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ALCHOURRÓN AND VON WRIGHT ON CONFLICT AMONG NORMS

1. INTRODUCTION

In an impassioned defense of deontic logic (1993), Carlos Alchourrón provided us with a clear statement of many of his final positions on the subtle relations between defeasibility, deontic modality, and belief revision. Alchourrón, the Argentine gentleman lawyer and polymath, stood at the apex where met three of this half-century's most important developments in reasoning and the mathematical modeling of reasoning. His passing must be marked with the particular sadness of the loss of the rare opposing thinker worth forthrightly engaging (although it must be confessed that this author never succeeded in doing so).

Alchourrón understood defeasibility and its implications better than all others who failed to embrace it.[1] Defeasibility was for him a competitor. It was an insurgent idea backed by the sheer volume and number of formalists in artificial intelligence, knowledge representation and non-monotonic reasoning, their incessance, their unchecked onslaught. It was floodwater. It was to be opposed because it was so plausible a substitute for Alchourrón's own favorite logical developments. Of course, as a co-founder with Peter Gärdenfors and David Makinson of AGM belief revision (Alchourrón *et al.*, 1985), and as co-author with Eugenio Bulygin on the understanding of legal reasoning through deontic logic (Alchourrón *et al.*, 1971), Alchourrón's loyalties were determined.

Unlike other opponents of defeasibility, Alchourrón was a legal scholar who had every reason to know the origins of defeasibility in contract and property law; he could appreciate the concepts of burden-shifting and process, upon which a proper understanding of defeasibility depends. In his paper, we find the depth of his appreciation of defeasibility, and through his concern with

[1] For example, Alchourrón understands that defeasibility is ampliative (Alchourrón, 1993, p. 83), that it creates "contributory" conditions rather than conditions necessary or sufficient [p. 82], that it is not always reducible to probabilistic relations [p. 69], that it is fundamental to the philosophy of law [p. 67], that it demotes its conclusions to a secondary status relative to its premises [p. 83], that it militates against the modularity of rules [p. 67], that it creates conditionals that lack truth values [p. 44] and that are not falsifiable [p. 83], and that it is closely related to belief revision [p. 83]. Inexplicably, Alchourrón fails to note its burden-shifting, its relativizing warrant to partial computation.

von Wright's conditional norms, we find the source of his recalcitrance.

2. ALCHOURRON'S ATTACK

Alchourrón's text shows his concern over the popularity of the newcomer and an obvious effort at restraint. His defense of deontic logic takes the form of an attack on defeasibility. Defeasibility invokes a "possible confusion of logic and revision," (Alchourrón, 1993, p. 69) providing new mechanisms for which "there is no need" [p. 44], and which anyway hides its "conceptually weaker conclusions" in a "quiet darkness" [p. 83].

The principal conclusion is that

> If x is a bird then (defeasibly) x flies

is not the proper way to "give formal expression of the cognitive situations of ... incomplete knowledge". When a bird is subsumed under this rule, the defeasible conclusion thereby (defeasibly) warranted, that it flies, has a questionable epistemic status. To Alchourrón, the better approach is to use the Russell/Frege/Peirce conditional,

> If x is a bird then (materially) x flies

and to revise that conditional as necessary if and when conflict arises. The revision of the conditional depends on the actual conflicts that the epistemic agent has suffered; for Alchourrón,

> If x is a bird and x is not a penguin and x is not dead,
> then (materially) x flies

is a reasonable stage to reach *post revision.*

This move is of course well known (though not always well understood). H. L. A. Hart, in the paper that brought defeasibility forward from medieval English law to modern logico-linguistics (Hart, 1952), entertained such a move in a footnote, regarding it as trivial at best and misleading at worst.[2] AI writers have built their industry on the correct perception that the antecedent

[2] Alchourrón cites other work by Hart and the prior work of Sir W. D. Ross (1930), but does not show an awareness of this principal work of Hart. This is quite clear in Alchourrón's analogy that Dworkin is to Hart as Ross is to Kant: the implication is that Dworkin's principles, like Ross's *prima facie* duties, make room for defeasibility while Hart's positive rules, like Kant's absolute duties, do not. This cannot be right. No scholar in possession of Hart's early paper would take Hart to be in contrast to Ross, since Hart's paper on defeasible concepts is the historical extension of Ross's *prima facie* duties. Perhaps Alchourrón knew the paper, but simply did not fully care, or was following too closely Dworkin's twisted prose. Although Hart trades the defeasibility of the conditional for the defeasibility of the predication, the sentiment is the same, and is largely present in the work of Hart that Alchourrón cites (Ross, 1961) under the new term, "open-texture".

cannot thus be gerrymandered. Something that has become important about the intertwining of computation and specification, about *prima facie* warrant's localization in a rule, about the incompleteness of computation, accounts for the transformation's failure. In plain language,

> If x is a bird then (defeasibly) x flies and
> If x is a penguin then (defeasibly) x does not fly

is not equivalent to

> If x is a bird and x is not a penguin then (materially) x flies
> and
> If x is a penguin then (materially) x does not fly.

