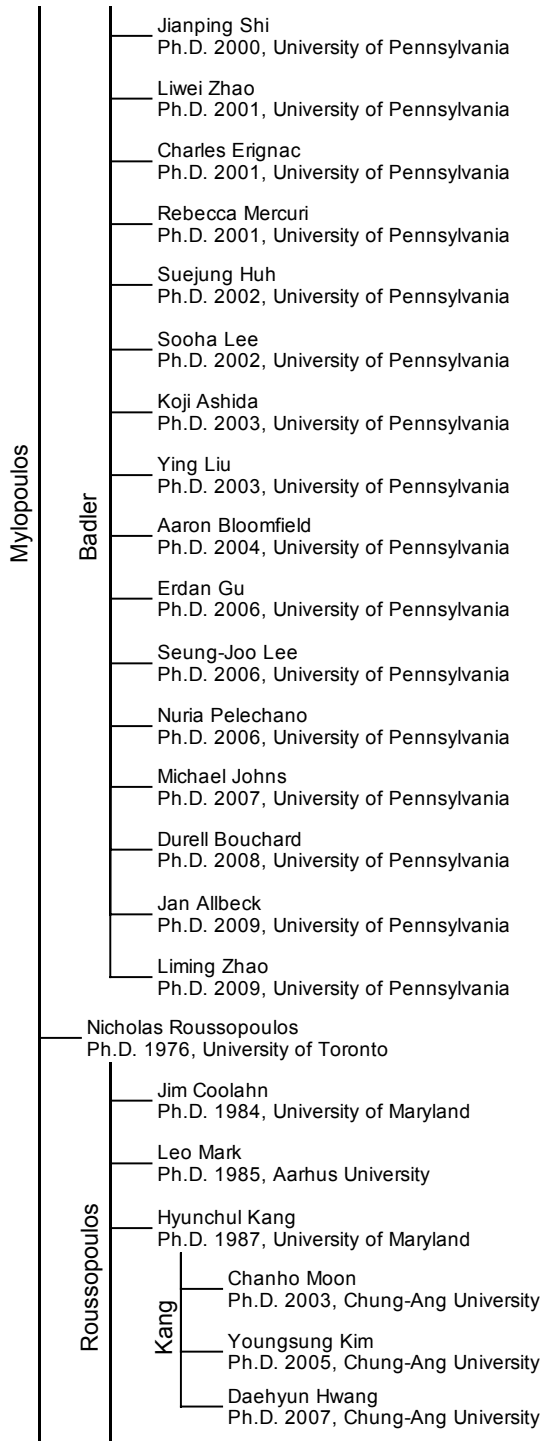
The Academic Tree of John Mylopoulos

