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# On solving Orwell's Problem in governmental communication. Experimental research into the structure of website information

*Jan Renkema*

## **1. Introduction**

An intriguing phenomenon in modern societies is the simultaneous occurrence of ever larger amounts of information released to the public by bureaucrats and the broadening of the communication gap between governmental organisations and citizens. This information gap is one of the manifestations of what is called "Orwell's problem." Chomsky coined the phrase "Orwell's problem" in one of his political publications (Chomsky 1986). Plato's problem is that we have no answer to the question: How can we know so much, given that we have such limited information? Orwell's problem is the lack of answer to the reverse question: How can we know so little, given that we have so much information? I give some general and political examples of this discrepancy between information and knowledge. There is a lot to learn from history on how to prevent a war. But the only thing we learn from history is that we do not know how to learn from history. There is a huge amount of information about 800 million people living below the poverty level. But if we really knew that information, we would be able to propose better measures for developing economies in the poor countries. Following Chomsky, we can try to solve Orwell's problem by discovering the institutional and other factors that block insight and understanding in crucial areas in our lives.

For Chomsky, Plato's problem is in the scientific domain and to solve it is the aim of cognitive and neurolinguistic research. But Orwell's problem is, in his opinion, situated in a completely different field. It is not a scientific problem but it is primarily a matter of accumulating evidence "to illustrate what should be fairly obvious to a rational observer even on superficial inspection" (Chomsky 1986:93).

In my contribution I will start from a different point of view, namely that to solve Orwell's problem an analysis of the information presented by governmental organisations is needed. To that extent Orwell's problem has to be situated in the field of communication studies, and especially in the domain of document design. If it is true that citizens of well-developed western countries have more than enough information about their society and that nevertheless they do not know enough to act as mature members of society, then that could be caused by the nature of bureaucratic language. Bureaucratic language is often thought of as a mix of impersonal, complicated, diffuse, and traditional language usage, "officialese" (e.g., see Renkema, 1986). In Janssen and Neutelings (2001) a lot of research is presented showing that a change in this kind of language usage in governmental forms, letters, and brochures has a positive effect on information exchange. Up till now a great deal of attention has been paid to stylistic changes that could optimise governmental documents, but there is more at stake concerning, for example, the structure of information, especially in this area in which digital information is becoming more and more important.

In this paper I have chosen a small, clear-cut topic, government information on paying taxes. The research was conducted in a Dutch context, but since the institutional context in the Low Countries is not much different from that in other western societies, the results are relevant for other language communities too. Within this topic I have focused on the phenomenon of "conciseness." The reason for this curtailment is that the most plausible explanation for information overload is lack of conciseness.

In what follows I first highlight some characteristics of document design research (1.1.). Then I start with an overview of advice on concise writing (2). This overview shows rather disappointing results, so I selected one clear aspect of conciseness on the level of structure with special reference to digital communication. This aspect, called compartmentalisation (or a structure with no need for scrolling) is explained and discussed in 3. In section 4 an experiment in web design is reported in which extra attention is paid to such questions as how to design different websites. In 5 the results are presented and in 6 conclusions are drawn concerning a structural aspect of digital document design.

### *1.1. Functional document design research*

Functional document design research can be described in short as an (1) evidence-based approach within (2) an institutional setting studying (3) the

effect of (4) clearly defined document phenomena. I will clarify the four elements in this description, in reverse order, using the well-known recommendation on sentence length in books on clear writing: "Keep your sentences short."

Often it is not clear what is exactly meant by the document phenomenon "short sentences." Is it only the length in number of words or syllables, or is length an epiphenomenon of monoclausal sentences, containing only a main clause without subordinations? And, if it is clear what is meant by "short," how can this advice be implemented in a document with a high average sentence length without diminishing the cohesion that is caused by connectives?

