ABSTRACT. Two proposals for a physicalistic analysis of causation – the so-called transference model and an account given by J. L. Mackie – are examined and found wanting on the score of physical objectivity. This shortcoming can be remedied, but it is further argued that both proposals embody a too restricted conception of what a physicalistic analysis of causation should be. A more general program is proposed.

There has been some discussion lately concerning the relative merits of various types of physicalistic and non-physicalistic analyses of causation. The distinction is broadly between approaches in which an attempt is made to provide an account of causation in terms of physical descriptions of events and states of affairs, i.e., descriptions according to our best physical theories, and approaches which appeal to “anthropomorphic” standards. The accounts from the latter category are usually variations on the theme that the notions of manipulation and human intervention are crucial for an understanding of causation. On the other hand, the proponents of physicalistic accounts customarily claim to be able to give an objective analysis of causation and its direction by making use of objective physical properties; in this way, they maintain, causation obtains its rightful place as a category of physical ontology and does not need to be relegated to the realms of psychology or anthropology.

In this article I shall examine two concrete proposals for physicalistic analyses which have been brought forward in the literature – the so-called transference model and an account given by J. L. Mackie. It will turn out that both proposals are wanting: they do not satisfy their own standard of physical objectivity. The two accounts can perhaps be suitably modified in order that they do satisfy that standard. I shall argue, however, that both accounts embody a rather narrow conception of what a physicalistic analysis of causation should be, and that their possible modifications suggest a wider notion of physicalistic analysis. According to this wider notion human patterns of use of causal concepts are taken as the basis of the account so that there is a certain rapprochement with the non-physicalistic approaches. Nevertheless, the objective physical status of the analysis is not affected.
The first candidate for a physicalistic analysis to be considered here is the so-called transference model of causation. In this model the causal bond is identified with the transfer of physical quantities like energy and momentum; the direction of causation is identified with the direction of flow of these physical quantities. Much stress is placed by the proponents of the transference model on the “ontic” status of the analysis (as opposed to the “nomic” status of approaches which make essential use of physical laws). The idea is that energy and momentum are there as objective components of the world, and retain their identity through physical processes; the flow of energy and momentum is likened to the motion of physical objects. There is therefore not only numerical equality of energy and momentum before and after physical interaction, but it is the same energy that is present. According to this point of view the question of the existence of energy and momentum should be well distinguished from the question which physical laws hold with respect to them. Aronson (1982), for instance, stresses that we could rightfully speak about a flow of energy and momentum even if there were no conservation laws pertaining to these quantities.

The transference model is thus not meant to be equivalent with a strictly nomological view of causation. On such a nomological view cause and effect are state descriptions (at different times) which are connected by physical laws. But, as has been objected many times against such an account, this does not make it clear why we think of the cause-effect relation as asymmetrical. If a state description $S(t_1)$ of an isolated physical system at time $t_1$ leads, together with the deterministic laws of classical physics, to a description $S(t_2)$ at time $t_2$, it is also true that $S(t_2)$ leads us back to $S(t_1)$. Why should we consider $S(t_1)$ as the cause of $S(t_2)$, and not $S(t_2)$ as the cause of $S(t_1)$? Apparently the asymmetry in the treatment of $S(t_1)$ and $S(t_2)$ could only be justified on physical grounds if there were some objective physical features which would make it possible to discriminate between the two state descriptions. But such a distinction cannot be made in an obvious way on the basis of the fundamental laws of classical physics alone. In order to appreciate this it is important to note that the laws, being time reversal invariant, do not single out events of a “cause-type” which would always occur earlier than events of an “effect-type”. Any process which is nomologically possible has a counterpart that is just as possible and