
Microservices and curricular education



Tullio Vardanega, Riccardo Cardin

tullio.vardanega@unipd.it

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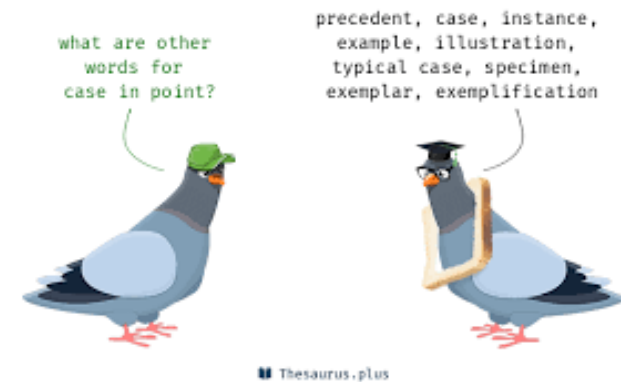
The talk's underlying thrust

- How should university-level curricular education relate to the advancement of practice?
 - Ideally, one ought to feed the other, in a perpetual cycle
 - In practice, not quite ...



- The microservices BoK is an interesting case in point

- And a plausible community concern



Bird's eye outline of the talk

- Delineating the challenge of curricular design
- Highlighting the role of the Microservices BoK in that context
- Illustrating some instructional design choices that seem to have worked
- Attempting to give some guidance for similar endeavours

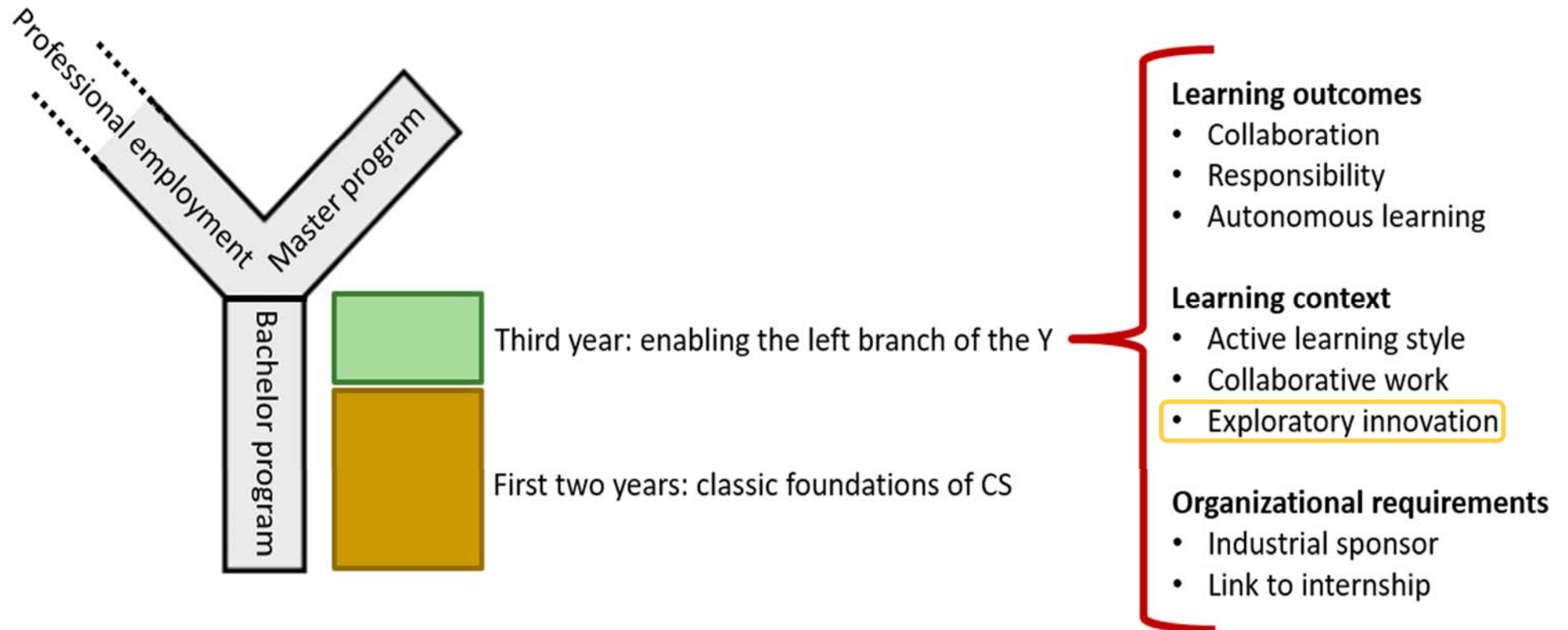


The curricular challenge in context

- How far should the learning outcomes of curriculum design cover the advancement in the state of knowledge *and* practice?
 - ❑ An instance of moving-target problem
- The command stance of faculty is: *we teach the basic principles; it is for employers to fill the gap*
- Focus here is on bachelor-level education
 - ❑ In our design, its final year aims at *professionalising* the students
 - Large collaborative explorative project + compulsory internship
 - ❑ The master-level program feeds more foundational insights into vocational themes



Our instructional design



Matchmaking

- Exploratory innovation (as project work) bridges the gap between curricular knowledge and (glimpses of) the cutting edge of the state of practice
- Success revolves around singling out challenges that
 - Engage the students
 - Focus on subjects (technologies, methods) likely to have lasting impact
 - No fads, no fancy, no tantalizing immaturity
 - Have an industrial sponsor, with a visionary case study and expert technical advice
- The concept, practice and technologies of microservices have cards to play in this game ...



hobbyartandcraft

Putting microservices into perspective

- Arguably, they represent forefront of the software architecture *at-scale* paradigms
 - (Unintended?) precursor of serverless computing
 - Reflects the hardship of building *agile* enterprise-level service infrastructures that serve complex business organizations
 - Meeting heterogeneous local vertical specialization needs while keeping the aggregate coherent, manageable, scalable, evolvable, and efficient
 - Actively supporting the Domain-Driven Design theory's notion of bounded context
- How farther can this be from the student's experience?
 - The organizational complexity of their base endeavour is 1
 - Their deliverables do not ever reach production, let alone operational deployment

Setting the learning outcomes /1

- All technology has a *raison d'être*
 - ❑ Exposing students to technology (not matter how cute) merely per se, is not sufficient
 - Teaching what it does without learning why
- Exposing microservices should evoke what problems they attempt to solve
 - ❑ Yet, it can hardly be organizational complexity or production and operation challenges ...
 - ❑ It has to shine over common obfuscating errors (from “nanoservices” to distributed monoliths)



Setting the learning outcomes /2

- What then?
- Some take-home messages we have seen “work” over the years
 - ❑ *Architectural scalability*, in the guise of highly variable load scenarios
 - ❑ *Development agility*, in the shape of continuous integration
- “To work” in this educational context actually means to be *conducive to deferred epiphany*
 - ❑ Making that happen is a reward in itself



Conclusions

- Elements of the Microservices BoK *can* be exposed to bachelor students
 - Reserving them for a small vocational selection of master students is unjust
- The corresponding learning outcomes should be set carefully
 - This talk has given some practice-based guidance
- Experience tells that this “learning intervention” makes the difference in the student maturity