# Viva Questions

This document contains a lists of questions I came up with by myself during the viva preparation process, starting mid December. The questions are ordered by their type e.g. whether they are more technical, or related to the overall contribution or deal with consistency / narrative of the thesis, etc.

Note that there are NO written answers to these questions because this list of questions act as a practice guide, where the intention is that the questions are given by freely speaking without lot of formal preparation – after all I do not really know what's coming during the viva.

An important inspiration was the book “How to survive your viva” by Rowena Murray. Another source of inspiration for many questions was a highly critical reading of my own thesis, which proved to be highly valuable.

[ ] weakness of my thesis: the thesis seems to invent a Problem where there was never really one: oop seems to be doing fine for implementing ABS. although the Thesis provides reports of failure, it is doubtful that oo is the sole reason for failure. also the selection of the beneficial topics of parallel and testing abs seens to be rather ad hoc. we hypothesise that this is due to the fact that the researcher simply let curiosity drive his research. however, the actual work is original, highly interesting and very well done with three novel contributions, unique to a pure Functional approach / very unlikely to have emerged in a oop abs research: guaranteed reproducibility at compile time, STM for concurrency and quickcheck for testing Abs implementations

[ ] why STM and quickcheck in Haskell? they also exist in other languages! answer: STM really shines in Haskell because of restricted side effects. quickcheck was invented in Haskell and data-driven programming better suited. also if it would not been for Haskell, i would never had even considered / known / experimented with STM and quickcheck in oop

[ ] over the next years i want to address the rather ad-hoc Nature of my PhD, building underlying theories, from dynamical Systems, coaltebras, category theory and Dependent Types

[ ] make concious your subconcious thought processes by thinking through my thesis and answering mock questions

[ ] list the assumptions on which my thesis Rests

[ ] identify assertions and speculations i made in my thesis

[ ] condense my thesis in a 3 Minute answer. focus on narrative. Key: rationale, aims and research questions, Method, approach, outcomes, contributions, implications,

[ ] summarize every chapter and sections

[ ] question about my Method: why not oop vs fp? because its not constructive and boring. oop already proved its usefulness for Abs. my thesis is doing it in a constructive way for FP

[ ] go through chapter 7 of how to survive your viva: Re-reading your Thesis

# Contribution

What is the original / unique research contribution (to knowledge) of your Ph.D. / thesis?

What do you think is the most valuable contribution of your Ph.D. / thesis?

# Coherency and Narrative

You say in the introduction that the central theme of your thesis is purity but in Chapter 8 “Concurrent ABS” you ‘sacrifice’ purity for the sake of parallel ABS by utilising STM. Why did you sacrifice purity? Why do you make purity the central theme but then violate it?

# Technical

Why do Monads NOT compose?

What exactly are Arrows?

What exactly are Monads?

Reader: partial function application

Writer: monoid

State: closures

Lists: non-deterministic programming

# Weaknesses of your thesis

comparison with imperarive approaches: how do i really prove that they are insufficient for verification and validation? Performance comparison is difficult but thats in the end the only Thing that really matters in Simulation. couldnt we have achieved that all not also with oop using some STM and property-based testing library, only with better performance?

Methodology! i never received any useful training on that Part. its more a piecing together of loose bits and pieces into a coherent narrative.

i started out with simple curiosity for the Problem without clear hypotheses / Research questions. This means, that there was never a real-world problem my PhD wanted to solve. I had to “find” real-world problems to which my research seems applicable and a potential solution, otherwise I couldn’t “sell” my results / research / approach.

chapter 5 no publication, how do i know its ok?  
I was thinking about publishing the work of chapter 5 but I thought I’d focus on more interesting stuff e.g. STM and QuickCheck. The problem is that this is probably technically the most advanced chapter in the whole thesis, therefore the only viable audience would have been FP community but the review to Haskell Symposium made it clear that the gatekeepers have not patience for rather applied stuff as I do. I could have developed something in the direction of pure functional objects, following the final tagless approach as I did in section 5.2.5.1. but then I would have needed to look into a lot of theory of coalgebras, codata and so on because with a simple “ad-hoc” approach without some super fancy theory, I would have wasted my time trying to publish at an FP journal / conference.

Chapter 7: should have used criterion as well but then there would not be this differentiation between 3 different output types

# Who are the major players in my field(s)?

Ivan Perez

Cezar Ionescu

Bezirgianis

Aivika 3

RePast Guys (Ozik, Collier)

# Did I share my work with others already?

Invited talk at Sandtable in London.

PhD seminar in China.

Exchange with Ian Buckley from Canada, Risk Specialist, (<http://csto-btcvm.ca/home.aspx>)