

# A Framework for Questionnaire Design: Labaw Revisited

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In 1980, Labaw argued that the greatest weakness of questionnaire design was lack of theory. Since then many books and articles have been written on the subject, and much research conducted into elements of the process. Despite this, a coherent theory of questionnaire design remains elusive. This paper revisits the foundation for a systematic theory of questionnaire design proposed by Labaw, and constructs a framework that incorporates Labaw's theoretical principles and the subsequent work of Jenkins and Dillman; Sudman, Bradburn and Schwarz; Harkness; Fowler; Belson; and others. This framework does not constitute a theory of questionnaire design, but provides a conceptual model of the questionnaire design process, which combines a general philosophy of questionnaire design with specific empirically-supported principles

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## Introduction

In a book which she wrote in 1980, Patricia Labaw argued that the greatest weakness of questionnaire design was lack of theory (Labaw 1980). Since then, despite the numerous books and articles that have been written on the subject, and notwithstanding the excellent research that has been conducted into elements of the process, a coherent theory of questionnaire design has remained elusive.

Labaw's book was strongly criticised by Jean Converse in a review in *Public Opinion Quarterly* (Converse 1982) and has never been cited in a *Public Opinion Quarterly* article. (*Public Opinion Quarterly* is the leading survey research journal.) It is not cited in any of the well-known survey research or questionnaire design texts subsequently published, and is cited fewer than a dozen times anywhere between 1981 and 1993. Yet it is, in my view, a thoughtful and thought-provoking book.

This paper revisits the foundation for a systematic theory of questionnaire design proposed by Labaw, and constructs a framework which incorporates Labaw's theoretical principles and the subsequent work of Jenkins and Dillman; Sudman, Bradburn and Schwarz; Harkness; Fowler; Belson; and others. This framework does not constitute a theory of questionnaire design, but it does provide a conceptual model of the process, and a simple, logical structure for approaching the task of questionnaire design.

## The Overall Framework

The overall framework for questionnaire design is shown in Figure 1. It is represented by a triangle, or pyramid, with general principles at the top and specific principles at the bottom. At the apex of this pyramid is the concept of respondent orientation, and at the base, specific principles of question wording and graphic design. The idea which this representation is intended to convey is that there are a small number of general principles of questionnaire design which broaden out into a larger number of specific principles.

The pyramid is deliberately divided into general and specific principles to illustrate the contention that much of what is written about questionnaire design starts at the level of what I

have defined as specific principles. This is not to say that this writing has no broader conceptual framework, but rather that, if it has, it is generally assumed or implicit. (One notable exception is the work by Jenkins & Dillman (1995), which discusses graphic language, cognition, visual perception and motivation as precursors to the development of principles of self-administered questionnaire design.)

Labaw's argument, and one with which I concur, is that these general principles should be explicit in questionnaire design.

## **General Principles**

Labaw's general principles of questionnaire design are shown in Figure 2. These general principles are not set out in Labaw's book in the way in which I have presented them. Figure 2 represents my interpretation of Labaw's ideas and the logical structuring of them. It is an interpretation and structure which makes sense to me, and I make no greater claim on the idea than that.

If there is a single, fundamental principle of questionnaire design, it is that the respondent defines what you can do: the types of questions you can reasonably ask; the types of words you can reasonably use; the concepts you can explore; the methodology you can employ. This is why a survey of doctors, for example, can be, and should be, quite a different proposition to a survey of the general public.

To find out what is in respondents' minds, Labaw argues that you should ask them questions they can truthfully answer about their physical environment, their consciousness, their knowledge and their past behaviour. This is a contentious proposition because it means that attitude and opinion questions play only a minor role in questionnaire design, if they have a role at all.

This proposition, that attitudes and opinions are relatively unimportant, is not critical to the questionnaire design framework proposed. If it were removed, the integrity of the framework remains intact. However, there is no evidence that attitudes are good predictors of behaviour, and even if there is a relationship between attitudes and behaviour, the direction of causation is not clear. Consequently, as a general principle, attitude questions should be replaced with questions about respondents' environment, consciousness, knowledge and behaviour.