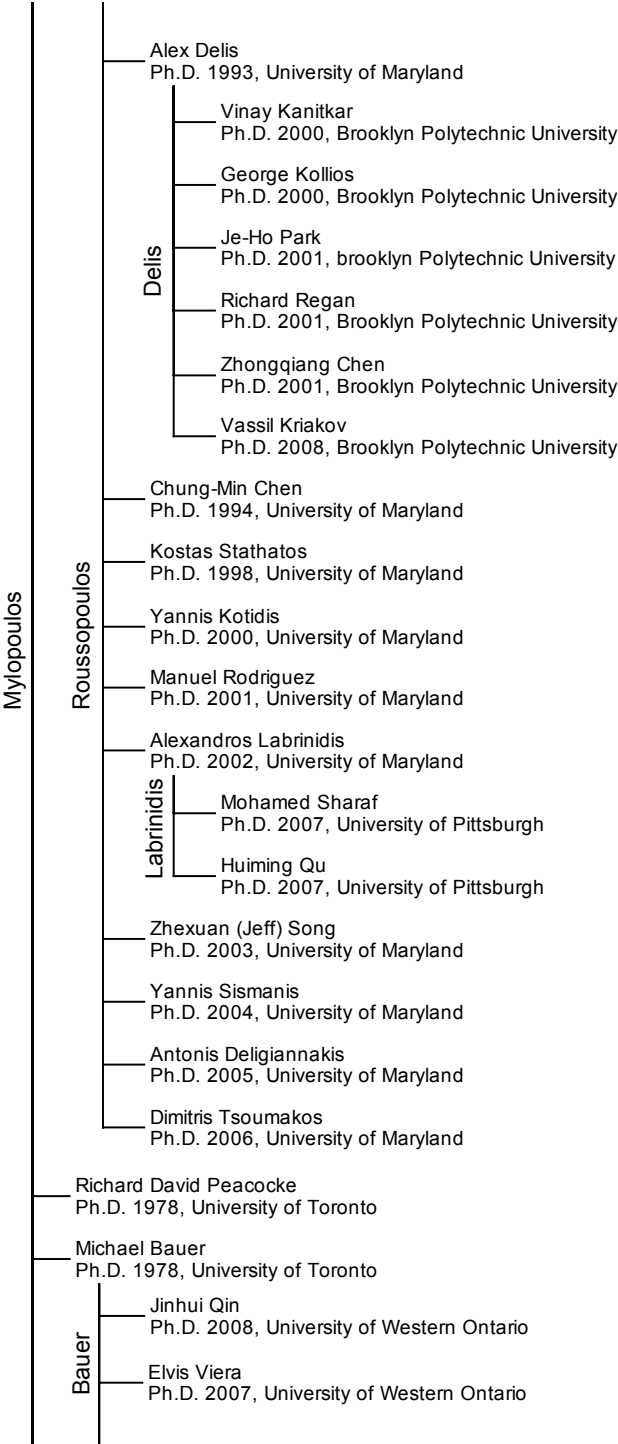


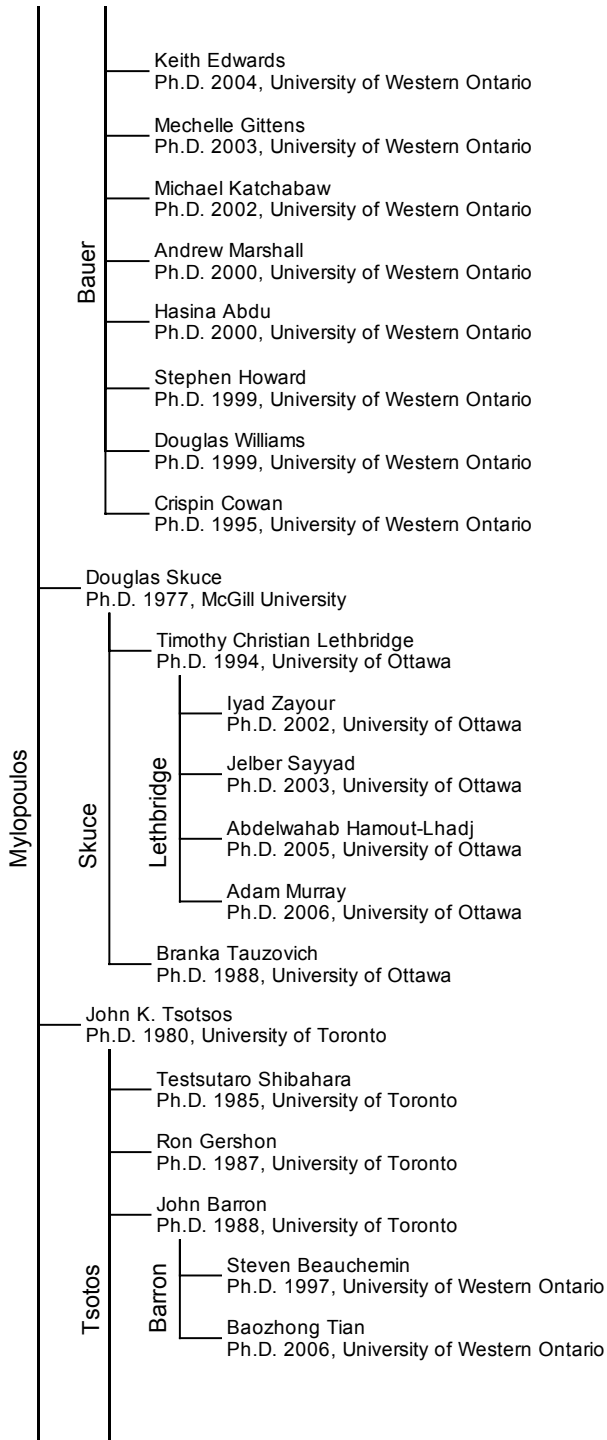


