POPPER, REFUTABILITY, AND PARACONSISTENCY

Roman Tuziak & Tomasz Skura
Department of Logic
Wroclaw University
ul. Koszarowa 3
51-149 WROCLAW Poland
e-mail: rtuziak@uni.wroc.pl

K. R. Popper touched on the problem of paraconsistency in his paper "What is Dialectic?" (1940) as well as in "On the Theory of Deduction I and II" (1948). Although he himself has never been interested in building formal systems of logic, some of his basic ideas seem useful for such a task, especially when applied to the theory of paraconsistent logic.

Paraconsistent logic is obtained from Classical Logic (CL) by rejecting the explosive inference $p, \neg p \vdash q$. Since there are many ways of getting such subsystems of CL , we have various paraconsistent logics rather than one paraconsistent logic. However, it is obvious that certain natural assumptions about what a paraconsistent logic should be like can reduce the number of systems to a few important ones. The first assumption is that a paraconsistent logic should be as rich as possible. This requirement brings us back to the work of those paraconsistency forerunners who suggested searching for systems satisfying several conditions, especially the one that the systems should contain as many classical theorems as possible. What we are trying to do is to reach for the limits of the hierarchy of systems. In formal terms this means that interesting paraconsistent logics should be maximal. By a logic we mean a structural consequence relation $\vdash$ between finite sets of formulas and formulas, but we also use the word "logic" in the sense of "the set of theorems of a logic $\vdash$". We say that a paraconsistent logic T is maximal, if there is no paraconsistent logic T' such that T is a proper subset of T'. We study and discuss paraconsistent logics induced by 3-element algebras satisfying certain natural conditions.

The techniques we use are, so to say, Popperian. We build our systems not by collecting what we need, but by refuting what is not needed. That proves to be a productive way of tackling the problem of paraconsistency.