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'A LOGICAL RECONSTRUCTION OF PURE EXCHANGE ECONOMICS': AN ALTERNATIVE VIEW*

INTRODUCTION

In an interesting recent paper, Wolfgang Balzer (1982) presented a reconstruction of pure exchange economics (PEE) by means of an informal model theory as it has been developed by Sneed, Stegmüller, Balzer and others. An important aim of his reconstruction is "to provide a basis for reflecting on theories" and more specifically "to yield a basis for further investigation of different microeconomic theories and their intertheoretic relations" and "to elucidate the status of the utility function which is the central and crucial concept of micro-economic theories" (p. 23).

In this contribution, we want to show that Balzer's reconstruction suffers from a basic weakness in his characterisation of an equilibrium and from his failure to introduce the important concept of demand-relationships. For this reason, it is strongly claimed that Balzer's reconstruction did not do justice to the standard texts he referred to on p. 24; it is in fact not in conformity with the presentation in these texts. On the basis of our own reconstruction – as it is developed below – we shall argue that the utility function is not "the central and crucial concept of micro-economic theories" (p. 23), in contrast to Balzer's view. Our own suggestion for a theoretical concept with respect to PEE, is the concept of a demand function. These differences are not stressed merely for aesthetical or dogmatical reasons but simply because of the fact that any reconstruction – in order to be useful for intertheoretical investigations – should represent as closely as possible what scientists themselves feel about their theories. This, of course, does not mean reconstruction should necessarily lead to a simple and trivial restatement of scientists' views about their own subject. It has to grasp, however, all essential concepts used in stating a certain theory.

* The very constructive criticism of Wolfgang Balzer which helped to eliminate some muddles in an earlier draft of this paper is gratefully acknowledged. The author has also benefited from discussions on the subject treated with G. Clemenz, E. Händler and J. Schneider. Responsibility for any remaining errors is his own.
Before we develop our own reconstruction, we want to express our agreement with Balzer's basic aim. Although we agree with his ideas, we have reservations about his view that "the principle issues of PEE are essentially the same as in more complicated 'realistic' and 'modern' micro-economic theories" (p. 23), because most economists would think of production as the most important of all economic activities.  

I. BASIC CONCEPTS

It is important to keep in mind, that the original objective of PEE is to show that the decentralised actions of selfish individuals in an economy need not lead to chaos. The "invisible hand" of a price mechanism in a market economy can make them mutually compatible.

We now introduce the concepts economists use in order to describe an economy. First there is the (finite) set of agents $F$, indexed by $i = 1, \ldots, n$ and the finite set of commodities $G$, indexed by $j = 1, \ldots, m$. $q_i$ denotes an $m$-dimensional, nonnegative vector or "commodity bundle", whose components $q^i_j$ denote the quantities of commodity $j (j \in G)$ consumed by agent $i \in F$. Each agent is also assumed to be endowed with a finite initial bundle of commodities $q_i^0 \in R^m_+$. Since there is no production in a pure exchange economy, the total quantity of commodity $j$ available for allocation in the economy is $q^j$, which equals the sum of the initial endowments of this commodity held by all agents, i.e., $q^j = \sum_{i=1}^{n} q_i^0 \forall j, j \in G$, or in vector notation:

$$\tilde{q} = \sum_{i=1}^{n} q_i^0.$$ Any allocation $q = (q_1, \ldots, q_n)$ must therefore be feasible, i.e. $\tilde{q} \geq \sum_{i=1}^{n} q_i$. For simplicity's sake we presuppose $\tilde{q}$ to be positive in all components. For each commodity there exists a market on which it can be exchanged. The positive and finite vector $p \in R^m_+$ denotes the prices of the commodities expressed in an arbitrary external accounting unit; that is, the unit of account is not a commodity.

Each agent also possesses a utility function $U_i : R^m_+ \to R$, that associates with each commodity bundle $q_i$ a real number, such that if $U_i(q_i) > U_i(q'_i)$ agent $i$ will prefer $q_i$ to commodity bundle $q'_i$. If $U_i(q_i) = U_i(q'_i)$ the agent is said to be indifferent between the bundles $q_i$ and $q'_i$. Note that for this utility function, only the ordering of the real numbers matters and inter-