

VISUAL  
COMMUNICATION FOR  
MEDICINES: MALIGNANT  
ASSUMPTIONS AND  
BENIGN DESIGN?

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An area of visual communication that might be classified as a ‘design failure’ is the visual presentation of information about ‘prescription-only medicines’ for patients. This information is provided on packaging, leaflets, brochures, labels and websites. The practical issue is that there are problems in convincing patients to take medicines appropriately and effectively. Some of the assumptions that underlie the development of visual information for patients could be incorrect. A visual rhetoric framework is applied to help this article answer two questions:

- is the current visual information about medicines a ‘communication failure’?
- can visual rhetoric be used as a framework to indicate failures?

The results show that visual rhetoric can be used as a basis for describing communication failures, but it needs to be incorporated into a larger ‘visual argument’ structure. ‘Visual rhetoric’ should be augmented by ‘visual dialectic’ (dialogues between commissioner and designer, and interactions between patient and artifact) and ‘visual logic’ (fundamental visual relations). The analysis indicates that visual information about prescription-only medicines for patients is—in general—not optimal and can therefore be seen as a failure. Application of some of the visual rhetorical principles indicates possible ways forward.

## INTRODUCTION: 'INFORMATION ABOUT MEDICINES'

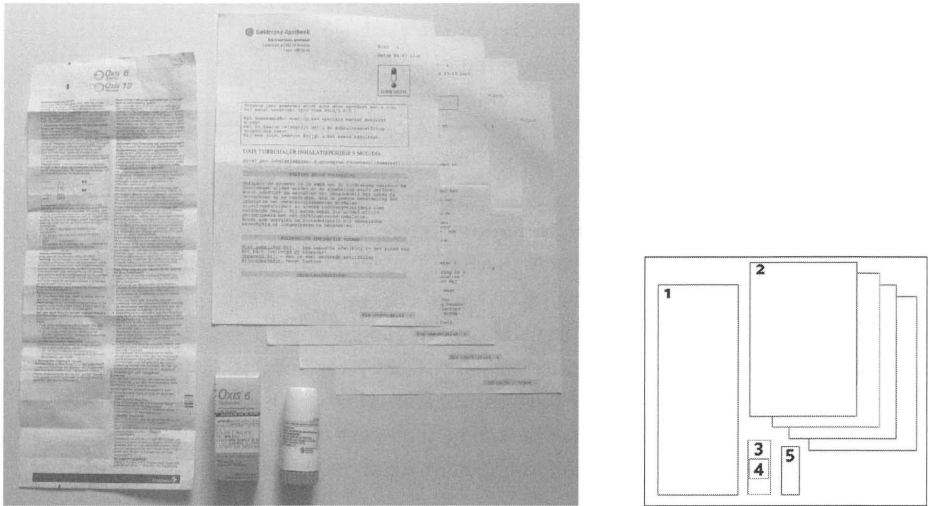
In order to clarify the scope of the issue, and before an analysis can be made, it is necessary to consider a few facts about medicines. Four groups of figures can be used as indicators:

- 1) The number of mistakes or errors leading to casualties and harm. The publication of the report, 'To err is human,' in 2000 led to an increase in research interest in 'error rates' (IoM, 2000).
- 2) Poor effectiveness (compliance, concordance, adherence). Although there are large variations between different types of medicines, there is a consensus that it is a major problem to persuade people to acquire certain medicines and take them as directed.
- 3) Increasing costs. Every year, the total costs of medicines increase by about ten percent.
- 4) Increasing use of medicines. In general, elderly people use more medicines and demographic trends indicate that this population is increasing. Furthermore, there is a trend that the use of preventive medicines—medicines that are used to avoid or delay health problems—increases too.

The literature on these issues is substantial and the figures related to these four areas vary considerably according to definitions, area, medicine type and data-gathering methods. However, the trends are clear in all four groups. They are likely to continue despite the fact that there are many initiatives that try to reverse them. Although these trends are worrying and need attention, it is beyond doubt that most medicines are used successfully: they cure and improve the quality of life.

The aim of providing information about medicines to patients is clear: to enable patients to make decisions about medicine use and to enhance appropriate and effective use. It is close to impossible to take medicines without information and this information supply has therefore a direct influence on effectiveness and error-rates.

The information about prescription-only medicines is in most situations a combination of aural and visual sources. Doctors and pharmacists provide aural information. Visual information comes from several sources, such as the pharmaceutical industry, health advocacy groups and health magazines. [This article focuses on 'prescription-only medicines' that are used by patients at home. Other groups of medicines, such as the 'over-the-counter medicines' or medicines that are only used by professionals in hospitals are not further discussed.]



*Figure 1*  
 All of the visual information that is provided with one product in the Netherlands: double sided package leaflet [405 x 160 mm] (1), four single sided A4-sheets from the pharmacists (2), outer box (3), pharmacist label (4) and inhaler (5). There is no obvious starting point, nor a clear sequence. If a patient needs to take two medicines at the same time, the amount of information doubles: two package leaflets, two boxes, two products and eight sheets of A4 paper.

The information that is supplied with one single medicine is shown in Figure 1. When a patient sits at a kitchen table and considers the use of this medicine, all this visual information is available. Based on this information, in combination with the recalled aural information from a doctor and a pharmacist, a patient should be able to make an informed decision whether to take this medicine, when to take it and how to take it. Although these questions are fairly simple, the answers are hard to find in the provided information.