Implicit in this contention is the assumption that the objective of most surveys is the prediction of human behaviour. However, a great deal of attitude and opinion research is done with no behavioural implications in mind; the measurement of attitudes and opinions is simply regarded as an end in itself. But not all attitudes or opinions are necessarily of equal value, and information on respondents' environment, consciousness and knowledge can be used to weight their opinions to give a more realistic perspective on the views of the population sampled.

By environment, Labaw means the physical aspects of respondents' lives over which they have little control, but which impinge on their ability to act or respond in specific ways; factors such as age, sex, socio-economic status, race, locale and mobility. Respondent consciousness, or awareness, means whether or not respondents can understand the implications of their answers; whether they can fit the pieces together to form a coherent picture. Knowledge simply means whether respondents really know what you are asking them about. Finally,

Labaw emphasises the importance of past behaviour as a predictor of future behaviour: people are better able to tell you what they have done compared to what they might do, and behaviour sorts out the priorities among competing attitudes.

All questionnaires reflect their designer's view of the world, no matter how objective the researcher has attempted to be. Intellectually, good questionnaire designers understand this and attempt to maintain a detached objectivity. However, it is much more difficult than it seems to prevent a questionnaire simply becoming an instrument of the designer's perceptions, values and language, which is then inflicted on the respondent. The example of researchers asking whether respondents were bothered by "heavy traffic", meaning large trucks, when to respondents this meant hard drugs, is a classic case in point. Thus the next general principle is to let the respondent tell you what he or she means and not to impose your values, perceptions or language on the respondent.

Labaw points out that a questionnaire is not simply a series of questions, nor is a question merely a series of words. A questionnaire is a structure consisting of several different layers which must be simultaneously integrated into an overall entity whose properties are greater than the sum of the properties of the individual layers (in this respect, questionnaire design can be likened to painting). The four layers of a questionnaire defined by Labaw are: objectives, questions, words and layout.

The final general principle is that the first "layer" of a questionnaire that needs to be dealt with is the questionnaire's objectives. You cannot begin to formulate questions and worry about wording unless you know what you want to accomplish with your questions and words

