

FocuStat, themes, the VVV conference ... with more to come?



Nils Lid Hjort

Department of Mathematics, University of Oslo

FocuStat Conference, 22-25 May 2018, Oslo

Outline

- A FocuStat (2014-2018) & some of its themes
- B 3-day theme based Workshops 2015, 2016, 2017
- C Research Kitchens 2014, 2015, 2016, 2017, 2018
- D This VVV Conference

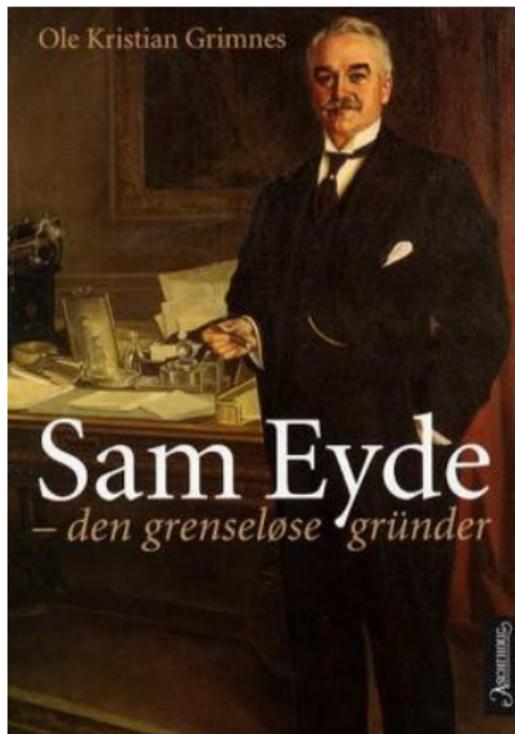
Birkeland and Eyde



Professor Birkeland, Gamle Festsal, 1903 ... oops!



- ▶ **Lesson A:** don't give up, even with a few setbacks (and even when your colleagues don't believe you?)
- ▶ **Lesson B:** find other people to work with (even outside your field) – 1903 P.R. disaster \implies in 2018, **35000 employees in 50 countries**



- ▶ Lesson C: don't write boringly ... 'Defeat of History as an Academic Discipline' (says Dag Solstad)
- ▶ Lesson D: don't miss or misinterpret crucial dimensions (even if you're a good statistician or historian)

A: The FocuStat five-year project

The **FocuStat** project and work group are partly funded by the Research Council of Norway, from Jan 2014 to Dec 2018. We are one professor + two PostDocs + two PhDs + other associated PhDs and Master's level students + links to yet other associated colleagues and projects. **Themes include and involve**

- ϕ **building bridges** between parametrics and nonparametrics;
- ϕ **combining diverse sources** of information;
- ϕ **focused model building**, selection, averaging, robustness;
- ϕ **confidence distributions**;
- ϕ **Bayesian nonparametrics**;
- ϕ **from processes to models**;
- ϕ **'doing things'**, focused statistics with complex data.

Workshops 2015, 2016, 2017; VVV 2018; **annual 'research kitchens'**; publishing papers + more; focus on methodology, but also on real applications; other activities.

Stay tuned – **website**, **FocuStat Blog!**, **Facebook page**.

Who We Are (and what we work on):

Nils LH: Confidence, Likelihood, Probability (cup 2016), Bayesian Nonparametrics (cup 2010), Model Selection and Model Averaging (cup 2008), Highly Structured Stochastic Systems (oup 2003), hybrid likelihoods, estimation theory, robustification, processes to models, regime shifts ...

Gudmund H: time series, prediction, regime shifts, complex modelling, regularised likelihood, machine learning, War & Peace, innovation startups, Oslo Data Science Meetup ...

Kristoffer H: $p \gg n$, biomedical applications, PCA, statistical genetics, measurement errors, fridge, focused PCR ...

Céline C: confidence curves $cc(\phi)$, regime shifts, combining information across diverse sources, II-CC-FF, linear mixed models and Japan vs. Australia in the International Court of Justice (FIC for Whales), Better Angels, the world's first novel (1460), the Wars of the Roses (1455–1487) ...

Sam-Erik W: robust estimation, minimum divergence and scoring rules, MWL and WIC, minimum disparity methods, model selection ...

Emil S: simultaneous estimation (e.g. Poisson), complex survival analysis, cure models, pharmatotoxicological consequences for children ...

Vinnie K: how to select a good vine, fraud detection, CIC and FIC for copulae ...

Various others, PhD and Master students and 'associated friends': model selection, multi-parameter estimation, cube root asymptotics, o'Bayes, Bayesian Nonparametrics, fine-tuning of confidence distributions, time series for macro-economics, finance, monitoring processes, focused ridging, War and Peace, goalkeeper statistics ...

B: International FocuStat Workshops

May 2015, May 2016, May 2017: three-day workshops; May 2018: four-day summing up conference

2015: Inference With Confidence, confidence distributions and related themes. About 20 participants; the core papers form part of a **special issue** of JSPI 2017. Also: **Confidence, Likelihood, Probability** (Schweder and Hjort, CUP, 2016).

2016: Survival of the FICest, focused model building, model selection, model averaging, FICology, applications.

2017: Building Bridges – between Parametrics and Nonparametrics.

2018: Summing-Up Conference (You Are Here)

C: FocuStat research kitchens

Term invented c. 1998 by the Steering Committee of HSSS (European Science Foundation funded project 1995–2003): a **small-size miniworkshop with loose structure**, where people ‘talk and learn’ (and generate new ideas)

Sept 2014: I. McKeague, I. Van Keilegom, us: **empirical likelihood** (and more, including ‘cure models’).

Oct 2015: Monica Musio, Fabian Krüger, Thordis Thorarinsdottir, us: proper scoring rules, **minimum divergence methods**, minimum dispair, maximum despair, robustness, modelling.

Oct 2016: Tamara B, Peter G, Jeff M, Peter M, Per M, Abhik G, locals, us: L^η , **многая лета**

Nov 2017: **From Processes to Models**

Oct 2018: **Combo Statistics and Data Fusion**

D0: The Counterfactual What-if VVV Conference!

We early on decided on the 'theme blocks' structure ... but which themes? We thought long & hard:

- ϕ **Principles of Inference**: some BFF, epistemic, philosophy of science
- ϕ **Minimum Divergence**: robust estimation and model selection,
- ϕ **Building (More) Bridges**: from parametrics to semi- and nonparametrics, growing models
- ϕ **Bayesian Nonparametrics**: 25 years of Beta Processes, big models with big priors
- ϕ **Robust Bayes**: with L^η , robust models vs. robust priors vs. robust inference
- ϕ **Change points and regime shifts**: CDs, monitoring, with applications
- ϕ **Complex multivariate dependencies**: copulae, vines, etc.
- ϕ **Personalised and Penalised**: FridgeS etc.

D: The Real Noncounterfactual VVV Conference!

- ϕ **Kitchen modus**: a bit of structure, but not too much
- ϕ Interrupt, ask, discuss, **volunteer ideas**, improvise ... We **talk and learn** (and generate some new thoughts?)
- ϕ We have **2 + 2 + 2 + 1 theme blocks**
- ϕ Friday 8:59 - lunch is the **Cool Strong Applications** Day, with some outreach (and a few journalists and guests)
- ϕ **Life After FocuStat**: Processes to Models (and various other things, Nils), PCA for high dimension (Kristoffer), \subset (Whales \cup Angels)^c (Céline), War and Peace (Gudmund), NILU (Sam-Erik), ...
talk to us!, also about **Futurum Simplex**
- ϕ Don't forget **Lessons A, B, C, D**