

# Foreword

It gives me the greatest of pleasures to write this foreword to *Ex Falso Quodlibet*, the first book-length study on the subject of paraconsistency to be published in Romanian. The subject has come a long way since the 1960s and 1970s. At that time, it was a small, unorthodox, and often somewhat derided subject. It is now a well-established branch of logic, with its own code in the AMS Subject Classification, and entry in the Routledge *Encyclopedia of Philosophy*.

Paraconsistent logicians—in the modern period at any rate; I will come back to this—have been driven by the thought that there are contexts where we need to be able to work sensibly with inconsistent information, data, theories, and so on. Clearly, employing an inference mechanism in which a contradiction implies everything makes no sense in this context. Yet the principle of inference  $\{A, \neg A\} \vdash B$  (*Ex Falso Quodlibet*, often now called *Explosion*) is valid in the orthodox logic of our time—or certainly of the 1960s and 1970s. If one wants to take the possibility of operating in an inconsistent context seriously, it is therefore necessary to have a logic in which *Explosion* fails. This has come to be the defining characteristic of a paraconsistent logic.

The term ‘paraconsistent’ itself was coined by Miró Quesada at the Third Latin American Symposium on Mathematical Logic in 1976. The prefix ‘para’ has a number of different meanings in English. Newton da Costa informed me that the sense that Quesada had in mind was ‘quasi’, as in ‘paramedic’ or ‘paramilitary’. ‘Paraconsistent’ is therefore ‘consistent-like’. Until then, I had always assumed that the ‘para’ in ‘paraconsistent’ meant ‘beyond’, as in ‘paranormal’ and ‘paradox’ (beyond belief). Thus, ‘paraconsistent’ would be ‘beyond the consistent’. Personally, I still prefer this reading.

Although paraconsistent logic started as a small interest, it was always a subject with a broad geographical spread. Indeed, within about 20 years of the end of the Second World War it was discovered independently by people on several different continents. It was clearly an idea whose time had come. It should also be said straight away that there are many paraconsistent logics, and nearly all the early investigators produced very different such logics.

The first formal logic that was constructed specifically with an eye on inconsistency was produced by the Polish logician Stanisław Jaśkowski in

1948.<sup>1</sup> About 1960 da Costa wrote a doctoral thesis on the subject in Brasil, as did Florencio Asenjo in Argentina. Da Costa quickly gathered a group of researchers around him. This group was the first to investigate a number of inconsistent theories, such as versions of set theory. The group also rediscovered the work of Jaśkowski, and this stimulated work on paraconsistent logic in Poland.

At about the same time, the details of relevant logic were being worked out by logicians in the US, and especially by Alan Anderson, Nuel Belnap and their students at Pittsburgh. Relevant logic is more concerned with the behaviour of the conditional than *Explosion* as such, but the connections are close; and particularly once the world-semantics for relevant logics were developed, relevant logics took their proper place in the paraconsistent family. The semantics were invented in the early 1970s by Richard Routley (later Sylvan), Val Routley (later Plumwood) and Bob Meyer (an erstwhile student of Anderson and Belnap). They also gathered a number of students and fellow-travellers around them in Canberra, giving rise to the Australian school of paraconsistent logicians.

By this time there were people working on paraconsistent logic in several different countries; notably, Diderik Batens in Belgium, who went on to develop the very fruitful notion of an adaptive paraconsistent logic, and the Canadian logicians Peter Schotch and Ray Jennings, who went on to develop what have come to be known as preservationist paraconsistent logics.

My own involvement with the subject began in the early 1970s, when reflections on Gödel's Theorem convinced me that we need to be able to make sense of reasoning in the context of an inconsistent arithmetic. I took my first full paper on the subject, 'Logic of Paradox', with me when I moved from the UK to Australia in 1976, and read it at the first Australian conference I went to—a meeting of the Australasian Association of Logic in Canberra in the same year. I was bailed up by Richard Routley in the corridor afterwards, who told me of his own interests and of paraconsistency in the other parts of the world. I was delighted to find that I was not completely alone in my lunacy.

This was the start of a strong and working friendship between Richard and myself, which lasted till his sad and untimely death in 1996. One of the

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<sup>1</sup>For further historical and technical details about paraconsistent logic, see G. Priest, 'Paraconsistent Logic', pp. 287-393, Vol. 6, of D. Gabbay and F. Guenther (eds.), *Handbook of Philosophical Logic*, 2nd edition, Dordrecht: Kluwer Academic Publishers, 2002.

first things we did was to plan and execute the first collection of essays on paraconsistent logic.<sup>2</sup> We solicited papers from all the people we knew to be working in the area. Since the subject was so new, we also wrote substantial introductory essays for each section. These essays appear translated into Romanian in this collection. In some ways, the book was not a happy one. Although the manuscript was sent to the publisher in 1982, the book did not appear until 1989, by which time it was already somewhat dated; and when it did appear, it sold for well over US\$200, an enormous sum in those days. So the book never obtained wide coverage. Yet I think it served its function amongst the *cognoscenti*. It gave the paraconsistent logic community an identity, and served as a reference point for future work.