As to the effect, how can one measure whether a document with shorter sentences is more effective? Only asking for readers' judgments is not enough. There must be some test on document quality, for example a better performance on a reader task based on the document, or an improvement in the image of the sender. And, even more important, evaluations of sentence length can depend on the type of document and expectations related to document types. If, for example, some kind of governmental document is usually written in a style in which long sentences seem appropriate, then shortening the sentences would in this institutional setting have another effect than, say, in news reports. All these diffusing factors stimulate an approach in which more rhetorically and stylistically inspired analyses of the quality of documents are tested in real communication situations in order to give document designers evidence based advice on effects of document phenomena (see further Renkema, Hoeken, & Spooren, 1999, on the seven sins of document design research).

In the next section I will focus on one document phenomenon, namely the conciseness (as opposed to verbosity) of information.

## 2. Concise writing

Literature on clear writing (see, for example, Strunk & White, 1983) is mostly very intuitive in describing document phenomena and in instructions about how to implement their advice. Many handbooks contain advice on concise writing (e.g., Rees Cheney, 1990, and Barnet, Stubbs, & Bellanca, 2000). But it is by no means clear what is meant by this concept and how verbose writers can prune their documents. The same goes for literature on designing digital information: the advice given resembles that for paper documents. Horton (1994), for example, lists the following instructions: write simple sentences, express ideas precisely, keep paragraphs short (avoid para-

graphs that span several displays) and write for translation. But what can writers do if they need a long paragraph? And what kinds of techniques are useful if one wants to write 'for translation' (whatever is meant by this)?

Horton especially recommends avoiding paragraphs that span several displays. On paper long paragraphs usually don't cause any problems (if the structure of the document is clearly marked), but on screen they can lose a reader in the structure of the document. Van der Geest (2001, p. 80) notes that "Writing for the web is almost by definition writing short units of texts, and it comes with all the problems of creating coherence and cohesion." So an important piece of advice for designing web pages is to be concise. The difficulties in following this guideline are shown by Nielsen (1998). In one of his experiments he says: "It was very difficult to be concise because we were concerned about cutting out too much. We began by separating the whitepapers using what seemed like natural section breaks. Doing so required not only tightening of language but also cutting of overly detailed information." This example shows that conciseness is a multilevel concept. At least three levels of discourse are relevant here: (1) content, (2) structure, and (3) formulation. Conciseness on the content level was achieved by cutting out overly detailed information. By separating the whitepapers using the natural section breaks conciseness on the structure level was achieved. Concise formulations were achieved by tightening the language.

All kinds of books, articles, and courses on clear writing, writing for the web, and designing information were checked for conciseness advice on these levels.

	Paper	Screen
<b>Content</b>	<ol style="list-style-type: none"> <li>1. Restrict background information</li> <li>2. Avoid redundant information</li> </ol>	<ol style="list-style-type: none"> <li>1. Restrict the length of text on screen</li> <li>2. Keep the information short</li> </ol>
<b>Structure</b>	<ol style="list-style-type: none"> <li>1. Less important information outside core text</li> <li>2. Avoid previews</li> <li>3. Use enumerations</li> </ol>	<ol style="list-style-type: none"> <li>1. Avoid scrolling</li> <li>2. Avoid previews</li> <li>3. Use enumerations</li> </ol>
<b>Formulation</b>	<ol style="list-style-type: none"> <li>1. Avoid extra words and empty words</li> <li>2. Delete redundant words</li> <li>3. Avoid long sentences</li> </ol>	<ol style="list-style-type: none"> <li>1. Avoid lengthy formulations</li> <li>2. Delete redundant words</li> <li>3. Avoid long sentences</li> </ol>

Figure 1. Overview of the conciseness advice found.

When we look at the recommendations for conciseness on screen we can conclude that they are vague and therefore difficult to put into practice. To follow the advice “keep the information short,” for example, we have to know the purpose of the author and the (informational) need of the reader. And by following the advice to “avoid lengthy formulations” one has to keep in mind that a long sentence is not always difficult and that a short sentence is not always easy. And if we want to delete redundant words we have to know which words the readers of the texts would judge redundant. There is however one recommendation that can be put into practice without knowing the author’s purpose and the reader’s need and that is “avoid scrolling.” Furthermore, this advice is technically realisable while preserving the content and the formulation.