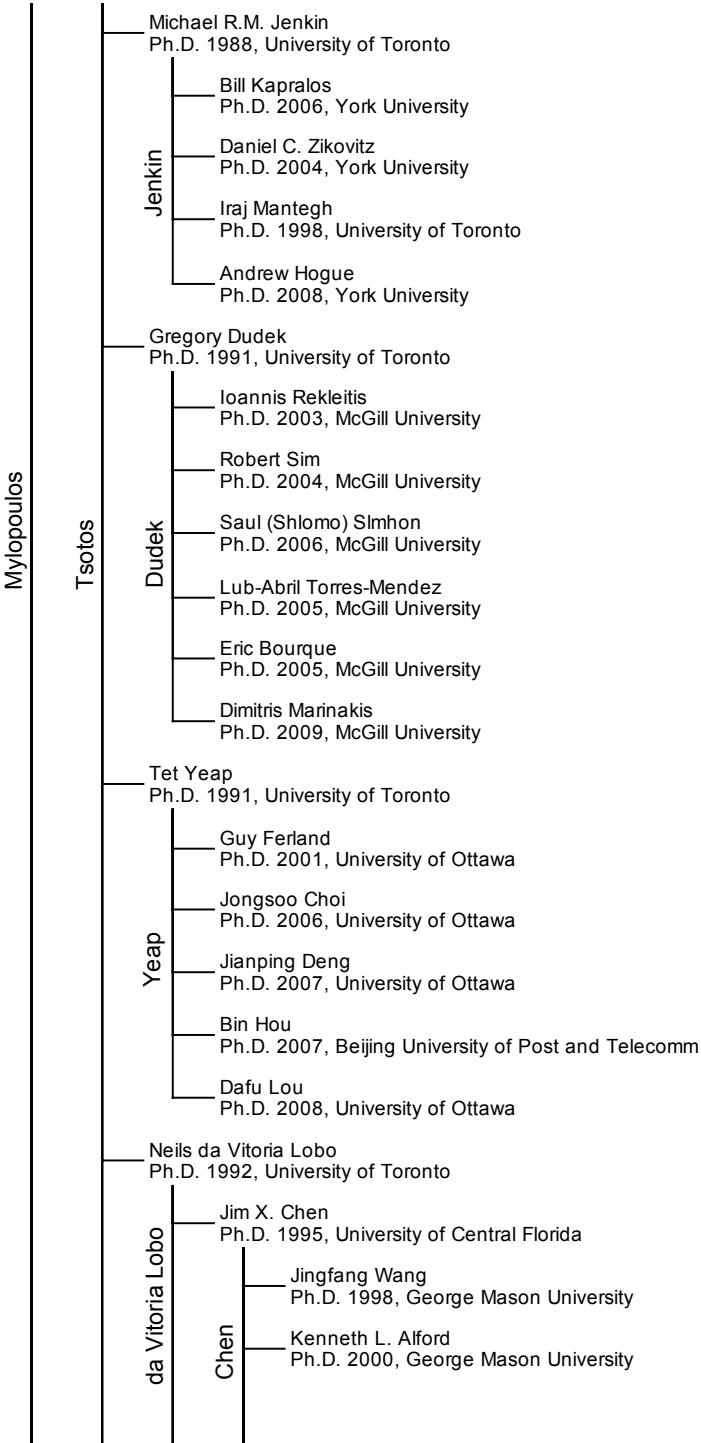


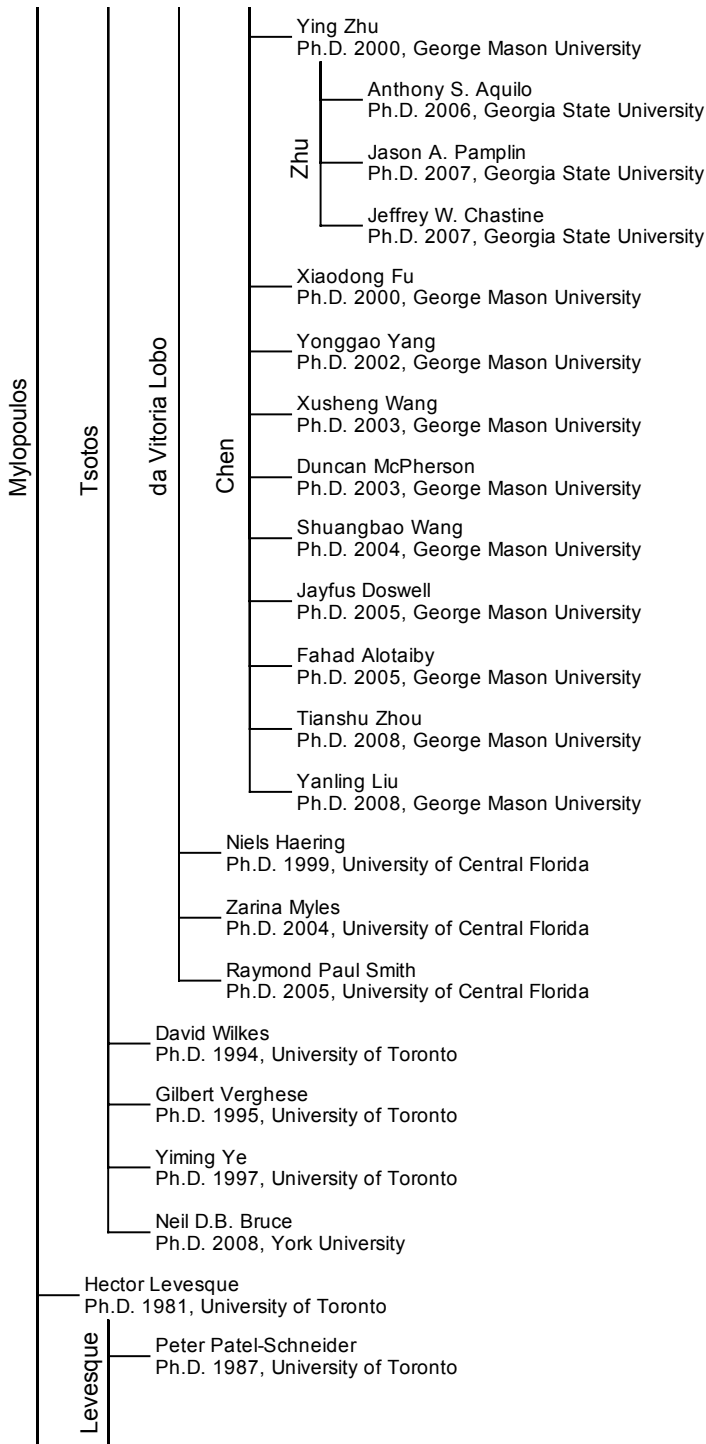