When writing the introductory essays for the volume, one thing that Richard and I found that we needed to do was to distinguish between paraconsistency, as defined above, and the view that some inconsistent theories might actually be true. (This is, of course, a much stronger view: one might hold that inconsistent theories are useful, good approximations to the truth, or have other virtues, without actually being true.) In those days ‘paraconsistent’ was used to describe both things—a source of confusion that still persists in some places. Richard called the stronger view ‘dialectical’ at the time, in virtue of its connection with the views of Hegel and Marx. But though the name had a point, it obviously carried too much theoretical baggage, and a different name was needed. We were stuck for a name, and went to consult the dictionaries in the library of the Australian National University: Greek, Latin, Hebrew, Gaelic... But we did not find a word that could be appropriated. In the end, we were forced to coin a neologism ‘dialetheism’ for the stronger view—a dialetheia (two way truth) being a true contradiction. The name was inspired by a passage in Wittgenstein’s *Remarks on the Foundations of Mathematics*, where he likens the Liar sentence to a Janus figure facing both truth and falsity. The word is not a particularly attractive one, and we even forgot to agree how to spell it: in his writings, Richard usually spelled it ‘dialethism’. But for better or for worse, this is how the view has come to be known. It must be pointed out that, at least at that time, dialetheism was a view largely associated with the Australian paraconsistent logicians, and especially with Richard and myself. It tends to be regarded as a particularly outrageous form of paraconsistency, even by some

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<sup>2</sup>G. Priest, R. Routley and J. Norman (eds.), *Paraconsistent Logic: Essays on the Inconsistent*, Munich: Philosophia Verlag, 1989.

paraconsistent logicians themselves. It is, at any rate, a view that I have subsequently gone on to defend at much greater length.<sup>3</sup>

In virtue of the stiff intellectual resistance that paraconsistency met in its early days, it is worth remembering how recent the entrenchment of *Explosion* is on the Western logical scene. In the only way in which it makes sense to understand the matter, Aristotelian Syllogistic is paraconsistent. The inference:

Some men are animals.

No animals are men.

All men are men.

is not syllogistically valid. *Explosion* first appears on the scene in the writings of a group of Paris logicians in the 12th century. After this time it is contentious, until about the 16th century when it is forgotten—along with most of the rest of mediaeval logic. *Explosion* is a highly counter-intuitive principle. And at least one of the founders of modern logical theory, Bertrand Russell, was aware of this. Anyway, the current general acceptance of *Explosion* in contemporary logic is entirely a creature of the 20th century, deriving from the entrenchment of the powerful logical machinery that Russell and Frege developed.

It should be noted that the situation concerning dialetheism is quite different. Though there were certainly dialetheists before Aristotle, his scathing—and surprisingly ineffectual, given its influence—attack on the idea has given rise to an almost unanimous acceptance of the Law of Non-Contradiction in Western philosophy. Until the present period, only a few philosophers, notably Hegel and his fellow travellers, have gone against the grain historically.

Perhaps the shallowness of the historical roots of *Explosion* explains the fact that much of the prejudice against paraconsistent logic is now disappearing. Indeed, in certain areas, such as parts of computer science, paraconsistency is now simply common sense. And even philosophical logicians—who tend to be more conservative than their computational cousins—are prepared to grant paraconsistent logic an equal footing with intuitionism, many-valued, and other “non-classical” logics, in terms of intellectual interest. Dialetheism is still a different matter. But even here, many philosophers (though by no means all), are prepared to engage with the issue, and not write it off as too

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<sup>3</sup>Especially in *In Contradiction* (Dordrecht: Kluwer Academic Publishers, 1987) and *Beyond the Limits of Thought* (Cambridge: Cambridge University Press, 1995; 2nd, revised, edition, Oxford: Oxford University Press, 2002).

absurd to be worthy of serious consideration.

The fact that the information in any data base (including the data base of a human mind) is all too obviously likely to be inconsistent—and not in an algorithmically detectable fashion—accounts for the now common-sense status of paraconsistency in areas of computer science which concern themselves with operating on such data. But the potential applications of paraconsistency are much broader than this, and arise wherever inconsistency may be a fact of life. Such areas may include inconsistent laws, as well as various theories in the history of science (such as the Bohr theory of the atom) and mathematics (such as the early calculus). The development of the whole new area of inconsistent mathematics is also taking place.<sup>4</sup>

Perhaps the philosophically most interesting—and most contentious—potential applications of paraconsistency are to areas where one might want to endorse dialetheism. The most high-profile such area is that concerning the paradoxes of self-reference, where taking the paradoxical arguments as establishing the truth of their contradictory conclusions is a simple, natural, and attractive view—at least once one has got over the *horror contradictio-nis*. There are a number of other areas, however. These include analyses of vagueness, and particularly of borderline areas, of states of change and motion, of concepts that have over-determined criteria of applicability, and of the whole issue of the limits of thought. Dialetheic work in all these areas can now be found.

The papers in this collection explore many of the above issues in greater detail. Some, such as the introductory chapters of *Paraconsistent Logic*, are old papers, translated for the first time. Some are new papers by seminal figures in the area, notably da Costa. And some are papers by the newer generation of logicians and philosophers who are keen to engage with paraconsistency and its applications, including dialetheism. The collection provides an excellent snap-shot of the subject, both its past and present, and will be particularly valuable for Romanian logicians and philosophers, who will find the material much more accessible in their native language. (Since I myself cannot speak Romanian, I have to trust that the translations are accurate! I have every faith that they are.)

I think that Iancu Lucica, and all those who have worked on the project, writing, translating, and editing, are much to be commended for all the hard

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<sup>4</sup>See C. Mortensen, *Inconsistent Mathematics*, Dordrecht: Kluwer Academic Publishers, 1995.

work that they have put into the project. The volume will well reward their efforts.

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