

**2nd Workshop on Worlds and Truth Values**  
**Barcelona 10-11 June 2024**  
**Ramon Llull Seminar (UB)**

**Abstracts**

**Carlos Benito (U. Lisbon)**

**Logical localism between minimality and collapse**

Logical localism is a thesis within philosophy of logic according to which the correct application of logic is not topic-neutral, domain-neutral or irrespective of subject-matter. The main challenge that localism has to face is the problem of mixed inferences, which is based on the fact that we reason across domains.

My goal is to offer a solution to the problem of mixed inferences by applying a method for combining logics, namely, juxtaposition and to explore various ways of going beyond it, according to the shortcomings that juxtaposition has when applied to mixed inferences involving classical and intuitionistic logics.

Some of the combination mechanisms developed from juxtaposition have the rare property of dropping the structural rule of uniform substitution. However, these systems allow the emergence of desirable bridge principles, while still avoiding the collapse of the connectives. Moreover, the way in which uniform substitution is lost seems to fit the philosophical standpoint of a localist that defends that classical and intuitionistic logics capture legitimate ways of reasoning in different domains.

**David Fernández Duque (UB)**

**The topology of surprise**

(Joint work with Alexandru Baltag and Nick Bezhanishvili)

In the Surprise Exam paradox, a teacher tells her students that the following week there will be an exam, but they do not know the day and in fact on the day of the exam they will be surprised. By inductive reasoning, the students can conclude that the exam cannot be on any given day of that week, since they will not be surprised if it is on Friday, ruling that day out, hence they also will not be surprised if it is on Thursday, and so on. Despite this, when they actually have an exam on Wednesday they are indeed surprised! I analyse this paradox using topological models of knowledge and argue that the statement can only be true on Cantor's perfect core. As such, the original statement is not actually paradoxical, but is simply false and thus cannot be announced by an honest teacher. I will give examples where a similar statement is instead true.

## **Joost Joosten(UB)**

### **An attempt at disentangling logical and semantical necessity**

(Ongoing work with Iris van der Giessen and Paul Mayaux)

The Rule of Necessitation allows us to conclude Necessary B (Box B) if we have a derivation of the formula B. A typical justification of the rule of necessitation runs as follows: if through pure reasoning we conclude the formula B, then this formula B holds valid in virtue of pure logic and hence should hold valid in every possible worlds whence (Box B). A tacit assumption here is that pure logic is constant in every possible world. In this talk we sketch the beginnings of a framework that allows for different possible worlds to have different logics.

## **Andreas Kapsner (LMU)**

### **Remarks on FDE and Aesthetics**

I will start by exploring the possibility that more often than one might think, it is aesthetic considerations that guide our choice of logic. As an illustrative example, I discuss work in Buddhist philosophy that employs FDE (First Degree Entailment) in its analysis. I will argue that, while the general outlines of a logic suitable for such an analysis can be pinned down, the exact choice of FDE over other four-valued contenders is in essence an aesthetic one. I will then proceed to discuss possible ways in which logic can be used to describe aesthetic phenomena, this time with music as my illustration. Again, FDE can be employed to suggest an interesting analysis, but, as might be expected, here the need to make what is in the end an aesthetic choice is even more apparent.

## **Sergi Oms (UB)**

### **A Dialetheist Solution to The Problem of Change**

Change has always been a perplexing phenomenon. One of the puzzles surrounding it is the so-called Problem of Change, according to which change is problematic because it apparently involves a single object having incompatible properties at different times, seemingly contradicting Leibniz's Law. Solutions to this problem can be categorized based on whether they involve directly relativizing some of the metaphysical categories present in the Problem (objects, properties, and exemplification) to time, or whether they adopt a non-tensed approach that does not involve any direct relativization to time. While most proposed solutions fall into the former category, there has been recent original work on solutions of the latter kind. This paper aims to contribute to this discussion by proposing a new dialetheist non-tensed approach to the Problem of Change. I will argue that, if we consider an object  $o$  undergoing change, taken at a time  $t$  (call it  $o'$ ) and at a time  $t'$  (call it  $o''$ ) after the change,  $o'$  and  $o''$  are both the same and not the same object. Given Leibniz's Law and the behaviour of the conditional in paraconsistent logics such as LP, it follows that,  $o$  both has and does not have the accidental properties it possesses throughout its history.

**Pilar Terrés (U. València)**

**Connecting two routes to relevance**

Relevant logic aims to codify a connection between premisses and conclusions that classically valid arguments fail to capture. There are many divergent proposals for capturing relevance, and we will focus on two main strategies: the core route and the disambiguation route. The first strategy (core route) is to discriminate in classical logic those inferences which are valid and relevant from those that are merely valid, building relevance at the level of logical consequence [Tennant, 2017], [Verdée et. al., 2019]. The second strategy (disambiguation) is to depart from a relevant consequence relation that rejects weakening and define logical connectives within that relation, splitting logical connectives into two (intensional and extensional) [Anderson and Belnap, 1975], [Read, 1988], [Mares, 2008]. This second strategy builds relevance at the level of logical connectives.

Although these two routes to relevance are philosophically divergent, I show that they are intimately connected: departing from the second route, we can consider a process of translating each intensional/extensional pair in the substructural relevant language into the same logical connective (a process explored by [Allo, 2013] and which will call Naturalization). This process does not by itself determine one unique consequence relation: different logics are defined depending on whether one considers *all* or *some* disambiguation of the premisses to entail *all* or *some* disambiguation of the conclusions. I will show that a consequence relation in which some sense of the premisses entails some sense of the conclusion coincides with the set of valid sequents that we obtain through the relevant core of the first route.

This result has consequences not only for our understanding of relevance and the two different routes that have been defended in the literature. Similar processes of translating two connectives into one in other logics will be explored. In particular, the process applied to disjunction and conjunction in classical logic leads to a non-trivial logic with Tonk. The philosophical consequence of this fact will be explored.

**Elia Zardini (U. Complutense, Madrid)**

**Totality=Every; Dependence=Some; Choice=Any; Chance=A Certain**

I'll first propose an interpretation of the multiplicative/additive distinction among operators arising in a logical framework lacking the structural property of contraction (focusing mostly on the quantifiers): multiplicative operators represent interaction among their operands (with universal quantification representing totality and particular quantification representing dependence) whereas additive operators represent selection (with universal quantification representing choice and particular quantification representing chance). I'll then argue that reflection on the behaviour of natural-language determiners points towards a very natural working hypothesis that associates: multiplicative universal affirmative with 'every'; multiplicative particular affirmative with 'some'; additive universal affirmative with 'any'; additive particular affirmative with 'a certain'. I'll illustrate the fruitfulness of this hypothesis with four examples, from the epistemic, normative, attitudinal and stative domains respectively.