One of the reasons that this has become difficult is the context in which visual information is produced. The development of visual information about medicines is a fairly complex undertaking. Several detailed descriptions of the development process of package leaflets (Schickl, 2007; Sommer, 2007; van der Waarde, 2009) and packaging (National Patient Safety Agency, 2008) highlight this complexity. Furthermore, the legal basis for visual information differs from nation to nation. This article has a strong European bias and it should be noted that information supply practices within Europe still vary

substantially. For example, the information that is provided by pharmacists—the label and the A4 sheets—differ in many aspects.

In a nutshell, the development process for the package leaflet and packaging comes down to filling in a template (QRD, 2006), designing a leaflet and a box within the applicable production requirements, testing the leaflet for readability (according to the Readability Guideline, 2009) and submitting all documents and mock-ups for approval to the appropriate regulatory authorities who decide if a medicine is safe enough to be sold to patients, and if the accompanying information is evidence-based.

The question that needs to be answered now is if the provided information optimally enables patients to use medicines appropriately. In other words: is there any evidence that the visual information that is shown in Figure 1 could be seen as a communication design failure? In order to answer this question, it is necessary to select an appropriate approach that would distinguish between ‘enabling’ and ‘hampering’ patients.

## INTRODUCTION: ‘VISUAL RHETORIC’?

Ivor Armstrong Richards described rhetoric as “*Rhetoric, I shall urge, should be a study of misunderstanding and its remedies*” (Richards, 1936). If ‘communication design failures’ are ‘visual misunderstandings,’ then ‘visual rhetoric’ could be used to study this area. The notion that design could learn from rhetoric has been described in several publications over the last fifty years. The general assumption is that “...in principle, rhetoric enables everyone to communicate successfully in varying contexts” (Joost and Scheuermann, 2006, 3). Pöggendorp provides an historical overview of the development of rhetoric in relation to design (1998, 203-213) and some recent publications (Joost and Scheuermann, 2007; Ehses, 2009) have developed this discussion further. Keith Kenney and Linda Scott wrote a review of the literature and concluded: “*There are great differences in how rhetoric is defined and, when visual rhetoric is defined, there also is great variability*” (Kenney and Scott, 2003).

Traditional rhetoric has always been seen as both ‘the practice of persuasive communication’ as well as ‘studying this communication’ (Buchanan, 1985, 6). Gesche Joost and Arne Scheuermann (2006, 5) state the same idea.

... the rhetoric of the design process can thus be formulated as:

- a production system that includes a collection of communicative strategies and techniques which are used in the production of media. This production aims at a convincing and appealing design for the addressee;
- an instrument for media analysis aiming at the exploration of argumentative, affective and construction principles.

Hanno Ehses took these descriptions and made a diagram based on a model by Barry Brummett (2006). The diagram by Hanno Ehses (2009, 15) shows “the principles of rhetoric discourse production” (see figure 2).

A THE SITUATION		
	Context	(Place and time).
	Exigency	(Problem, issue or event).
	Audience	(Profile, strengths and weaknesses).
B THE SPEAKER/RHETOR		
	Background	(Qualifications, experience, reputation).
	Intentions	(Goal and purpose).
C THE SPEECH/RHETOR		
<i>Inventio</i>	Invention	Finding what to say ( <i>logos, pathos, ethos</i> ).
<i>Dispositio</i>	Arrangement	Structuring and ordering what is found.
<i>Elocutio</i>	Style	Choice of fitting language, literal and figurative, in consideration of appropriateness, clarity, correctness and ornamentation.
<i>Memoria</i>	Memory	Committing to memory (today, we tend to rely on technical media).
<i>Actio</i>	Delivery	Performing the discourse like an actor (today, performance includes the design of all kinds of communication material, the staging of events, the display of products and techniques of presentation).

Figure 2  
Hanno Ehses (2009, 13) states: “As an instrument for analysis, it [rhetoric] aims to explore argumentative, affective, and stylistic construction principles.” Ehses based this table on a model by B. Brummett (2006).

In the next section, this diagram of rhetorical principles is used as a basis to critically analyze visual information about medicines. From the outset, it is clear that it is not possible to deal with both topics—‘visual rhetoric’ and ‘information about medicines’—in depth in a single article. Both are substantial areas of study and relating these in detail would simply exceed the length of an article. The following application of rhetorical principles to information about medicines is therefore necessarily truncated.

## APPLYING ‘VISUAL RHETORIC’ TO INFORMATION ABOUT MEDICINES

The first category in the table of Hanno Ehses (*figure 2*) is “The situation.” This category includes the context (place and time), exigency (problem, issue or event) and audience (profile, strengths and weaknesses). The second category encompasses the background and intentions of the speaker. These two levels are very briefly discussed in the first section of this article and can be summarized as:

The situation:

- context: *Europe 2009*.
- exigency: *The problematic use of prescription-only medicines by patients*.
- audience: *Patients*.

The speaker/rhetor:

- background of the speaker: *pharmaceutical industry*.
- intentions of the speaker: *inform patients to enable them to use medicines correctly and effectively*.

The third category mentions the five steps in a rhetorical process. In the rhetorical tradition, these five steps need to be executed if a speaker wants to persuade an audience. An application of these steps should highlight the failures and successes of visual information about medicines.

### Step 1: Inventio

In the rhetorical tradition, the first step of successful communication is to collect materials and arguments. This first step starts based on an understanding of the task, a specific context and a specific audience. There are three types of appeal, or three modes of proof, that can be used as a basis:

- What are the rational arguments? It is necessary to create a reasonable and intelligible formal structure (formal name: *Logos*).