Neither do the pairs of rules behave the same at various levels of computation, nor do they behave the same at various levels of epistemic improvement.

This much is a standard lesson in knowledge representation and reasoning. The usual response among classically trained thinkers is that logic should be about commitment, not computation, and that one who uses the rule that birds fly without explicit commitment to whether the bird is a penguin, implicitly asserts that it is not a penguin. It is a response that retraces its steps rather than steps forward.

Alchourrón takes us farther. He too embraces epistemic commitment as the goal of logic and denies the importance of computation. But he understands that defeasibility is part of a constructive model of belief. Construction is different from constraint. Defeasible rules prescribe the construction of warrant based on what can be computed or asserted so far. Alchourrón's model of belief revision can describe the dynamics of belief, so he too can give an account of construction. He can do more than indulge the insistence of deductivists. He can supplement conditionals with revision.

Alchourrón notes that what is at stake is ampliative reasoning. Ampliative reasoning is the great logical territory unconquered by earlier mathematical models. Probabilists and inductivists thought they had accounts of it, as did philosophers of scientific explanation. Alchourrón believed that his theory of revision (with Gärdenfors and Makinson) provided the best qualitative understanding of ampliative reasoning. Of course, AGM revision theory occurs shortly after Gärdenfors's feud with Isaac Levi on indeterminate decision; historically and technically, I find belief revision's paternity in Levi's work on confirmational conditionalization and non-Bayesian shifts. So perhaps AGM revision theory's ampliativity is not so different from inductive ampliativity.

For Alchourrón, the state of belief depends on the epistemic agent's experience. The posterior nature of the revised conditional is important. Adding

the explicit conditions of the bird not being dead and not being a penguin are for Alchourrón dependent on the particular conflicts and revisions that were endured at earlier times. "It seems to me unquestionable that the main [conditions] are the formal representation of the revisions effectively performed by an agent and of his dispositions to revise. ... We will probably need different choice functions [i.e., conditions] for the same sentences in different moments of his life." (p. 81) In AGM, revisions are constrained but not uniquely constrained. There is some indeterminacy of the resulting state of belief. This indeterminacy together with the contingency of the agent's revisions accounts for Alchourrón's view of the result as ampliative. The result is certainly not contained wholly within the language of the original, unrevised state of belief, and it is not predictable even if one has been given the sentences that force revisions.

Defeasible reasoning likewise permits indeterminacy of the result, a freeing (or indexing) of the connection between input and output. The antecedent of a defeasible rule is a contributory condition, not a sufficient condition. Its sufficiency depends on what other conditions might be found in conflicting rules. This in turn depends on which rules have been considered by the search and inference procedures which are indeterminate, unspecified computations.[3] There is no question that the result of defeasible reasoning is an ampliative procedure. Computational indeterminacy permits entailments to be independent of their premises in a sense that can be found in none of the competing accounts of ampliative reasoning. Defeasible entailments are computationally ampliative.

Alchourrón's claim in the paper, that there is no need for a logic of defeasible norms, is more the consequence of his fancy for revision than his fixation upon deontic modalities. Nevertheless, we may find in von Wright what is at stake for deontic logic, and what is surely a precursor of Alchourrón's view.

3. VON WRIGHT'S STAND

von Wright(1982) responds to Roderick Chisholm's (1963) puzzle of Contrary -to-Duty imperatives. According to the puzzle, it is possible that

$$\bigcirc(p \rightarrow q), \bigcirc p \rightarrow r), \text{ and } \bigcirc(\sim p)$$

can co-exist in a corpus. Worse,

[3]Isaac Levi (1996) writes that this view might merely reinforce our human irrationality, our bad habits of reasoning. Levi, too, views logic as the specification of ideal belief commitments, finding no place in the model for computation or construction. He does not say whether he thinks there can be analysis of the canons for regulating the constructions that might be used in case humans fall short of the ideals, in case societies insist on procedural justice, in case rule-makers decide to write regulations for constructions, or in case we discover that the classical ideals merely affect our language but do not help fix our beliefs.

$$\bigcirc(\sim p) \text{ technically entails } \bigcirc(p \rightarrow x)$$

for any x! von Wright goes to some length to distinguish deontic obligation from technical, or derived obligation, to avoid this representational embarrassment. But the main point is that the norms are not in conflict unless p, which is prohibited, occurs. The addition of p would require the subtraction of $\bigcirc(\sim p)$. This would be a revision, and the revision might as well include the resolution of whether q or r (or x) is the appropriate sanction. von Wright says as much:

> [The coexistence] in itself, need not lead to trouble. It only means that, if the prohibition is violated, the coordinated Contrary-to-Duty imperatives require, for their satisfaction, that both q and that r come true. ... If ... the conjunction of the two states that q and r is a logical impossibility ..., if a case like this occurred "in real life", the legislator would presumably take steps to remove the conflict – say by derogating one of the conditional norms or by making them, somehow, consonant. (vonWright, 1982, p. 157)

von Wright presses further into the question of deontic modeling:

> Such contradictions cannot be "solved" in logic, only in the practice of norm-giving. ... The legislator is well advised to amend legislation. The *logician* cannot help him. (vonWright, 1982, p. 158)

In no less a pair of legal authorities than John Austin and Hans Kelsen does von Wright find a distinction between laws that norm action, and laws that specify sanctions for delicts. Some laws delimit right and wrong. Some laws specify consequences. von Wright wishes here to keep them separate, as primary and secondary norms, as two different deontic environments between which one passes when one retracts an *a priori* $\bigcirc(\sim p)$ in favor of an *a posteriori* p.

Alchourrón likewise discusses a problem of conflicting norms (Alchourrón, 1993, pp. 60–61). From

$$\bigcirc(A/B);$$
$$\bigcirc(\sim A/C),$$

he derives

$$\sim(B\&C).$$

That is, if B and C can co-occur, then the authority has inconsistently normed. Hence, conditional norms with inconsistent consequents B and C cannot jointly apply because B and C cannot co-occur.

> A set of conditional general norms entails (in the logic of norms) a non-tautological sentence (has a factual or contradictory consequence) iff it follows in the logic for normative propositions that the authority has inconsistently normed some action for some circumstance. (Chisholm, 1963, p. 61)

The problem is that in real normative systems, conflicting norms seem to occur. In a legal code, conflicting norms might be the natural, most literal interpretation of the "duties imposed." The law might prohibit people from making p true, and might additionally specify the sanctions q and r in the case of p. In case of a crime of one foreign national upon another, perhaps one rule prescribes extradition while another recommends imprisonment. Sometimes the conflict is resolved by ordering the rules, by considerations of jurisdiction, rank, or recency. Sometimes the rules are unorderable and an adjudicator sets a precedent with deliberation and opinion.

This situation is the normal problem for juridical decision. The problem is not that two rules are in direct conflict. The problem is usually that the current fact situation can be subsumed under two (or more) rules with equal probity. The problem is not, as Richard Wasserstrom muses (1961) as he attempts to escape the dominant deductivism of the time, that there is no precedent that governs a case. The problem is that with no disingenuity, two or more precedents can be brought to bear on the case at hand.

In a slightly different example, p might be the killing of a person by accident, for which there is one remedy for killing in general, and one remedy for manslaughter in particular. p is thus separable as $p_1 \& p_2$, stating the killing and the accidental nature of the killing, respectively. So the literal "duties" might be

$$\bigcirc(p_1 \rightarrow q);$$

$$\bigcirc(p_1 \& p_2 \rightarrow r).$$

Nevertheless, from $\bigcirc(p_1 \rightarrow q)$, many can derive $\bigcirc(p_1 \& p_2 \rightarrow q)$. This is exactly the kind of situation in which the law's *lex specialis* recommends the more specific rule. The deference of one rule to the other, or "derogation", can also be governed by (meta-)rule, principle, or precedent. In logics of defeasible reasoning the more specific antecedent dominates (for example, (Nute, 1985)) or else there are rules that have as their consequents that one rule is preferred to the other (for example, (Prakken and Sartor, 1996)).

Instead of specifying in a mathematically precise way how this deference, derogation, or defeat occurs, von Wright regards the question as extra-logical. Somehow, consistency is restored. Alchourrón hides the defeat within the "choice functions" that arise during "contingent" revisions. Somehow, the legislator or adjudicator makes the right revisions.

"The particular details of the revisions (and the choice functions) are never analyzed by a logician (as a logician), since at the logical level any empirical analysis is out of question." (Alchourrón, 1993, p. 83). The alternative paradigm, says Alchourrón, hides its conclusions in an epistemic status that is tentative and subordinate. Defeasibility is sneaky science. It is disrespectful of the *status quo*; it flaunts the weaker status of its defeasible conclusions.

But the defeasible logics describe exactly how conflicting norms are processed. The defeasible logics do not need to pretend that there are no conflicts, or that someone else will solve the problem somehow. The defeasible logics provide a place for computation.

Alchourrón left us at this same point: a choice between two paths, neither of which he could ascertain to have *a priori* superiority. Like the revisions of the agents he proposes with Gärdenfors and Makinson, the only constraint is for the final snapshot to have the dignity of consistency. Alchourrón could only hope that we would choose well. I however, am able to believe consistently that inquiry will dignify other conclusions.[4]

R. P. Loui
Department of Computer Science
Washington University
St. Louis

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[4]Dr. Fernando Tohmé gave important encouragement in the preparation of this paper and graciously recalled his meetings with Professor Alchourrón.