### 3. Compartmentalisation

The overview above has shown that there are not many differences between the advice for texts on paper and the advice for texts on screen. The most important difference is the structuring of the information: texts on screen should be structured in such a way that there is no need for scrolling. The information units should take up one screen page and should be connected by way of hyperlinks. Furthermore, on each screen page there should be a menu that highlights in which part of the text the reader is situated. This type of

structuring can be called “compartmentalisation.” Below is an example of the changes needed to put a paper document on screen with this structure. After a screen with the title and the headings of the content, for each section or paragraph a screen is made, which can be reached by links from another screen. In Figure 2 the left column symbolises a normal paper document, which is compartmentalised into different linked screens in the right column.

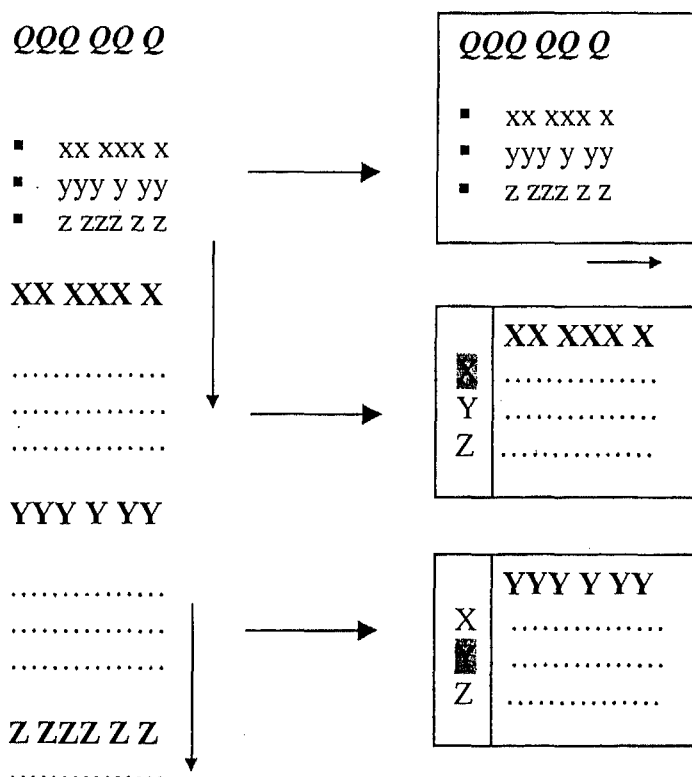


Figure 2. *The concept of compartmentalisation*

#### 4. An experiment in web design

##### 4.1. Hypotheses

The recommendations on how to design a website (conciseness through compartmentalisation of information) are very interesting and useful but the

most important thing is that they have to be effective. But how can their effectiveness be proved? In the experiment reported in this paper the effectiveness of the conciseness advice was tested on three levels: (1) text performance, (2) text evaluation and (3) image. The first question was whether a change in the structure of the website had a positive effect on the text performance. If people are working with a compartmentalised text (for example to carry out a task), is their performance better than the performance of people who were working with a noncompartmentalised text? This was measured by determining the effectiveness (correctness of answers to questions about the text) and the efficiency (time needed to give the answers) of the text.

The second question was whether a change in the structure of the website had a positive influence on the way the text on the site was evaluated. If the text was presented in units taking up one screen page, was the text judged as more comprehensible, attractive, and concise than if the text was presented as one long scroll page? This was measured by judgements about the three aspects mentioned above.

Finally, it was interesting to investigate the effect of the structure change on the judgments about the sender of the text. Research (Renkema, 1994) has shown that a positive judgment about the text also had a positive effect on the judgment about the sender. So if people judge the compartmentalised website more positively than the noncompartmentalised website, do these positive judgments also have an effect on the judgments about the sender of the text?

On the basis of these research questions the following hypotheses about the effect of compartmentalisation of texts on screen were formulated:

*Text performance*

1a A compartmentalised text is more effective than a noncompartmentalised text.

1b A compartmentalised text is more efficient than a noncompartmentalised text.

*Text evaluation*

2a A compartmentalised text is more comprehensible than a noncompartmentalised text.