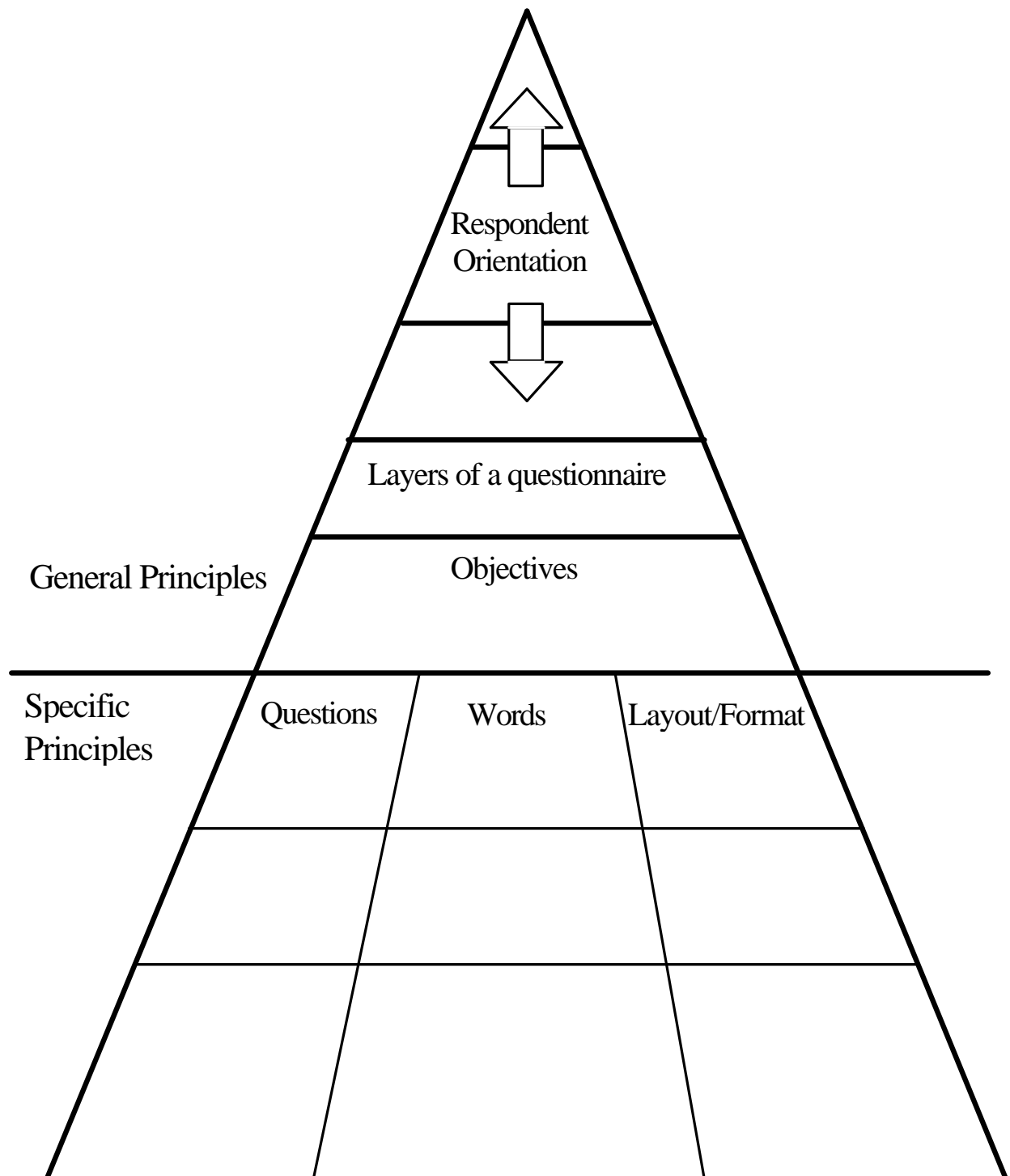
It could be argued that the general principles I have just described as self evident and second nature to any competent questionnaire designer. Certainly the ideas themselves are not original. However, if they are so self-evident, why are so many poorly designed questionnaires produced? Furthermore, while these principles may be self-evident to experienced questionnaire designers, I believe they provide a coherent and logical starting point for novices, something which is often missing from the advice they are given.