- How should the speaker portray himself? The credibility and character of the speaker need to be established (formal name: Ethos).
- What are the emotional arguments? Which state of mind or feeling in the audience/listeners should be created (formal name: Pathos)?

Buchanan (1985, 9) summarizes these three as “technological reasoning, character and emotion.”

For information about medicines, this step encompasses the collection of information legally required to be put onto package and package leaflet. The contents of the information that appears on boxes and package leaflets is strictly regulated in European Directive 2004/27. The regulatory authorities in Europe provide detailed templates that need to be filled in (QRD, 2006). The templates demand that information must be based on scientific information, and it stipulates exactly what needs to be mentioned on the packaging (outer box, inner packaging) and package leaflet. A closer look at the three rhetorical appeals exposes several issues with the use of this template and its legal basis.

### *Logos*

The European Directive 2007/24 not only states which information elements must be mentioned, but it also states that these elements must appear in a specific order. All medicines—whether for a single occasion or for a chronic disease, whether for minor ailments or life threatening illnesses, for use by patients or for use by professionals—will get the same structure of the information elements. This might be a good approach, if patients are persuaded by the logical structure and rational arguments. Two very practical examples show that this approach is not entirely suitable for all patients.

*Example 1:* The emphasis in a package leaflet seems to be on potential side effects and not on potential benefits. The information about benefits is a brief description of the group of medicines with a single sentence describing the expected effect. Some additional information can be added here, but only if it is of benefit to the patient. The list of potential side effects frequently runs into twenty or more different side effects. The difference in length (a single benefit versus a substantial list of side effects) makes it very difficult for patients to make a rational decision. It always gives the impression that the potential risks of side effects outweigh the potential benefits.

*Example 2:* The information does not refer to the effectiveness of a medicine. The frequencies of side effects are provided in five categories from ‘very common (more than 1 in 10 patients might get these)’ to ‘very rare (these affect less than 1 in 10,000 patients).’ Unfortunately, the likely effectiveness of a medicine is not discussed. This implies that a medicine is always optimally effective in all circumstances. However, for some medicines, in some situations, it might be possible to include a statement like: ‘This medicine cures the illness in 60% of patients, and substantially reduces the symptoms in a further 20% patients. This medicine does not have any positive effect in 5% of patients. Furthermore, it has not been proven that this medicine is more effective than other medicines with the same active ingredient.’ This information, together with a short description about ‘the risk of not taking,’ might enable a more rational decision, especially when this message reiterates the information that is given by the doctor and pharmacist.

*Observation 1: Patients cannot be sure if all arguments are provided. The length of the text in a leaflet seems to imply that everything possible is mentioned, but a suspicious patient expects that information might be intentionally hidden or left out completely. Information about risks and benefits, effectiveness and ‘taking or not taking?’ is not always available. For a patient, this might make the logical arguments in a package leaflet hard to accept.*

### *Ethos: character*

For patients, it is clear that the pharmaceutical industry writes and designs the packaging and package leaflet. A common reaction from patients during usability tests is ‘They just have to cover themselves with all this information.’ After reading a package leaflet during a usability test, patients realize that there seem to be several voices in a package leaflet. It is not only the pharmaceutical industry who provides information. The following three standard phrases from the QRD-template show that there are different sources. These three sentences are obligatory and must be included, but all three refer to a different character:

- “If you have any further questions on the use of this product, ask your doctor or pharmacist.”
- “For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder.”
- “This leaflet was last approved in <date/month/year>.”

These three sentences show the split personality of the speaker/rhetor. The leaflet comes from a pharmaceutical industry, but it refers directly to ‘your doctor or pharmacist,’ the ‘local representative of the Marketing authorisation holder,’ and to ‘someone who has approved the leaflet on a specific date.’ From a rhetorical point of view, this lack of clarity about the origin of the information is problematic. It makes it difficult for patients to trust the information because the originator of the information is unclear. The text in the leaflet implies that your doctor or pharmacist, a representative of the marketing authorization holder or the person who approved the leaflet could be approached if there are any questions. In usability tests, patients expect to see a direct contact address of the pharmaceutical industry: telephone numbers, websites, e-mail addresses. Instead of this, they are directed to other information sources. The image of the speaker is therefore weak. Patients get the impression that the pharmaceutical industry does not take its responsibility, but refers to others.

*Observation 2: The package leaflet does not make it clear ‘who is talking.’ Is it the pharmaceutical industry, a doctor or pharmacist, or an unidentified approval authority? This lack of clarity about the character of the provider of information weakens the credibility of this type of appeal.*

#### ***Pathos: emotions***

Buchanan phrases the pathetic appeal as (1985, 16): “*The problem for design is to put an audience of users into a frame of mind so that when they use a product they are persuaded that it is emotionally desirable and valuable in their lives.*” Do the current packaging and package leaflets put patients into a specific ‘frame of mind’? Of course, prescription-only medicines are prescribed by doctors and dispensed by pharmacists who both endorse the idea that it is worth taking medicines. The process of obtaining prescribed medicines is already intimidating enough, and if two highly educated professionals tell a patient that medicines are ‘valuable in their lives,’ what could go wrong?

Furthermore, during the registration process, package leaflets and packaging are very carefully scrutinized to make sure that they don't contain "any information that is of a promotional nature" (Directive 2004/27, 2004). Most emotional arguments are therefore not acceptable in leaflets and on packaging for prescribed medicines. This is directly linked to discussions about "direct to consumers advertising" of medicines and the use of television and Internet for this purpose. At the moment, emotional arguments seem to be mainly reserved for advertising and over-the-counter medicines.

