1 Introduction

As you may recall, our present series of banknotes began to be issued in 1971. At first, the general public considered the designs too progressive. This was apparent from the many critical letters and articles in the press. In the course of time, however, the criticism subsided and, at present, the designs seem to be accepted. Nevertheless, at the Bank we were not entirely satisfied with the public’s reaction. When asked individually and informally, most people are unable to recall the names and portraits of the historical figures depicted in the designs. Therefore, for our new f 100 note we changed our policy and left it to the artist Professor Oxenaar to choose a subject or object with a much greater appeal. He chose a snipe. Shortly after the issue of the Snipe, in 1981, the success proved to be great. In a very short time the f 100 / Snipe was familiar to nearly everyone. In Dutch vernacular ‘snip’ became synonymous with f 100 and is used in many lively phrases. In 1982 the f 50 / Sunflower was similarly given a good reception, although the word ‘zonnebloem’ lends itself less easily to word games and jokes.

As the public’s reaction to both new models was tested by us informally, we looked for a means to collect such information more systematically. This proved to be easy and cheap. In Holland there is a commercial institute, NIPO, which carries out a public opinion poll among 2,000 households once a week on Mondays and Tuesdays. Every week another 2,000 households are selected for the sample. The NIPO claims that every sample is representative of the Dutch population. The NIPO’s services are available to all and the cost
is approximately one guilder per question per household (= house address) visited. In our case the cost is approximately f 35,000.– for a poll.

So far we have used the services of NIPO twice and we should like to report to you now the results of the 1983 poll. The first poll was conducted in 1981.

2 The set-up of the questionnaire

The list of questions aimed, on the one hand, at measuring the appreciation and, on the other hand, the knowledge of the respondents about our banknotes. We therefore asked the respondents straightout whether they liked the designs of the f 100 / Snipe and the f 50 / Sunflower. Further, we asked them to recall from memory

— the denominations in circulation,
— the pictures on the banknotes,
— the predominant colours,
— the text elements, such as the value in digits and letters, the place and date of approval of the design, the signatures, etcetera,
— the security features.

In the evaluation we looked for meaningful correlations between the sets of answers and, surprisingly, we found strong and convincing correlations.

3 Appreciation

Let us deal with the appreciation first. About two thirds of the respondents found the f 100 / Snipe and the f 50 / Sunflower attractive. Only 6% found the f 100 / Snipe and 12% the f 50 / Sunflower awful and the remainder was indifferent. This sounds as if the f 100 / Snipe has a wider appeal than the f 50 / Sunflower. However, when asked directly which of the two they liked best, the respondents showed no preference. In the period between 1981 and 1983 polls the appreciation of the f 100 / Snipe diminished slightly from 70% to 65%. This does not seem significant. It remains to be seen in a future poll if the trend continues. Understandably, we were rather satisfied with these results.
4 Knowledge

Most respondents (77%) could mention all denominations in circulation spontaneously. The f 100-note is best known: it was mentioned by 97%. After half a year of circulation the new f 50-note was mentioned by 91%, which is a good score taking into account that f 50 was a new denomination. One or more denominations were left out by 23%.

Especially the colours and the pictures were known. The brown colour of the f 100 was mentioned by 38%, ‘snipe’ by 37% and ‘bird’ by 38%. The yellow/orange colour of the f 50 was mentioned by 61% and ‘sunflower’ by 45%. The text elements of the notes were less known than the picture elements. It was remarkable that 1% (= 21 respondents) thought that there is a text on the notes stating that they are ‘issued by the State of the Netherlands’!

As regards the security features, the results were much less satisfactory:

- no security feature could be mentioned by 20%,
- 1 security feature was mentioned by 61%,
- 2 security features were mentioned by 15%,
- 3 security features were mentioned by 3%,
- 4 security features were mentioned by 1%.

Nobody could mention more than 5 features. Please note that the numbers above are the result of a simple count of the answers. In many cases the ‘features’ mentioned are no security feature at all. The watermark was mentioned by 75%. This means that when a feature was mentioned, it was almost always the watermark. Other features mentioned were

- the mark for the blind (49%), which is not a security feature but a means of recognition of the denomination value, just as the letters and digits are,
- the note number (16%), which is a security feature though only for the Bank and not for the public,
- the quality of the paper (10%), which is not a security feature,
- the tactility of the ink (7%),
- the two-colour rainbow printing (4%),
- the micro-lettering (3%),
— the unicolour rainbow printing (3%),
— the non-fluorescence of the paper and the ink (3%),
— the yellow fluorescent fibres in the paper (3%).