## **Specific Principles**

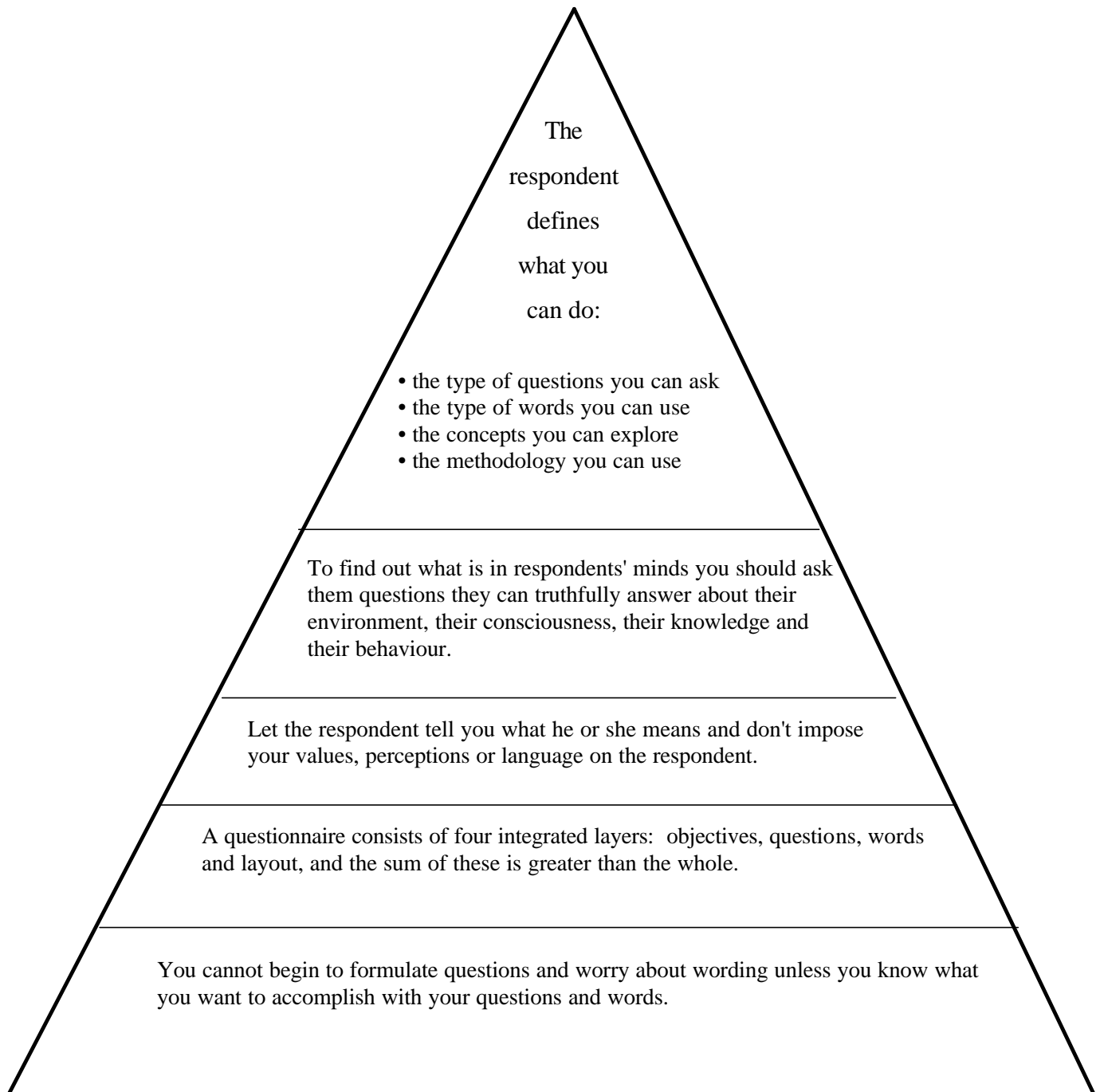
Labaw's book also contains what I have called specific principles. However, her discussion of these principles is far from complete. This is partly a reflection of the fact that much of the empirical work in these areas has been done since 1980. Consequently, many of the specific principles incorporated into the proposed questionnaire design framework are based on the work of other researchers.

Specific questionnaire design principles are divided into three sections, each concerned with one of Labaw's questionnaire layers: question design, question wording, and formatting or layout. Within each section the principles outlined become progressively more and more specific. Though the sections are shown as separate and are treated separately in the discussion that follows, this is largely a matter of convenience. Like all aspects of questionnaire design, one element cannot be dealt with in isolation of the others. This becomes increasingly apparent as the principles outlined become more specific. Consequently, the section to which some specific aspects of questionnaire design are allocated is somewhat arbitrary (and in some cases, aspects may apply to more than one section).

**Figure 1. A Framework for Questionnaire Design**



**Figure 2. General Principles**



(Source: Adapted from Labaw 1980)

The specific principles of question design, question wording, and layout or formatting are shown in Figures 3, 4 and 5. Rather than discussing each section in detail, I will simply comment on some relevant issues.

In terms of the proposed questionnaire design framework the section on question wording is the most elegantly structured in the sense that it precedes logically from a "general" specific principle to increasingly more specific principles, culminating in detailed empirical findings. This is entirely consistent with the idea of a progressive unfolding of questionnaire design principles at a series of levels, each of which is more specific in content than the one which precedes it.

The other factor which distinguishes this section is the principle of question wording, taken from Labaw. Namely, that question wording variations *per se* have little impact on the stability of survey results; they become significant when they introduce or tap a different concept or reality or emotional level surrounding an issue. This is a fundamental tenet of questionnaire design because it means that, although changing a single word can change a whole question, the same question can be written using different words.