2b A compartmentalised text is more attractive than a noncompartmentalised text.

2c A compartmentalised text is more concise than a noncompartmentalised text.



### *Image*

A compartmentalised text leads to a more positive judgement about the image of the sender than a noncompartmentalised text.

## *4.2. Materials*

Two web site versions were designed: a compartmentalised and a non-compartmentalised version. The content of these website sections was based on an informative text from the digital brochure “If you’re going to live together in 2000” from the Dutch Revenue Service. There were three reasons for choosing a text from the website of the Dutch Revenue Service:

1. The information on this site is aimed at everybody who wants to know something about taxes and the Revenue Service. People with all kinds of different questions about a particular tax topic are invited to visit this site. For that reason it is extremely important to have the information well organised.
2. The Dutch Revenue Service wants to keep up with the developments in the field of information and communication technology (Meijer, 2000) and therefore has put a number of paper brochures on the website. However, they haven’t made them suitable for the Internet.
3. Brochures often contain a lot of text. To keep the text legible (and comprehensible) on screen, conciseness is very important. Research has also shown that the longer a text is, the less the chance that it is going to be read (Hoeken, 1998).

For the noncompartmentalised version of the website the chapter “Tax consequences of living together” was chosen. The reasons for choosing this chapter were that it dealt with a topic that subjects might encounter in real life and that the chapter was representative of the other chapters in the brochures.

The page started with the title of the brochure and the name of the chapter. Then an index consisting of internal links to all sections and subsections of the chapter was presented. Next the text followed, i.e., all sections were presented after each other on one long scroll page. In some sections there were arrows to enable one to move up and down in the text.

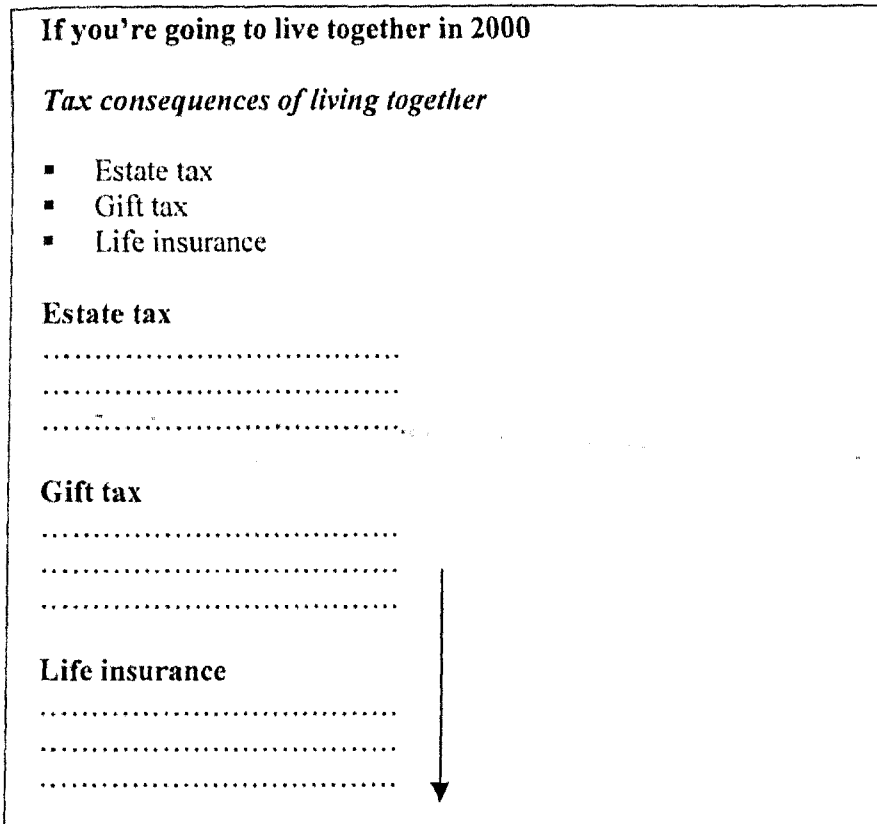


Figure 3. *Noncompartmentalised website*

For the compartmentalised version of the website exactly the same information was used but now manipulated on the structure level. The following changes were carried out:

- The long (original) scroll page was divided into shorter pages so that each section from the original brochure could be presented on one screen page.
- If on a new screen page scrolling was still necessary, this page was again divided into separate screen pages. This way a second level was created. To connect the pages of both levels, a hyperlink was created.
- Sometimes scrolling was still necessary on pages of the second level. For these pages a third level was created.

