Von: Genomorientierte Bioinformatik <bioinformatik@wzw.tum.de>
Betreff: **[Kolloq-announce] Reminder - Biocolloquium tomorrow at 6 pm!**
Datum: 23. November 2010 12:00:33 MEZ
An: kolloq-announce@bioinformatik-muenchen.de

Reminder - Biocolloquium tomorrow at 6 pm!

We would like to invite you to our next Bioinformatics and Systems Biology Colloquium on **Wednesday, November 24 th, 2010 at 6:00 pm.**

Our speaker will be

Prof. Dr. Hannes Leitgeb,

Ludwig-Maximilians-Universität, Munich Center for Mathematical Philosophy

Probability

Reducing Belief Simpliciter to Degrees of Belief

There are two kinds of belief: belief simpliciter - believing that A is the case - and degrees of belief - assigning subjective probabilities to propositions. We prove that given reasonable assumptions, it is possible to give an explicit definition of belief simpliciter in terms of subjective probability, such that it is neither the case that belief is stripped of any of its usual logical properties, nor is it the case that believed propositions are bound to have probability 1. Belief simpliciter is not to be eliminated in favour of degrees of belief, rather, by reducing it to assignments of consistently high degrees of belief, both quantitative and qualitative belief turn out to be governed by one unified theory. Turning to possible applications and extensions of the theory, we suggest that this will allow us to see: how the Bayesian approach in general philosophy of science can be reconciled with the deductive or semantic conception of scientific theories and theory change; how primitive conditional probability functions (Popper functions) arise from conditionalizing absolute probability measures on maximally strong believed propositions with respect to different cautiousness thresholds; how the assertability of conditionals can become an all-or-nothing affair in the face of non-trivial subjective conditional probabilities; and how high conditional chances may become the truthmakers of counterfactuals.

Wednesday, November 24th, 2010, 6pm

Richard-Wagner-Str. 10, HS102

We would be very pleased if we could welcome you.

Best regards

H.W. Mewes
TUM Wissenschaftszentrum Weihenstephan
Lehrstuhl für Genomorientierte Bioinformatik

IBI
Institute of Bioinformatics and Systems Biology
Helmholtz Zentrum München
Deutsches Forschungszentrum für
Gesundheit und Umwelt

RECESS
Graduiertenkolleg GRK 1563
supported by the DFG

Munich Center of Mathematical Philosophy

How to get the qualitative from the quantitative

Different standards of normality – belief simpliciter

and the quantitative one – degrees of belief

Orthodoxy – Bayesian – Need only qualitative

something quantitative belief is supposed to be eliminable

Even scientists do seem to believe in the truth of some

propositions (which rules out X is believed iff $P(X)=1$

assigning probability 1

If they believe 2 hypotheses A and B to be true,

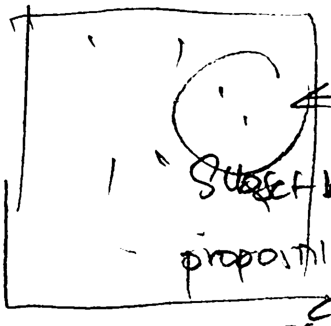
$A \wedge B$ does seem believable to be true for them,

Belief simpl. valuable that it occupies a more economic? space

* Postulates of Quant/Qual Belief
* Representation Theorem
* Applications + extensions

cf Hilpinen 1968

$P1: \mathfrak{A} \to [0,1]$ is probability measure



$P(Y|X) = \frac{P(Y \cap X)}{P(X)}$ when $P(X) > 0$

$P(Y|X)$ is the degree of belief in Y on the supposition of X

class of pairs of propositions

P_2 (countable additivity) if $X_1, X_2, X_n \ldots$ are pairwise disjoint members

Bel express an agent's conditional belief

B1 (Reflexivity) If $\neg Bel(\neg X|W)$, then $Bel(X|X)$

B2 (One premise logical closure)

B3 (Finite Conjunction)

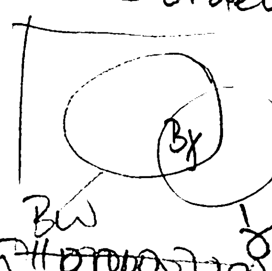
B4 (General conjunction)

B5 (Consistency)

B6 (Expansion

BP1' (Likeliness)

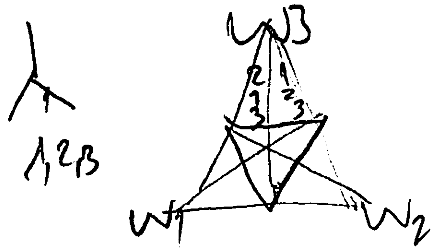
Theory of belief revision Gärdenfors 1988



Representation theorem

class of P stable sets X in $\mathfrak{A}$ is well ordered

Finally, we postulate
BP3 (Maximality) – the class Bel is the largest among all Bel
one can prove that a similar result holds even when all postulates are generalized to suppositions that may contradict an agent's current beliefs,
Every P determines a sphere system of worlds!



And almost all P over finitely W have at least P-stable set X_{least} with $P(X_{least}) < 1$

Applications
Lottery Paradox
all single tickets have a low probability. So is the overall probability that any will win is high
Preface Paradox
what one can have is a different version of fallibilism.
Conditionalization
John Doring's Duhemian example

Promising future topic in these areas – a unification of logical and probabilistic accounts of reasoning – unifying the qualitative and the quantitative,