I have deliberately left the framework unfinished. This is to recognise the fact that new insights into specific questionnaire design issues are constantly being reported. As each new piece of information becomes available, it can be added to the framework. An example is questionnaire cover designs. There is evidence that the cover design of a questionnaire may affect the response rate achieved. However, there are no principles for choosing one cover design over another, and no empirically-supported theory to guide questionnaire cover design. Thus I have included this topic as one which is relevant, and may be important, but for which there is, as yet, no firm guiding principle. Finally, I hasten to add that what I have included in Figures 3,4 and 5 does not purport to represent a comprehensive review of all the relevant research on questionnaire wording, formatting and design. The idea is simply that, from this research, some empirically-supported questionnaire design principles have either been established or, at least, suggested.

## **Other Issues**

In her work involving a text-analytical approach to questionnaires, Harkness raises some interesting issues about the very nature of questionnaires. For example, where does a self-completion questionnaire begin and end - with the accompanying letters, with the first question, or somewhere in between (Harkness 1995)? Harkness also discusses the textual meaning of questionnaires and makes the point that, whatever we include or exclude from questionnaires may become "used as evidence" against (or for) us. In other words, the dialogue between researcher and respondent is not necessarily limited to what we would conventionally regard as a questionnaire, or necessarily to the questions or words we use. This could be regarded as another general principle.

As a result of his work on the design and understanding of survey questions Belson developed 15 sets of hypotheses (involving over 50 principles) about the nature and causes of respondent misunderstanding of survey questions (Belson 1981). (The question design principles attributed to Belson, which are included in Figure 4, are a refinement of these original guidelines.)

**Figure 3. Specific Principles: Questions**

<b>Questions</b>	
<p>A good question is one that produces answers that are reliable and valid measures of something we want to describe (Fowler 1995). A bad question is one that obscures, prohibits or distorts the communication from respondent to researcher, and vice versa.</p>	
<ul style="list-style-type: none"><li>•</li><li>•</li></ul>	<p>Use closed rather than open-ended questions wherever possible. Then at least the context is the same for all respondents. However, the pattern of responses for a closed question is critically dependent on the answer set presented; the inclusion of "other" will not compensate for the omission of an important answer, and if an unimportant answer is included, its importance is likely to be over estimated.</p> <p>The likelihood of question context effects needs to be anticipated so that as far as possible they are deliberate rather than unanticipated. This can be done by understanding the rules that govern conversations and social encounters between strangers. (Sudman, Bradburn &amp; Schwarz 1996)</p>
<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>	<p>The more specific a question the easier it will be for a respondent to understand what the researcher wants.</p> <p>Longer questions will improve recall if respondents use recall and count strategies, but not if they estimate.</p> <p>Telescoping can be reduced or eliminated by the use of bounded recall methods.</p> <p>Avoid asking questions in a context that is likely to deviate strongly from the probable context in which an issue will be considered.</p> <p>If an anticipated context effect is undesirable, either change the context by omitting questions that may have an undesirable impact or by putting the crucial question in the first position.</p> <p>To eliminate undesirable response order effects, consider using open ended rather than closed questions.</p> <p>In personal interviews, the introduction given by the interviewer to a question or series of questions can be used to increase, reduce or eliminate context effects, as desired by the researcher. In self-administrated questionnaires, the same result can be obtained by including printed instructions, putting the questions together in a box on the same page or putting the questions on different pages. (Sudman, Bradburn &amp; Schwarz 1996)</p> <p>Use forced choice, not agree-disagree attitude questions. (Converse &amp; Presser 1982)</p> <p>Longer questions may produce longer responses. (Sudman &amp; Bradburn 1982)</p>