- The index from the original site (at the top of the text) was converted into a menu on the left side of each screen page.
- For pages with more levels in the menu a popout was created. When the mouse was moved over the headings a text block showed up on which the titles of the deeper pages were presented.

Figure 4. *Compartmentalised website.*

<p>Menu</p> <ul style="list-style-type: none"> <li>▪ <u>Estate tax</u></li> <li>▪ <u>Gift tax</u></li> <li>▪ <u>Life insurance</u></li> </ul>	<p><b>Tax consequences of living together</b></p> <p>Estate tax</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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<p>Menu</p> <ul style="list-style-type: none"> <li>▪ <u>Estate tax</u></li> <li>▪ <u>Gift tax</u></li> <li>▪ <u>Life insurance</u></li> </ul>	<p><b>Tax consequences of living together</b></p> <p>Gift tax</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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<p>Menu</p> <ul style="list-style-type: none"> <li>▪ <u>Estate tax</u></li> <li>▪ <u>Gift tax</u></li> <li>▪ <u>Life insurance</u></li> </ul>	<p><b>Tax consequences of living together</b></p> <p>Life insurance</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
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### 4.3. Questionnaire

The questionnaire included items on personal characteristics,<sup>1</sup> text performance, text evaluation, and image. Every questionnaire started with questions about image, text evaluation, and personal characteristics. Then the subjects had to carry out two tasks to measure text performance. After doing this they had to answer the same questions about image and text evaluation again.

#### *Text performance*

Text performance was measured by way of two tasks. Each task started with a sketch of a particular situation followed by three yes/no-questions and two multiple-choice questions (in Figures 5 and 6 the first task is presented). The answers to the questions could be found in the text on the website. Text performance consisted of the effectiveness and the efficiency of the text. The score for effectiveness was determined by two aspects: (1) the correctness of the answers and (2) the certainty of the subject that an answer was correct.<sup>2</sup> The efficiency was measured by the time needed to give an answer.

Figure 5. *Task 1.*

Eric and Cathy start living together at the beginning of the year 2002. In 2002 they live together for more than six months. Cathy is still at school. They both have an income. They also have a son. This child was born before they started living together. They spent € 250.00 at the recognized day care center "The Sandcastle." Besides their joint property Eric and Cathy each have property of their own. Eric received a tax assessment that he cannot pay in time. He wants to get a postponement or a cancellation of his tax arrears. Finally, Eric has taken out a life insurance policy on his own life with Cathy as beneficiary: if he dies, Cathy gets the proceeds.

<sup>1</sup> Next to gender, age, and educational level three other aspects were measured: experience (with Internet and brochures), attitude towards digital media, and affinity with the topic. Because the subjects did not differ from each other on these aspects, these data were not further analyzed.

<sup>2</sup> A correct answer of which one was sure counted for 2 points, a correct answer of which one was not sure 1 point, an incorrect answer of which one was not sure was scored as minus 1 point and an incorrect answer of which one was sure minus 2 points.

1. Is it possible that for Eric and Cathy the income tax category has changed because they started living together?
  - A No
  - B Yes, but their standard deduction doesn't change.
  - C The tax category only changes for Cathy because she is still at school.
  - D Yes, and as a result the standard deduction changes as well.
  
2. Are Eric and Cathy allowed to share the costs for the recognized day care center?
 

Yes/No
  
3. For how long do Eric and Cathy have to live together to be allowed to share their exceptional expenses?
  - A Longer than one day.
  - B Longer than one month.
  - C Longer than half a year.
  - D Longer than a year.
  
4. For the postponement or cancellation of the tax arrears does it matter for how long Eric and Cathy have lived together?
 