There are a few emotional arguments in the visible information as it is presented Figure 1. A first group of emotional arguments can be found in the texts that are based on the QRD-template. For example, the first sentence of the package leaflet states: "*Read all of this leaflet carefully before you start taking this medicine.*" It is possible to modify this sentence a little and in Figure 3, it is rephrased as "*Read all of this leaflet carefully because it contains important information for you.*" These sentences do seem to address emotions of patients in a fairly paternalistic way. The ambiguous author of the text worries that patients could read a leaflet carelessly and that they are not able to value the importance of the information for themselves. This first sentence of the package leaflet does put 'the audience in a frame of mind,' but it is doubtful if this is beneficial.

The second group of emotional arguments has to do with the experience of unpacking and unfolding the information about medicines. Before a patient can start reading they have to unpack a medicine bag, open a medicine box, unfold the package leaflet and the information from the pharmacist and consider a starting point. The daunting task of reading texts of a few thousand words and applying this to a personal situation is not very encouraging. The 'package leaflet unfolding experience,' the 'where is the starting point search' and the 'what is important for my decision' do put patients in a specific 'frame of mind,' but it is doubtful if this is really beneficial for successful communication.

*Observation 3: The emotional appeal is poorly treated. Both the general task of handling a substantial amount of information as well as the micro-level paternalistic phrases do not put an audience into a suitable frame of mind.*

It is surprising that the result of the inventio step is a tidy text-document that is accurately based on the QRD-template. This document contains all the information that is legally required. Unfortunately, in some situations it is not all the information that patients really need to make a rational decision; the character of the originator is ambiguous, and the information does not really help to put patients in a suitable frame of mind. Furthermore, there is no evidence that the different rhetorical

appeals are considered together. Despite these three observations, the collected arguments and materials can now be visually designed into a package leaflet and packaging.

## Information

**Read all of this leaflet carefully because it contains important information for you.**

This medicine is available without prescription. However, before using Prostanan you must have been told by your doctor that you have an enlarged prostate (also known as benign prostatic hypertrophy or BPH). You need to take Prostanan carefully to get the best results from it.

- Keep this leaflet. You may need to read it again.
- If you need more information or advice ask your doctor, pharmacist or other healthcare advisor.
- You must contact a doctor, pharmacist or healthcare practitioner if your symptoms worsen.
- If any of the side effects become serious, or if you notice any side effect not listed in this leaflet, please tell your doctor, pharmacist or healthcare practitioner.

### In this leaflet:

1. What this product is and what it is used for
2. Before you use this product
3. How to use this product
4. Possible side effects
5. How to store this product
6. Further information

**<Read all of this leaflet carefully because it contains important information for you.**

This medicine is available without prescription. However, you still need to <take> <use> X carefully to get the best results from it.

- Keep this leaflet. You may need to read it again.
- Ask your pharmacist if you need more information or advice.
- You must contact a doctor if your symptoms worsen or do not improve <after {number of} days.>
- If any of the side effects gets serious, or if you notice| any side effects not listed in this leaflet, please tell your <doctor> <or> <pharmacist>.

### In this leaflet:

1. What X is and what it is used for
2. Before you <take> <use> X
3. How to <take> <use> X
4. Possible side effects
5. How to store X
6. Further information

Figure 3

A detail of the text of the QRD-template (left) and a detail of a package leaflet (right). Most of the text in this section of the package leaflet is directly based on the text in the QRD-template. (This leaflet on the right is published by the British Regulatory Authorities MHRA. It is a 'leaflet of the month' and should be seen as a 'good example'.)

## Step 2: dispositio

This second step in the rhetorical process is the organization of the materials and arguments that have been gathered. In the dispositio step, the concept, genre and structure are chosen. The EU-regulations stipulate exactly what needs to be presented, where it needs to appear and in which order.

The sequence and contents of the information cannot be changed; the structure of the argument is therefore dictated by the legal framework. This makes it very difficult for different groups of writers to emphasize a certain perspective to make sure that their own aims are reached.

*Observation 4: The regulations make alternative sequences of information illegal. A substantial change would be in conflict with the EU-regulations or the QRD-template and would therefore not be approved by the regulatory authorities.*

The information from pharmacists does not have to follow this strict sequence and this could potentially be a substantial benefit. This benefit is diminished because the information-sheets from the pharmacist will always be seen at the same time as the package leaflet. Not following the sequence of the regulations makes it nearly impossible to compare the information.

*Observation 5: The information on the different artifacts (as shown in figure 1) does not provide patients with a clear narrative structure. The information does not indicate a starting point or a straightforward sequence of actions.*

### Step 3: elocutio

The third step in the rhetorical process consists of selection of fitting language. Although the texts of package leaflets in Europe have undoubtedly become easier to understand in the last fifteen years, the package leaflet is still be characterized by small type on very thin paper. The content matter does not really lend itself to use figurative language, ornaments or rhetorical embellishment.

Especially the length of package leaflets has become a major issue. The QRD-template demands that about 400 words are included, and the length of a complete leaflet can easily become 1500 words or more. Together with the information from the pharmacist, the pharmacist label and the information on the packaging, it becomes not so much a matter of fitting language, but of reducing the length to manageable proportions.