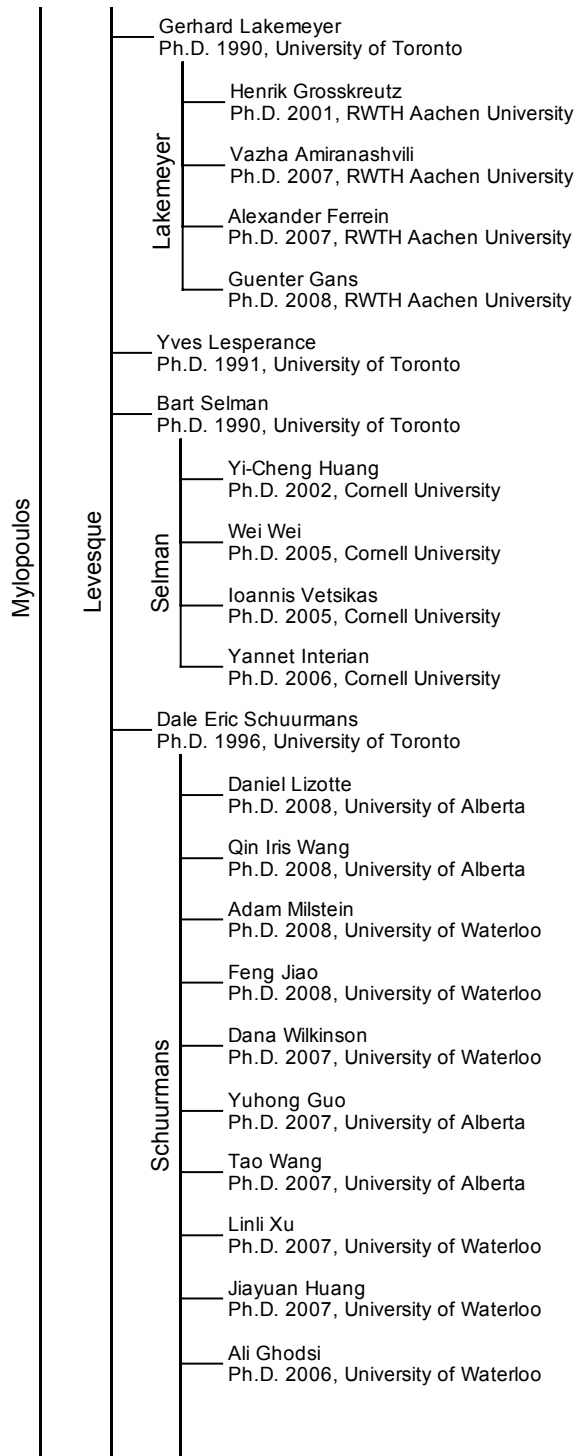


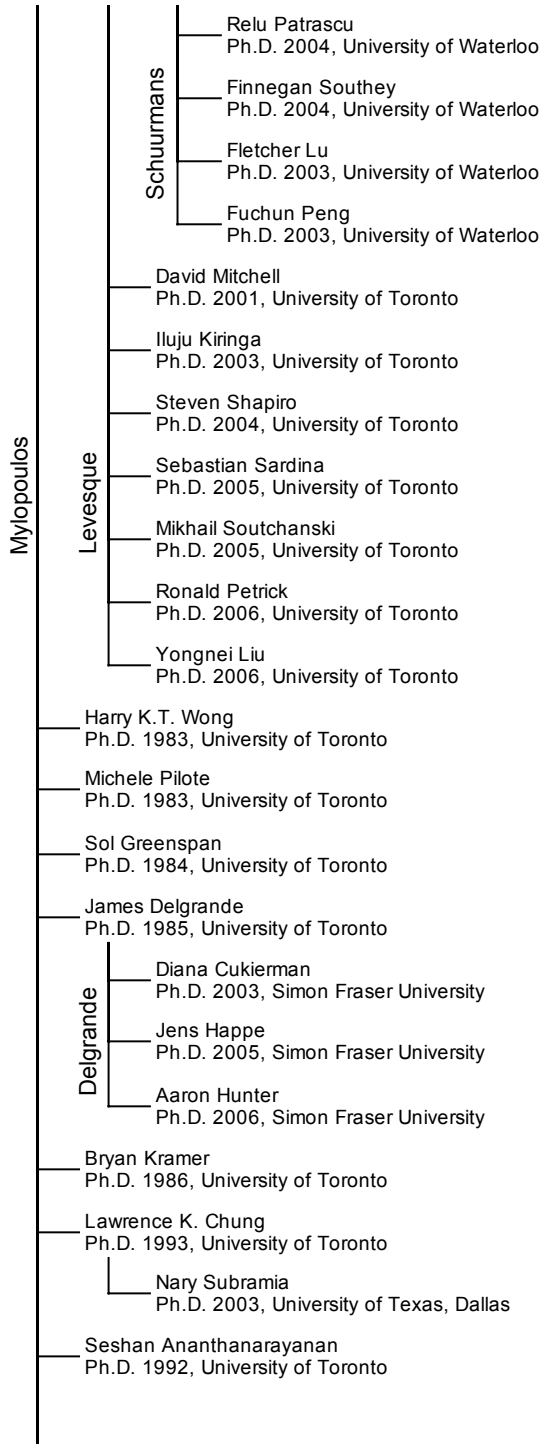












