In the first part of this paper the definition and use of advertising response functions are examined critically. It is shown that advertising response functions cannot be regarded as models of the advertising process whose parameters are known, that only a small section of the complex functions often postulated is relevant to media planning, that measures of advertising impacts or exposures are relative rather than absolute, and consequently that the "response function" only shows a notional relationship between advertising response and exposure, which normally needs to be calibrated to the advertising appropriation.

In the second part a media planning system which utilizes a "control parameter" rather than a "response function" is described. The main feature of the "control parameter" is that it adapts itself so that an appropriate relationship between response and exposure is used, whatever the appropriatin. Other features of the system are described.

GENERAL INTRODUCTION

One of the major sources of the complexity of media planning in Great Britain is the high degree of overlap between the readers of different publications, the viewers of different programmes, and of readers and viewers; each person "reads" on average five or six national publications and views a substantial proportion of the only commercial television programme available in most parts of the country. (There are areas where programmes from two, or even three, companies are available; the proportion thus affected is approximately 7 per cent of homes receiving commercial television.)

The media planning problem is not just one of allocating expenditure to achieve maximum cover, but also one of allocating expenditure to achieve an acceptable, or efficient, distribution of impacts, or opportunities to see, throughout the target audience. Placing sufficient insertions in each publication to give adequate impacts to its solus readers may lead to oversaturation of those reading several of the publications in the campaign.

PART I—THE ADVERTISING RESPONSE FUNCTION

The concept

The advertising response function is introduced as a formula to show the cumulative advertising value of repeated impacts on an individual. In its essence the idea is simple and logical. If it is judged that there is no value in

† Correspondence discussing this paper appears in Viewpoints.
anyone having less than five impacts, no extra value in having more than ten impacts, and that each impact between the fifth and tenth is equally valuable, the advertising response function for that campaign has been precisely defined.

The apparent simplicity ends at this point. The problem of measuring the response function is more difficult than the problem of measuring the effectiveness of advertising for it involves measuring the exposure to advertising in addition. The response function is intuitively meaningful but practically nebulous. Nevertheless, the point is made that when media schedules are prepared, an advertising response function is assumed, whether explicitly or implicitly. Virtually all media-planning systems, particularly those employing computers, utilize response functions. The purpose of the first part of this paper is therefore to examine the concept of the "response function" critically, and the use to which the concept has been put.

Use of the response function

Explicit formulations of response functions have been incorporated into computer systems in two different ways.

Procedures have been developed which utilize response functions specified by the advertiser to prepare an optimal schedule from a limited set of possibilities or to prepare an evaluation of a schedule and stated variations on it and a quasi-optimal schedule. These procedures depend upon precise formulation of advertising response functions.

In an alternative approach schedules are evaluated according to several different response functions simultaneously to enable the sensitivity of the results to the precise formulation of the response function to be determined. Thus it is possible to make an attempt to select and calibrate the response function to match the appropriation and the media planners' views. The procedure for improving the schedules presented is limited to indications of the marginal effectiveness of nominated changes of media, each change taken individually.

The response function is regarded by some as a model of the actual advertising process as it takes place in individuals subjected to increasing amounts of advertising. If it were, and the parameters of the function were known, then it would be natural to calculate advertising expenditure on the basis of the effect of the advertising campaign in achieving the firm's objectives (e.g. maximum profit or maintaining market share) by relatively straightforward calculations. That this is not even seriously advocated as a method of calculating advertising appropriations indicates clearly a rejection either of the response function as a model of the actual advertising process or of the parameters being known or both. Thus optimizing with one nominated response function regarded in this way is like using a scalpel in the darkness. On the other hand, the procedure of assessing campaigns by several different response functions is as liable to the same logical inconsistency if the response function is held also to be a model of