*Observation 6: The patient gets the impression that the information is not suitable for him or her. There is too much and the combination gives the impression that it is too complex.*

### Step 4: memoria

Traditional rhetoric was about speech and the art of speaking in public. It was vital to learn a complete speech by heart. At the moment, this fourth step of memorizing does not seem to be applicable to visual communication. Hanno Ehses (2009, 15) suggests: "From a design perspective, it would make sense to update this phase to address the technical knowledge and skill requirements that are needed to prepare a piece of print for production or digital implementation." This is a valuable suggestion and it is recognizable in practice. Unfortunately, the

technical knowledge and skills are only partly used at the moment. The information that is currently provided to patients consists mainly of paper artifacts. The digital media are conspicuously absent. The information sheets from the pharmacist and the package leaflet mention a telephone number and postal addresses, but e-mail addresses or websites are not provided anywhere. The technical knowledge and skills to develop these digital artifacts are available, but are not used.

*Observation 7: If Ehshes' suggested update is accepted, then the information for patients does not optimally use the available technical knowledge and skills. The technical knowledge and skills in relation to digital media is well ahead of current practice in information about medicines.*

#### Step 5: actio

The final step in the classical rhetorical process is the delivery of the speech. Hanno Ehshes (see figure 2) suggests that this includes “the design of all kinds of communication material, the staging of events, the display of products, and techniques of presentation.” Gesche Joost alludes to the same issue: “The last two phases, *memoria* and *actio* are relevant for the presentation. Here, the designer finds techniques to prepare an eloquent presentation, to grab the audience's attention and to persuade them of the artefact's quality” (Joost and Scheuermann 2006).

Both authors refer to the ‘presentation,’ but this has at least two meanings. In professional design practice, there are at least two types of presentation for a designer. The first one is the presentation of a prototype to a commissioner and the second one is the presentation of the object to the consumer or beholder, or in this case, the patient. Both require ‘eloquent presentation,’ but these are very different when information about medicines is discussed. The general descriptions of Gesche Joost and Hanno Ehshes are probably not detailed enough to apply them to an analysis of information about medicines.

*Observation 8: The fifth step of ‘presentation’ does not distinguish between ‘presentations for commissioners’ and ‘presentations for patients.’ This makes it difficult to apply it to the development of information about medicines.*

The application of the rhetorical instrument of Hanno Ehses shows that the development of information about prescription-only medicines diverges at several points from the five steps of a rhetorical process. There are discrepancies in the selection of the contents, the structure of the argument and the style in which the argument is presented.

The last two steps indicate that information about medicines need to be discussed in more detail. And this is where the instrument of visual rhetoric—as it is presented in Figure 2— shows its limits. For example, the instrument does not differentiate between a presentation for a commissioner in the form of a unique prototype and a presentation of a mass-produced artifact for a patient. A second example is that the relation between ‘commissioner’ and ‘designer’ needs to be included. Although both are working together to reach a common aim, they do this from very different starting points.

Furthermore, there are several issues that would not be detected by this instrument. Some of the standard problems with information about medicines, such as small typesizes, confusing pictograms and difficult instructions were not caught. And the rhetorical framework does not describe all activities in the process of information development. As an example, the usability testing of visual information is not easy to put into this table, because it is not presented as an iterative process.

Richard Buchanan (2001, 17) touches on these discrepancies by suggesting: “*Our early theories of design found expression in grammars and logics of design thinking, but the new design finds expression in rhetoric and dialectic.*” Sharon Poggenpohl (1998, 212) mentions this as well by stating the following: “*He [Aristotle] defines three methods: ‘analytics, dialectics and rhetoric. Analytics are concerned with the grammatical relationships between subjects and predicates; dialectics deal with dichotomous relationships formed by question and answer; rhetoric explores appearance by proposing themes and arguments which invite judgement, decision and action’*” (quoting Thomas B. Farrell, *Norms of Rhetorical Culture*, 1993).

It seems that, in order to describe the problems with visual information about medicines, it is necessary to look at analytics (grammars and logics) and dialectics (dialogues) too.

Visual logic looks at visual elements and the relations between these elements. The number of types of elements is limited to text, images, schematic elements and inseparable combinations. These types of elements can be related to each other in four different ways (Waarde, 1999):

- elements can be placed close together (proximity). This is an indication that these elements should be interpreted together.
- elements can be made larger or smaller (prominence). This is an indication of importance: larger elements are more important than smaller ones.
- elements can be made to look similar (similarity). The more similar elements look, the more similar their function.
- elements can be put into a visual succession (sequence). Elements that are placed earlier in a sequence should be read earlier.

Below are four examples of visual elements. It would be fairly easy to show a few hundred of these examples. In order to structure and analyze these examples, it would be necessary to provide a detailed description of the European guidelines related to these visual elements and compare this with current professional practice.

The four examples below illustrate that the rhetorical analysis instrument does not cover the whole area of rhetorical discourse production. The instrument would not have detected the problematic issues in any of these examples.