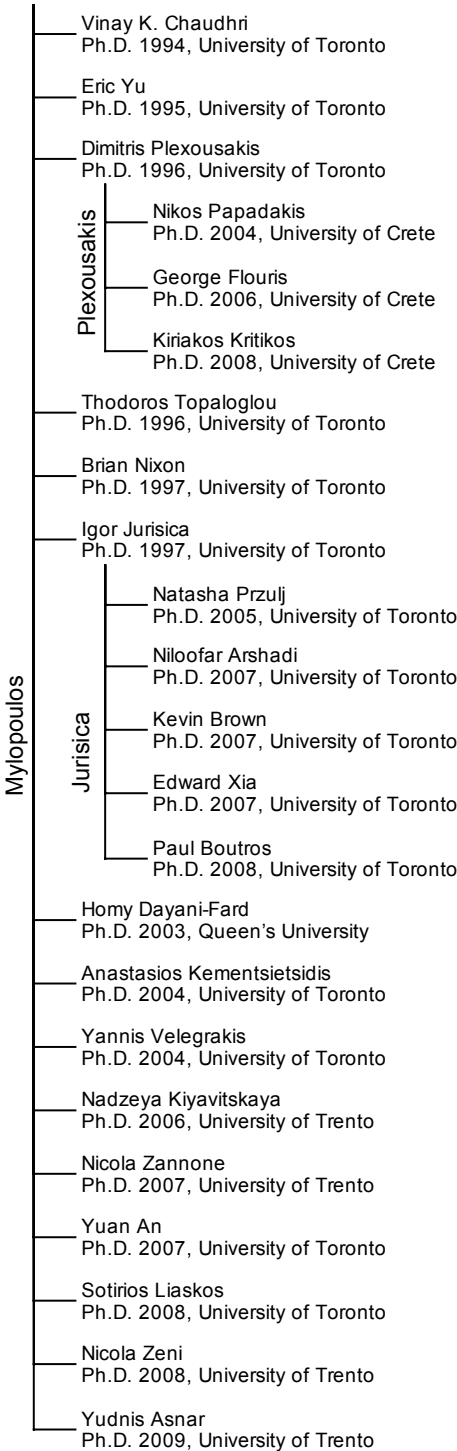


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