SHAPIRO'S AND HELLMAN'S STRUCTURALISM

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I give brief descriptions of and motivations for Stewart Shapiro's and Geoffrey Hellman's positions in mathematical structuralism and criticize each position in turn. Shapiro explains mathematical objects as 'places in structures', conceived as akin to offices, occupiable by arbitrary things and individuated by their interrelations. I argue that while places as occupiables are much like the 'places' of relations and thus not too worrisome, the two aspects of places —occupiability and what I call 'relational essence'— don't go well together. Therefore Shapiro's structuralism doesn't constitute a substantial advance over traditional platonism. Furthermore, mathematical practice indicates that mathematical objects aren't needed anyway to account for the information content of mathematics. Accordingly, in Hellman's version of structuralism mathematical propositions do not refer to mathematical objects; rather, they are implicit generalizations over logically possible systems. Statements P of a mathematical theory have to be analyzed as "Necessarily, for all systems of type so-and-so, P", where the theory also says that it is logically possible that there be systems of type so-and-so. I claim, however, that the logical possibility of structural conditions isn't required for mathematical reasoning about them. Thus Hellman's structuralism isn't adequate as an account of mathematics. Finally, I hint at my own half-baked views on what mathematics is about.