### Example 1: Text



Figure 4

*Text elements. The differences between the names 'Emconcor' and 'Emcoretic' is not very much, and it is not unlikely that these names might cause some confusion. The visual differentiation of these names could have been made more prominent. Sandra Gabriele (2006) investigated this and one of the conclusions was that just making the difference bolder would already help: Emconcor and Emcoretic.*

## Example 2: A pictogram



Figure 5

*Pictorial elements. This pictogram is used in the United Kingdom and appears on some medicine packaging. It means: 'Do not reuse. A single-use device is used on an individual patient during a single procedure and then discarded. It is not intended to be reprocessed and used again, even on the same patient.' For some medicines, it is obligatory to place this pictogram on the outer packaging.*

## Example 3: Schematic elements



Figure 6

*Schematic elements. Pharmacists must be able to distinguish between these two boxes. The left hand side package contains 30 tablets of 1 mg each, and the right hand side 20 tablets of 5 mg each. In order to help pharmacists to distinguish these boxes, schematic elements are introduced. The 1 mg-box has a single band around it; the 5 mg-box has two bands. When looked from the front, only the single and double ends of these bands are visible.*

Example 4: Inseparable combination

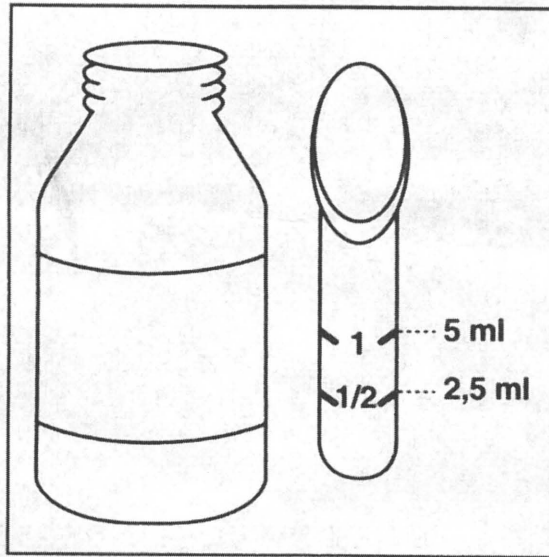


Figure 7

*Inseparable combinations. In this instructional diagram, the patient is made aware of the volume of one dose. One dose is 5 ml and half of one dose is 2.5 ml. (Bristol-Myers Squibb, Belgium, Duracef, 2004).*

*Observation 9: The design of visual elements and their relations needs to be scrutinized. Tiny typesizes, poor typography, confusing illustrations and vague pictograms are fairly common. It is essential to include these in the analysis of 'potential communication design failures' too.*

## VISUAL DIALECTIC

Apart from visual rhetoric and visual logic, there is a third type of argument that might need to be considered: visual dialectics.

Poggenpohl (1998, 226) suggests that “*all designers ... are developing rhetorical representations as prototypes of the idea to be realized.*” In this view, a prototype is a kind of ‘ill-formed’ argument that “*is a way to postulate some proposed design for a kind of reality check with those involved whether clients, other designers or end users*” (1998, 229). She concludes “*rhetoric is a design tool supporting human decisions.*” Although it is certainly true that designers must try to persuade commissioners about the values of a prototype, this does not seem the main reason to develop prototypes. The main reason—at least as far as information about medicines is concerned—is to stimulate a dialogue with a commissioner and with patients who might use the finished product in the future.

For information about medicines, a ‘reality check,’ or ‘presenting’ as Hanno Ehses describes it, is not sufficient in practice. Commissioners, other designers and patients need to discuss prototypes and interact with them directly. It is not only a matter of ‘persuading’ commissioners, designers and patients of the benefits of a prototype, but it is essential to get involved in a dialogue. It is this dialogue in which different opinions are discussed that reveals appropriate ways forward.

It might therefore be fruitful to look at two different ‘dialogues’ to find out if there are any other ‘visual communication design failures’ in this realm:

- dialogue 1: the dialogue between commissioner and designer, evoked by a prototype. This dialogue is an essential part of the co-operation between designer and commissioner.
- dialogue 2: the interaction between patient and visual information. This is the interpretation, understanding and application of the information about medicines.

### Dialogue 1: Commissioner – designer (co-operation and service)

The first dialogue is the discussion between a commissioner and a designer about a prototype. In this discussion, the intentions of providing information to patients are considered. In practice, this is a difficult dialogue, because it needs to consider intentions from several different groups who are not directly taking part in the discussion.

Every dialogue between a commissioner and a designer is guided by the question: 'Is this a legal prototype?' In other words, are there any regulations or guidelines anywhere that state that this proposal is not disallowed? The intentions of these regulations and guidelines are to make sure that all information that is provided to patients "protects them against incorrect claims" and to standardize it in such a way that "a free movement of goods within Europe" is enhanced.

Different departments within a pharmaceutical company provide a second diverse group of intentions. The information for patients is usually the responsibility of a regulatory affairs department. Their aim is to register a medicine as accurately and as quickly as possible. This department needs to consider several intentions from other departments, such as medical affairs (are we sure that this medicine is effective?), marketing (how can we sell this?) and production (when do we need to start?). These have a direct influence on the contents and the design of information about medicines, but are rarely directly involved in a dialogue.

A third group of intentions are provided by a designer, or better a design-team. This team consists of a writer, a designer and a usability tester. Their intention is to make sure that the information for patients passes the 'readability test.' The aim is to make the visual information as suitable for patients as possible.

And finally, the fourth group of intentions is provided by the regulatory authorities who ultimately register medicines and provide a license to sell. The aim of these authorities is to make sure that all claims are correct and can be verified. They also accurately check if the visual information conforms to all regulations and guidelines.

The visual information about medicines for patients, as shown in Figure 1, show the result of a combination of all these different intentions. The single intention that was mentioned earlier "*inform patients to enable them to use medicines correctly and effectively*" is therefore only partly correct.