Yes/No
  
5. When Eric dies Cathy gets the proceeds of his life insurance. Does she have to pay death duty over this payment?
 

Yes/No

Figure 6. *Questions to Task 1.*

### *Text evaluation*

Twelve items were formulated for comprehensibility (Cp1-Cp4), attractiveness (A1-A4), and conciseness (Co1- Co4). Each aspect was measured using seven-point Likert scales (for a complete listing, see Table 1). The actual relationships between the items were determined by way of a principal component analysis with varimax rotation. This procedure resulted in three components, accounting for 67 percent of the variance in the scores. These were largely in accordance with the a priori clustering of the items. The first component was made up of attractiveness items (A1-A4). The second component was dominated by comprehensibility items (Cp1-Cp4) and also included an attractiveness item (A3) and two conciseness items (Co3, Co4). The third component consisted of two conciseness items (Co1, Co2). For each component the scores of the items loaded onto it with an absolute value of .50 or more were combined into one scale (first the negatively phrased items were recorded of course). The reliability of the scales was good for comprehensi-

bility (Cronbach's  $\alpha = .82$ ), adequate for attractiveness (Cronbach's  $\alpha = .77$ ) and moderate for conciseness (Cronbach's  $\alpha = .66$ ).

	Com prehen sible	Attr active	Con cise
Co3 To me texts from the revenue service are longwinded – brief	<b>-.83</b>	-.03	-.09
Cp2 To me texts from the revenue service are simple – complicated	<b>.77</b>	-.36	.15
Cp1 To me texts from the revenue service are easy – difficult	<b>.75</b>	-.31	.08
Co4 To me texts from the revenue service are concise – tiresomely long	<b>.69</b>	-.09	.17
Cp3 To me texts from the revenue service are unclear – clear	<b>-.66</b>	.27	-.06
Cp4 To me texts from the revenue service are badly organised – well-organised	<b>-.56</b>	.32	.25
A4 To me texts from the revenue service are boring – fascinating	-.26	<b>.83</b>	-.04
A5 To me texts from the revenue service are unpleasant – pleasant	-.31	<b>.76</b>	.04
A2 To me texts from the revenue service are varied – monotonous	-.07	<b>-.66</b>	-.07
A3 To me texts from the revenue service are readable – unreadable	.45	<b>-.64</b>	-.03
Co1 To me texts from the revenue service are detailed – succinct	.11	-.04	<b>.98</b>
Co2 To me texts from the revenue service are terse – verbose	.13	-.04	<b>.98</b>
Percentage of variance explained	28.8	21.0	17.2

Table 1. Loadings of the items of text evaluation after varimax rotation. Loadings with an absolute value of .50 and more are printed in bold.

After the tasks, subjects had to respond to six statements about the structure of the website by way of a seven point Likert scale: two for convenience of organization (*When I answered the questions I had a good overview of the site; To me the text is well-organized*), two for structure (*To me the text has a clear structure; To me the text has a logical structure*) and two for navigation (*I found it difficult to find my way on the website; To me the information on the website was easy to find*). Because the reliability of the scales was insufficient the items were analysed separately.

### Image

Evaluations of the image of the Dutch Revenue Service were measured using eight semantic differentials, four for “competence” (*honest – dishonest, businesslike – personal, careful – careless, reliable – unreliable*) and four for “customer friendliness” (*authoritarian – not authoritarian, friendly – unfriendly, customer-oriented – not customer-oriented, bureaucratic – not bureaucratic*). The differentials were scored on seven-point Likert scales. The principal component analysis with varimax rotation resulted in two components. Because the reliability of the scales was insufficient the items were analysed separately.

#### *4.4. Design*

##### *Subjects*

52 subjects participated in the experiment (28 men and 24 women). To compare the two versions of the website in a proper way the subject group had to be as homogeneous as possible. Therefore they all met the following two requirements: (1) they were attending or had completed higher education; (2) they were between 18 and 27 years old (mean 23.3,  $sd=2.4$ ).