**Figure 4. Specific Principles: Words**

<b>Words</b>	
<p>Question wording variations <i>per se</i> generally have little impact on the stability of survey results. They become significant when they introduce or tap a different concept or reality or emotional level surrounding an issue.</p>	
<p>In general, keep questions short, simple and concrete. Avoid:</p> <ul style="list-style-type: none"><li>• unfamiliar or difficult words</li><li>• many information-carrying words in one question</li><li>• words that sound like something else (partial/impartial)</li><li>• broad concepts (e.g., children, the government)</li><li>• a qualifying clause at the end of a question</li><li>• two questions in one</li><li>• suggestions or leadingness</li><li>• big names</li><li>• questions that call for a lot of respondent effort</li></ul> <p style="text-align: right;">(Belson 1981)</p>	
<ul style="list-style-type: none"><li>• General questions are prone to assimilation effects and specific questions to contrast effects. In either case, context effects will be much smaller, or vanish altogether if a previously-formed judgement or substantial amounts of relevant information are chronically assembled in memory. This is not something the researcher can easily manipulate.</li><li>• If response alternatives to a question are necessary, their order may be randomised unless there is a natural ordering.</li><li>• Avoid items or stimuli that receive extremely positive or negative ratings when asking for judgement about a series of items, because items that follow will be strongly affected.</li><li>• Even when the wording of the question and the ordering of the response alternatives are identical, a visual presentation mode is likely to result in a different pattern of response order effects than will an auditory presentation mode. <p style="text-align: right;">(Sudman, Bradburn &amp; Schwarz 1996)</p></li><li>• A no opinion option should always be offered.</li><li>• When measuring attitudes you should omit the middle alternative and measure intensity. <p style="text-align: right;">(Converse &amp; Presser 1986)</p></li></ul>	
See: de Vaus, 1991	Checklist of 16 questions to "help in avoiding the most obvious problems (with question wording)".
Belson, 1981	Provisional guidelines (for question wording).
Fowler, 1995	Summary of seven principles of good question design.
Payne, 1956	A concise checklist of 100 conditions.
Sudman & Bradburn, 1982	Checklist of major points for threatening and non threatening questions about behaviour; questions for measuring knowledge and attitudes; recording responses; question order, questionnaire format, designing questionnaires for mail or telephone surveys, and steps in preparing a questionnaire.



**Figure 5. Specific Principles: Layout**

<b>Layout/Format/Graphic Design</b>
Questionnaires should be designed to make the task of reading questions, following instructions and recording answers as easy as possible for interviewers and respondents. (Fowler 1995)
<ul style="list-style-type: none"><li>• Questions should follow a logical sequence. Commonly this is in the form of a downward funnel; general and non threatening questions first, followed by more specific, more personal ones. However, other pathways are possible and sometimes more desirable.</li><li>• Formatting should meet the respondent's needs first, the interviewer's needs second and the researcher's or data processor's needs last.</li><li>• Formatting and graphic design are particularly important for self-completion questionnaires, to motivate and guide respondents through a questionnaire and achieve good information organisation.</li></ul>
<ul style="list-style-type: none"><li>• Present information in a format that respondents are accustomed to reading.</li><li>• Present only the most relevant information using graphical design features and composition.</li><li>• Pique respondent's interest early in the questionnaire.</li><li>• Dominantly feature questions over additional explanatory information.</li><li>• Include in each question all of the relevant information necessary for respondents to answer it, rather than specifying information in a subsequent instruction.</li><li>• Vertically align the questions and response categories.</li><li>• If incorporating needed information into a question makes it too complicated to understand, then provide accompanying instructions at the place where they are needed.</li><li>• Utilize single-formats rather than multi-task formats.</li><li>• Utilize single-question formats rather than matrix-question formats.</li><li>• Make headings and instructions at the top of the page more prominent than those in the middle of the page.</li><li>• Provide directions in a natural reading format and utilize graphical design features to make the directions more salient.</li><li>• Utilize graphical design techniques to establish a clear path through the questionnaire for the respondent to follow.</li><li>• Avoid using the same design feature to request different respondent actions.</li><li>• Utilize variability in design features judiciously.</li><li>• Visually emphasize information the respondent needs to see and de-emphasize information which the respondent does not need to see.</li><li>• Utilize graphical layout of questions on the page to distinguish among different types of question structures; maintain consistency within types.</li><li>• Provide descriptive captions either above, beneath, or to the right of blank answer spaces and utilize appropriate signs or symbols whenever numbers are requested.</li><li>• Utilize dominant graphical markings to provide the most important information needed by respondents to guide them through the answering process.</li><li>• Avoid the separation of questions through the use of lines and rectangles, in favour of an open format.</li><li>• Structure and organize the questionnaire in such a way that it, first, makes sense to respondents and, second, avoids leaving the choice of the order in which questions get answered up to the respondents. (Jenkins &amp; Dillman 1973)</li><li>• Questionnaire cover design (see: Dillman &amp; Dillman 1995; Gendall 1996)</li><li>• Covering letters (see: Gendall <i>et al</i> 1995)</li></ul>