*Observation 10: Information about medicines for patients is guided by several different intentions. Only some of these can be discussed and negotiated.*

Apart from the intentions, it is also worth looking at the five steps of the rhetorical process. There is a clear similarity between the construction of a speech and a design process. Ideally, the commissioner has to be involved in these steps through a dialogue with a designer, so that an appropriate result can be achieved. Unfortunately, the rhetorical process has little to do with the way in which information about medicines is developed.

The development of information about medicines does *not* start with the consideration of the most appropriate rhetorical appeal in a specific context. The collection of information starts with a template and regulations that only partially incorporate the knowledge and expectations of patients. The invention step (*inventio*) is therefore not fully explored. The European directive determines the structure of the argument. An alternative structure of the different arguments that suits patients (*dispositio*) is prohibited. The development of a suitable format (*elocutio*) is predetermined: it must be a folded leaflet or a tiny booklet that fits into a medicine box. Length of the text and production requirements dictates the dimensions of the leaflet. At this point, outside the rhetorical process, a usability test must be undertaken. At least twenty people need to be asked if they can find information and if they can understand the information. Their answers will only have a minor influence on the contents, but the structure of the leaflet and the choice of the leaflet-format itself cannot be modified. The regulatory authorities accept the end of the third step (*elocutio*) as ‘final version.’

*Observation 11: Technological knowledge and skills (memoria) and presentation (actio) are not applied to their full potential. The current development process of information about medicines diverts from the tried and tested rhetorical processes of developing an appropriate argument.*

### Dialogue 2: Patient – visual information (interpretation)

Interaction of patients with visual information about medicines can be observed directly; simply by contacting patients and asking for their co-operation. Their first hand experience will tell exactly how the information that is shown in Figure 1 is used in real life. Observing patients while they are interpreting visual information and asking questions about what they found and understood reveals some of the opinions patients have and it reveals a sequence of questions. These questions and the sequence in which they are asked depend on the type of medicine and the context in which the medicine is used.

At the moment, only a 'usability test' of package leaflets is conducted, but this test is not completely representative for real-life decisions. A readability test finds problematic issues in a single package leaflet without any doubt, but it will not show the problems of patients when they have to take two different medicines at the same time and have to deal with around a dozen artifacts.

Without going much further into additional information suppliers (internet, phone help lines, friends, health magazines), it is obvious that it is difficult for patients to find relevant and reliable detailed information. Usability studies and contextual inquiries indicate that patients expect information that is differentiated according to their needs, type of medicine and context.

*Observation 12: Visual information about medicines does not start from the perspective and existing knowledge of patients. In general, it ignores the context and specific requirements by providing a 'one-size-fits-all.' This makes the interpretation of visual information about medicines difficult.*



*Figure 8*  
A bin in a hospital pharmacy. In order to stock and dispense medicines in a hospital, the pharmacist removes outer packaging, leaflets and trays. None of this carefully developed and meticulously regulated information about medicines reaches patients in hospitals. Similar leaflets and packaging of medicines that are used at home are read and used very well. It might be beneficial to distinguish between these different contexts of use, but the European legislation is based on the idea that all medicines must be provided with the same information.

## DISCUSSION: IS IT A FAILURE?

The application of the visual rhetoric instrument (*figure 2*) to information about medicines shows that at least eight critical observations can be made. Two other types of arguments—visual logic and visual dialectics—add another four observations. The following table shows the results of the analysis of visual information about medicines for patients according to the rhetorical instrument. ( Parenthetical numbers below refer to observations.)

Visual Rhetoric	Observations from analysis
<p><b>A The Situation</b></p> <ul style="list-style-type: none"> <li>• context: Europe 2009.</li> <li>• exigency: The problematic use of prescription-only-medicines by patients.</li> <li>• audience: Patients</li> </ul>	<ul style="list-style-type: none"> <li>• No change</li> <li>• No change</li> <li>• No change</li> </ul>
<p><b>B The speaker/rhetor</b></p> <ul style="list-style-type: none"> <li>• background: pharmaceutical industry</li> <li>• intentions: inform patients to enable them to use medicines correctly and effectively</li> </ul>	<ul style="list-style-type: none"> <li>• At least 5 different voices are involved.</li> <li>• There are very different intentions: standardization, swift registration, and scientific and non-promotional accuracy (10)</li> </ul>
<p><b>C The speech/artifact</b></p> <ul style="list-style-type: none"> <li>• Inventio (invention) <ul style="list-style-type: none"> <li>Logos (rational arguments)</li> <li>Ethos (character)</li> <li>Pathos (emotions)</li> </ul> </li> <li>• Dispositio (arrangement)</li> <li>• Elocutio (style)</li> <li>• Memoria (memory)</li> <li>• Actio (delivery)</li> </ul>	<ul style="list-style-type: none"> <li>• Several simultaneous but un-coordinated processes (1)</li> <li>Hard to accept for patients (2)</li> <li>Ambiguous and unclear (3)</li> <li>Underused; counter-productive (4)</li> <li>• Hardly possible (5); No narrative structure (6)</li> <li>• Underused; questionable format (7)</li> <li>• No optimal use of technological skills (8)</li> <li>• ‘Presentation’ needs to be more detailed</li> </ul>
<p><b>Visual Logic</b></p> <ul style="list-style-type: none"> <li>• Text</li> <li>• Images</li> <li>• Schematic elements</li> <li>• Inseparable combinations</li> </ul>	<ul style="list-style-type: none"> <li>• Not according to professional standards (9)</li> <li>• Not according to professional standards (9)</li> <li>• Not according to professional standards (9)</li> <li>• Not according to professional standards (9)</li> </ul>
<p><b>Visual Dialectics</b></p> <ul style="list-style-type: none"> <li>• Dialogue between commissioner and designer</li> <li>• Interpretation of visual information - patient</li> </ul>	<ul style="list-style-type: none"> <li>• Process does not follow ‘best practice’ (11)</li> <li>• Information does not start from perspective of patient, and ignores existing knowledge, context and specific requirements (12)</li> </ul>

If the principles of visual rhetoric—which is the study of visual misunderstanding—is applied to visual information for patients, then it is clear that this information fails to optimally convince and support patients. The analysis shows that the visual communication of information about medicines can be substantially improved. Both the process, as well as the ways this information tries to appeal to patients could be reconsidered.

