

Chapter 1: INTRODUCTION
by Marcelo Vásconez

- 1b *Principles of Bivalence. Sensu stricto*: T and F jointly exhaustive and mutually exclusive. Rejected.
Loose sense: "p" is true or false. Accepted.
- 1c *Principles of Excluded Middle*: Strong: (3) " $p \vee \neg p$ " true, to some degree however small.
Absolute: (4) " $H(p \vee \neg p)$ ", (5) " $H p \vee \neg p$ " both totally false.
Weak or simple: (1) " $p \vee \sim p$ " at least 50% true, and at most 50% false. (2) " $L p \vee \neg p$ " completely true.

FUZZINESS

- 3bi Fuzzy fact: (6) $\sim(\Delta\phi x \vee \Delta\sim\phi x) = (5) \sim\Delta\phi x \wedge \sim\Delta\sim\phi x \Rightarrow (8) \sim H\phi x \wedge \sim\neg\phi x \therefore (1) \sim\phi x \wedge \sim\sim\phi x$
Softly indeterminate.
Fuzziness weakly falsifies the simple PEM & vice versa. However, we can have both.
Absolute PEM: (9) $\Delta\phi x \vee \Delta\sim\phi x = (11) H\phi x \vee \neg\phi x$ completely incompatible with (6)
Inverse Co-variance of Opposites (ICO): the more ϕ x is, the less $\sim\phi$ it is $\Rightarrow \exists$ no total indetermination
- 3bii Borderline case is contradictory: (13) $\sim\phi x \wedge \phi x$, from (1) of 3bi + DN.
Border zone instead of border line. Not all borderline cases are equally distanced from the extremes.
- 3biii Fuzzy property has many borders. x is $<\phi$ than $y \Rightarrow x$ is $>\sim\phi$ than $y \Rightarrow x$ is $\sim\phi$.
There is a soft limit whenever there is a relation of inferiority, because of the ICO, and the:
Aristotelian Rule for Comparatives: possession of ϕ in a $>$ or $<$ degree implies unqualified possession.
Paraconsistent soft borders: there are ϕ things on both sides of the border.
- 3biv Fuzziness generates the sorites, but is not responsible for the absurdity.

SORITES

- 4b Intuitive Major Premise: The loss of a single hair cannot turn a hairy man bald.
 Ψ - ϕ *Correspondence Principle*: no tiny alteration in Ψ creates a significant change in ϕ
Major Premise extends the status of a_0 to all other a_i . Against transition from ϕ to not- ϕ .
What is fuzzy diffuses itself.
- 4d Soritical Series. Core idea: a_i and a_{i+1} almost completely similar with minimal dissimilarity;
subjectively indiscernible. How to capture this logically?
(SP) $\phi a_i \wedge \phi a_{i+1} \vee \sim\phi a_i \wedge \sim\phi a_{i+1} \Rightarrow$ (CP) $\sim(\phi a_i \wedge \sim\phi a_{i+1}) =$ (Par.P.) $\sim\phi a_i \vee \phi a_{i+1}$
The Fairness Principle: Like cases must be treated alike.
(Pre.P) $\phi a_i \supset \phi a_{i+1}$. Completely false for the last two members, in bounded series.
It does not represent the relation of contiguous members in a soritical series.
We must render the Major Premise in terms of disjunction + weak negation. Rule: DS.
- 5 Denials of Major Premise. *Discontinuism*: (DT): $\exists a_i, a_{i+1} (H\phi a_i \wedge \neg\phi a_{i+1})$. Sharp boundary
Criticisms: To deny the intuitive major premise is empirically false.
To deny (Ψ - ϕ C) goes against common sense truisms, backed up by paraconsistency.
(DT) is arbitrary, against likeness of adjacent members, and unfair
(it discriminates indiscriminable cases).
However, no major premise is completely true, for they all are partially false.
There is a soft boundary: $\exists a_i, a_{i+1} (\phi a_i \wedge \sim\phi a_{i+1})$
DS is invalid for the weak negation, though valid for the strong negation.
- 6 The Rejection of the Slippery Slope. If the RI (transitivity of the closeness relation) fails, then:
Maximalism: in order for x to be ϕ , it is necessary that x be absolutely ϕ .
Only prototypes. What is good? The optimum.
Alethic Maximalism: a sentence is true only if totally true.
Criticisms: 1) Massive impoverishment of reality. Deficient instances eliminated. Fuzziness abolished.
2) No degrees, and no comparatives.
When the property is unbounded, accept the conclusion of the slippery slope: everything is ϕ .