Belson recommended that his 15 hypotheses be tested, as an important step in advancing the science of questionnaire design. This has not been done, though subsequent researchers have provided some evidence to support one or more of Belson's hypotheses. Nevertheless, I believe Belson's conclusions probably deserve more emphasis than I have given them. The ideas that, if respondents cannot answer a question, they will modify it to one they can answer, or, even if they do understand a question, they may answer, a different, more interesting (to them) question, seem rather fundamental.

Similarly, it could be argued that Sudman, Bradburn and Schwarz's conception of a survey as a both social encounter and a series of cognitive tasks is a fundamental principle of questionnaire design, and I would not disagree with that (see Sudman, Bradburn and Schwarz 1996). However, I have "relegated" their social - cognitive analysis to the lowest level of the proposed framework on the ground that this is the level at which its implications have the most impact on questionnaire design. For similar reasons I have included Jenkins and Dillman's self-administered questionnaire design principles at the same level, whereas it could easily be argued that the concepts of navigational guides and information organisation which underlie these principles should be incorporated at a higher level (see Jenkins and Dillman 1993 and 1995).

## Conclusion

There appear to be two reasons why Labaw has been largely ignored by the academic community in general and the public opinion research community in particular. The first is her book's title, *Advanced Questionnaire Design*. Several reviewers commented that the book was mistitled and should instead have been called something like *"Introductory Questionnaire Design"*. It is certainly true that Labaw does not discuss much of the empirical work on question wording and other question effects that had already been done by the late 1970s. Furthermore, a large part of Labaw's book is devoted to issues such as determining objectives, which precede the task of actually writing questions.

However, in my opinion, criticism of Labaw on these grounds is misplaced. Labaw's intention was to discuss the fundamental principles of questionnaire design. The fact that some of these seem self evident or that experienced questionnaire designers take some of them for granted does not diminish their importance. And it is only experienced questionnaire designers who are likely to fully appreciate the importance of these fundamental principles. To give an example, only someone who was aware of the effect of question wording variations on response distributions could fully appreciate Labaw's conclusion that wording variations *per se* have little impact on survey results. Thus, I believe Labaw's attempt to define the fundamental principles of questionnaire design could legitimately be described as advanced questionnaire design.

The second reason may be Labaw's relegation of attitude (and, by implication, public opinion) measurement to a minor role in social research. This reflected Labaw's experience as a market researcher and her belief that the purpose of most surveys should be to predict behaviour when conditions change. Labaw's approach would be anathema to those who believe in the efficacy of attitude and opinion research.

There may also be a cultural explanation. Goyder (1985) notes the British tradition of avoiding attitudinal questioning, whereas the requirements of American political culture have

"exalted the collection of attitude surveys and opinion polls to a high level of legitimacy" (p.236). Goyder hypothesises that this level of legitimacy for attitude surveys in the United States is unique. If this is true, it would be surprising if Labaw's views on attitudes had been well-received in America.

In this paper I have proposed a framework for questionnaire design. This framework is based on the fundamental principles outlined by Labaw in 1980 and incorporates the ideas and findings of other researchers in the field. The objective was to present a simple, logical structure for approaching the task of questionnaire design, which combines a general philosophy of questionnaire design with specific, empirically-supported principles.

If this has been achieved, it will provide a guide to questionnaire design for those who have little or no experience in the task and want to know where and how to start. It should also be useful to experienced questionnaire designers, if only as a reminder of the principles they take for granted, but which are sometimes overlooked, even by the most assiduous.

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