However, from the point of view of several other involved parties, the information about medicines is very successful. The European regulators have achieved a standardized format across Europe that protects consumers against unmerited claims. The regulatory authorities can check and control visual information for patients very effectively, and the pharmaceutical industry can register medicines relatively quickly.

The analysis also shows that the development of visual information about medicines is based on four assumptions.

1) The first assumption is that patients are helped by standardization and by strictly prescribing the information that is required. Although it is essential to regulate information, it should not be based on a ‘detailed description of the information elements,’ but on the ‘aims that need to be achieved.’ In other words, guidelines and regulations should not be prescriptive, but must be performance based. Performance based regulation automatically takes—exactly as the rhetorical instrument suggests—the context, exigency and audience into account.

2) The second assumption is that patients are not the main influential factor when information about medicines is considered. It is clear from the analysis above that patients do not really benefit from the current information supply, but that this supply is acceptable for other main groups. The current development of standardized information makes “free trade within Europe” easier, it makes regulatory applications smoother and it makes the approval processes faster. It therefore depends on the position of the observer, if it is unfortunate or not, that the end result does not optimally enable patients to use medicines appropriately.

3) The third assumption is that ‘medicines’ and ‘information’ must be regulated in the same manner. It is essential that patients are protected against medicines that might do more harm than good. Patients are not capable to consider the safety of medicines for themselves. The legal system and the regulatory authorities are doing this very well—the number of problems with approved medicines is very small if compared with the total number of available medicines. Unfortunately, this approach of ‘protection’ is counterproductive when visual information is concerned. It is not possible to provide standardized information and expect that this will be effective in all circumstances without considering the knowledge and experience of patients.

4) The fourth assumption underestimates the ability of patients to recognize and interpret information about medicines. Patients can—in most situations—very well judge for themselves how they value information. There is a more than sufficient network of healthcare providers that can help to interpret information appropriately. At the moment, the different intentions and different voices in the information about medicines are confusing.

These four assumptions lead to a view that it is only necessary to ‘protect patients’ against ‘incorrect and incomplete’ information. The result is a profusion of guidelines and regulations about visual information. The uncontrolled growth leads to a continuous increase of legally required visual information. This strategy results in very long package leaflets, information on packaging that is very hard to understand and additional visual information that only increases the difficulty to find understandable instructions.

## NEXT STEPS

The description of information about medicines for patients according to a preliminary division of argument theories into visual rhetoric, visual logic and visual dialectics also shows that some of the issues can be fairly easily resolved. These alternatives would provide patients with information that is suited to their task and activities in a format that can be understood and used. Visual rhetoric, supplemented with arguments from the domains of visual logic and visual dialectics, provide a way forward.

1) Start from the perspective of the actual patient. It is necessary to observe and find out how real patients interact with real information and determine what kind of visual information is required. This could lead to the development of performance based guidance which is centered around the available knowledge and experience of patients and answers their questions in a sequence that suits the context.

## 2) Develop alternative prototypes

Despite the fact that it would be difficult to develop alternative visual information about medicines that would fall within the current regulatory framework, it seems beneficial to develop new prototypes to stimulate the discussion between all stakeholders. Three types of prototypes should be considered:

- prototypes that could be used as starting points for dialogues with commissioners and clients. Especially in the digital domain, there is a lot to be gained.
- prototypes that are based on other combinations of rhetorical appeals (pathos, ethos and logos).
- prototypes that are based on visual logic. A detailed consideration of the visual elements and their combinations is likely to alleviate some of the problems that patients have with visual information.

Prototypes are absolutely essential to show that it is possible to develop appropriate information about medicines.

## 3) Clarify the development process

The description of visual rhetoric, as it is presented by Hanno Ehses, mentions the importance of a step-by-step development process that is based on the background of the speaker and their intentions and is focused on a particular situation. The current development process leads to a compromise of several intentions of different speakers without distinguishing between situations. For the benefit of patients, it might be worthwhile to reconsider this compromise.

## CONCLUSION

The analysis of the visual arguments about information for patients leads to the conclusion that the current systems prevent the development of information that is suitable and appropriate for patients. This can be seen as a communication design failure. From the perspective of the pharmaceutical industry, the regulatory authorities and the European legislation, the same visual arguments can be seen as a communication design success.

The description of the visual arguments shows that at least four assumptions about effective communication related to information about medicines are malignant: standardized information that serves patients, free trade or regulatory agencies rather than patients are the focus, patients cannot assess the safety of medicines and patients cannot interpret information about medicines. These assumptions hamper the development of appropriate visual arguments that might convince patients to handle medicines appropriately. If information about medicines is intended to support, persuade and enable patients to make appropriate use of medicines, then it is necessary to take their views into account before new regulations are considered.

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## ACKNOWLEDGEMENT

The author would like to thank Conrad Taylor for several insightful remarks on an earlier version of this paper.