##### *Procedure*

The subjects were asked to take part in an experiment that was aimed at the quality of on-line texts. Each subject participated individually. In the lab of the Faculty of Arts they took place behind a computer and were instructed by the experimenter. Then the experiment started. A between-subject design was applied: each participant worked with either the compartmentalised or the noncompartmentalised version of the website.

##### *Statistical analyses*

For each version of the website a one-way Manova test was carried out on the scores of image, text evaluation, and text performance with the between-group factor being Version (compartmentalised, noncompartmentalised). The results for image and text evaluation present the differences between the scores before and after carrying out the tasks. In the results we report both the level of significance and the proportion of variance explained ( $p$  and  $\eta^2$ ; see Van Wijk 2000, p. 102-104, p. 157). To test if the scores for text evaluation differed from the value 0 the results were tested with a one-sample t-test.

### **5. Results**

#### *Text performance*

The results for text performance did not present any significant differences between the noncompartmentalised and the compartmentalised version (effectiveness: Version  $F<1$ ; efficiency: Version  $F(1,50) = 1.51$ ,  $p = .42$ ,  $\eta^2 = .035$ ). By both versions the tasks were carried out equally well and there was also no difference between the versions in the time needed to complete the tasks.

### *Text evaluation*

In Table 2 the mean judgments on attractiveness, conciseness and comprehensibility are presented in relation to website version.

Table 2. *Text evaluation in relation to website version.*

	noncompartmentalised	compartmentalised
Attractive	+0.50	<b>+1.15</b>
Concise	+0.80	<b>+1.38</b>
Comprehensible	+0.74	<b>+1.60</b>

In case of a significant difference the score with the most positive judgement is printed in bold

There was an effect of Version ( $F(3,48) = 3.94, p < .025, \eta^2 = .20$ ). Univariate analyses showed that this effect appeared on each dimension (Attractive:  $F(1,50) = 9.21, p < .005, \eta^2 = .16$ ; Concise:  $F(1,50) = 2.90, \text{one-sided } p < .05, \eta^2 = .05$ ; Comprehensible:  $F(1,50) = 9.00, p < .005, \eta^2 = .05$ ). The compartmentalised version scored higher on attractiveness, conciseness and comprehensibility.

Then both versions were tested against the value 0. A positive score means that the subjects were more positive about the texts after completing the tasks than before. A negative score means that the subjects were more negative about the texts after the tasks than before. The results show that the subjects judged both the compartmentalised and the noncompartmentalised version positively. Both versions have scores above 0: compartmentalised version (Attractive:  $t(25) = 7.76, p < .001$ ; Concise  $t(25) = 5.97, p < .001$ ; Comprehensible:  $t(25) = 9.39, p < .001$ ), noncompartmentalised version (Attractive:  $t(25) = 3.06, p < .01$ ; Concise:  $t(25) = 3.21, p < .005$ ; Comprehensible  $t(25) = 3.19, p < .005$ ). Nevertheless the compartmentalised version was judged more positively than the noncompartmentalised version.

### *Text evaluation: structure*

In Table 3 the results on structure are presented in relation to website version.



Table 3. *Structure judgments in relation to website version*  
(minimum score = 1, maximum score = 7)

	noncompartmentalised	compartmentalised
<b>Navigation</b>		
I found it difficult to find my way on the website.	3.19	<b>2.35</b>
For me the information on the website was easy to find.	4.96	<b>6.19</b>
<b>Structure</b>		
To me the text has a clear structure.	4.42	<b>5.27</b>
To me the text has a logical structure.	5.00	<b>5.50</b>
<b>Convenience of organization</b>		
When I answered the questions I had a good overview of the site.	3.96	<b>5.85</b>
To me the text is well-organised.	4.92	5.46

Where there is a significant difference the score with the most positive judgement is printed in bold.