All in all these results about the security features were certainly not satisfactory. There seems to be little sense increasing the number of security features further as there are already 15 different features for the public in Netherlands banknotes [1]. It would be much more useful if our design team directed their attention to the perception of the security features. The features could be made larger or more conspicuous, and they could have a more natural and self-explanatory relationship with the design. The micro-lettering is a case in point. We feel that the micro-lettering could play a more interesting role if some information pertinent to the picture were given instead of the usual text from the Penal Code, which occurs at least four times. Other ideas concern the mark for the blind, the see-through register mark and the note number.

5 Correlation between appreciation and knowledge

If we correlate the results given above, there is a strong positive correlation between appreciation and knowledge. As an example, let us take the following table, where the appreciation of the design is expressed in terms of the number of picture elements mentioned spontaneously. The example chosen is the $f_{100}/$ Snipe.

<table>
<thead>
<tr>
<th>knowledge of number of picture elements</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>&gt;2</th>
</tr>
</thead>
<tbody>
<tr>
<td>appreciation of the design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>nice</td>
<td>36</td>
<td>63</td>
<td>72</td>
<td>83</td>
</tr>
<tr>
<td>indifferent</td>
<td>57</td>
<td>32</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>awful</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The table shows that, of the respondents who knew no picture elements, only 36% found the design nice. If they knew one element, 63% liked the design, and if they knew 2 elements 72%. Of the few respondents who knew more than 2 elements, an astonishing 83% liked the design.
In this manner we examined correlations between the appreciation and 6 different measures of knowledge:

— knowledge of picture elements and colours of the f 100 / Snipe,
— knowledge of text elements and digits of the f 100 / Snipe,
— knowledge of security features of the f 100 / Snipe,
— knowledge of picture elements and colours of the f 50 / Sunflower,
— knowledge of text elements and digits of the f 50 / Sunflower,
— knowledge of security features of the f 50 / Sunflower.

There are a number of statistical methods to test whether correlations are significant in a statistical sense. We have used three test methods: the chi square test, Kendall’s tau c and regression analysis. Thus a total of 18 test results were calculated (6 correlations times 3 test methods). In 16 tests a significant correlation was found; only in two tests there was no significant correlation. Using the method of the chi square test there was no significant correlation between appreciation and knowledge of texts and digits. This applied to both banknotes. The strongest correlation was found between appreciation and knowledge of pictures and colours with all three methods for both banknotes. Hence, it was proven to our satisfaction that the more a design is appreciated, the more features and elements are remembered, or vice versa.

6 Implications for the design of a banknote

As already said in the introduction, we changed our design policy starting with the f 100 / Snipe in that we left it to the artist to choose a picture. This does not mean that the artist is completely free in his choice. The colours of the denomination are largely fixed by tradition or subject to the requirement that the denominations should be easily distinguishable. In order to help to create an arresting image, the picture chosen should be one in which the natural hue of the object is similar to the predominant colour reserved for the denomination: a brownish snipe for the brown f 100 and a yellow sunflower for the yellow/orange f 50. The results of the polls show that our aim has been achieved. The public became familiar with both new banknotes in a very short time. We intend to continue this design policy in the future.
Further, it was shown that only a small part of the security features is known to the public. Therefore, we do not intend to increase the number of security features in our banknotes. However, the design of the security features for the public should be improved considerably. They should be clear, interesting and conspicuous, and their purpose should be self-explanatory.

Finally, it was shown that the more a design is appreciated, the more features and elements are remembered. What is apparently lacking is a clear and easy-to-understand explanation of our security features. A leaflet to this effect is in preparation. We intend to measure its impact again with a opinion poll soon after it is issued.

The results of the opinion polls in 1981 and 1983 are so good and practical, and the costs are so low that we like to continue them and create a coherent series. A poll every two years seems a reasonable frequency. The sample of 2,000 households is small enough for the polls to be almost unnoticed so that they do not by themselves influence public opinion.

Acknowledgement
In addition to questions about the banknotes questions were also asked about the frequency and the amounts of cash withdrawals. Mr. F.A.G. den Butter was responsible for this part of the poll and for the statistical calculations given here.

References

Note
This paper was presented at the Vienna meeting of the Banknote Printers’ Conference, 4-6 June 1984. This digital version, composed in October 2006, follows the original with minor emendations.

Both authors worked in the Banknotes Technical Development Department of De Nederlandsche Bank, Amsterdam, at the time this paper was published. Dr Peter Koeze retired from De Nederlandsche Bank in 2004; Ir Hans de Heij is still employed by the Bank in 2006.

E-mail: p.koeze@pkoeze.nl
Curriculum vitae: http://www.pkoeze.nl/CurriculumVitae.pdf