There was a main effect for Version ( $F(6,45) = 5.10, p < .001, \eta^2 = .40$ ). Univariate analyses showed that this effect appeared on each dimension. Navigation (*information easy to find*  $F(1,50) = 20.95, p < .001, \eta^2 = .30$ ; *difficult to find my way*  $F(1,50) = 3.48, \text{one sided } p < .05, \eta^2 = .07$ ). Structure (*clear structure*  $F(1,50) = 4.68, p < .05, \eta^2 = .09$ ; *logical structure*  $F(1,50) = 2.98, p < .05, \eta^2 = .06$ ). Convenience of organization: (*good overview*  $F(1,50) = 23.48, p < .001, \eta^2 = .32$ ). On all these items the compartmentalised version was judged more positively.

#### *Image*

The results for image did not present any significant differences between the website versions on the dimensions competence and customer-friendliness (Version  $F(8,43) = 1.28, p = .28, \eta^2 = .19$ ).

## 6. Discussion and conclusions

The hypotheses on text performance were not confirmed. On both website versions the tasks were carried out equally well and equally fast. So a com-

partmentalised website is not more effective or more efficient than a noncompartmentalised website.

A possible explanation for the results is that the subjects were all well-educated and had a lot of experience with the Internet. Therefore they were able to carry out the tasks well and fast even though they had to look up the answers on the noncompartmentalised website.

Another explanation could be that the subjects of the noncompartmentalised version were helped by the existing structure of the version, since it did contain some structure markers. At the top of the site, for example, there was an index which consisted of the sections and section numbers of the text. Subjects could determine from this index where they could find the information. It appeared that the subjects first looked up the subject of the question in the index and then scrolled to the relevant section for the answer. Other structure markers in the noncompartmentalised version were the headings and the paragraphs. Subjects took advantage of these as well. The results of the structure judgments, for example, showed that the noncompartmentalised version was also judged as having a convenient organization.

The hypotheses on text evaluation however were confirmed. Subjects judged the compartmentalised text version as more comprehensible, more attractive, and more concise than the noncompartmentalised text version. It further turned out that both the subjects who had read the compartmentalised version and the subjects who had read the noncompartmentalised version were more positive about the text after carrying out the task. At first sight this may appear strange but this result can be explained by the fact that the subjects had a negative view (probably based on prejudices) of texts from the Revenue Service before they read the texts. After reading the information this view became more positive for both the compartmentalised and the noncompartmentalised version.

The results on the structure dimensions, however, showed that the compartmentalised version was judged more positively. Because the difference between the two versions was a difference in the structuring of the information, this aspect caused the effect on text evaluation.

The hypothesis on image was not confirmed. The compartmentalised website did not lead to a more positive judgement about the sender (the Dutch Revenue Service). This result is remarkable because it had seemed likely that the positive text evaluation of the compartmentalised version would also cause a positive effect on the judgement of the sender of the text (as Renkema (1994) found in his inquiry into the quality of letters from the Dutch Revenue Service). A possible explanation for this result could be that a distinction should be drawn between the image of the text and the image of the sender

and that the attitude (image) towards the text does not automatically influence the attitude (image) towards the sender. Maybe the attitude towards the Dutch Revenue Service was already so ingrained that the texts on the website couldn't change it anymore.

What can be concluded within this framework of document design research about solving Orwell's problem in digital governmental documents? Is it possible to diminish the information overload and to bridge the information gap between government and citizens by improving documents? There are two final remarks to be made.

First, the advice literature on clear design is mostly rather vague and intuitive. This means that it is not at all clear whether specific document design principles have a positive effect. It is remarkable that although many stylists and researchers stress the difference between documentation on paper and on screen, the greater part of the advice for both is the same, for example, "Be succinct" or "Do not use superfluous words." There is an urgent need for testing specific design principles for digital communication.

Second, changing one concrete phenomenon, like the structural aspect in the experiment described in this paper, is not enough to have effects in terms of text performance. There was an effect, but it has to be situated on the assessment level of document evaluation. This could be interpreted negatively or positively. The positive aspect is that even a change on one discourse level (structure) has an effect, namely in diminishing the subjectively perceived gap between government and citizens. This suggests that a multilevel change, also embracing content and formulation, will have a stronger effect. With this research, evidence has been presented that digital governmental communication can be designed more effectively, and that in doing so the information overload can be a little bit lighter with at least some more possibilities for decreasing the communication gap between government and citizens.

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