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The verbal transmission of visual information: An experimental study

Marianne Gullberg*, Jan Morén– and Iréne Stenfors–

1. Introduction

The aim of this exploratory study is to show how visual information is verbally transmitted in an experimental task. The overall theoretical framework adopted is a modification of Chafe 1994.

An experiment was designed in which a drawer was assigned the task of reproducing a stimulus picture relying only on verbal information provided by a describer. No visual contact was allowed between the subjects, but they were encouraged to freely interact verbally. Two pairs of subjects were selected.

The study shows that remarkably similar drawings can result, in spite of dyad differences with respect to (1) the describers' focus-directing preferences, as reflected by their verbal output, (2) drawer strategies for solving the task, and (3) interactional styles.

2. Theoretical background

The framework proposed by Chafe 1980, 1994 raises the issue of how focus of attention and language are related. In this system, attentional foci are said to correspond to new ideas, which are expressed in 'spurts of language'. These spurts, or idea units, are said to be characterised by certain prosodic features, and are referred to as 'intonation units'. Attentional activity is seen as a continuum, with foci being active, semiactive, or inactive. An intonation unit corresponds to an active focus. Related foci are grouped into 'centres of interest' which, in turn, can be clustered together in topics. Both of these higher level categories are assumed to be semiactive. Centres of interest are considered to correspond to sentences at the linguistic level, whereas topics are said to be equal to linguistic topics. Spoken narratives and written fiction serve as the empirical base for these studies.

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Chafe's framework has been used to investigate how focus movement over internal images during spoken discourse can be reconstructed by relying on attention moving markers (Holmqvist & Holsánová, to appear). On the basis of a case study it was shown that, in addition to numerous linguistic markers (pronouns, deixis, etc.), speakers rely on external foci when directing the attention of their interlocutors, such as pointing gestures. One of the subjects in the data drew an abstract picture of the discourse, and this was referred to gesturally as well as verbally.

The present study, in contrast, attempts to include the listener in the framework by showing that speaker focus-movement is not the sole determinant in message construction. Although linguistic attention-markers play an important role in conveying visual information, this study aims to show that listeners are guided not only by these, but also by their own expectations and internal images, and that this is reflected in the drawings produced. This corresponds to findings in psycholinguistic and Bakhtinian discourse studies, where meaning is said to be a joint construction between interlocutors and where the dialogical aspect of language use is emphasised (Clark 1996; Clark & Wilkes-Gibbs 1986; Marková & Foppa 1990).

3. The present study

3.1. *Method, variables*

Subjects were instructed to jointly recreate a stimulus picture as faithfully as possible. Their only means of communication was oral language. They were seated next to each other with a dividing screen preventing visual contact, but not oral communication. The experiments were recorded in audio and video mode.

The subjects received both verbal and written instructions, clearly stating that the purpose of the task was to achieve overall, rather than detailed, resemblance of the stimulus picture. The verbal instruction emphasised the interactional nature of the task. The describer studied the stimulus picture for two minutes prior to, as well as during, the experiment. A five minute limit was imposed for the completion of the task.

The stimulus picture (see appendix) was chosen for several reasons. It is reminiscent of a blueprint in which the parts are easily recognisable (an elephant, a motor, etc.), whereas the whole constitutes an unknown object (a 'pachydermobile', see Maple 1983). Thus, the subjects could not rely on shared knowledge alone. Also, the picture lacks artistic intentions to guide the observer's gaze. Finally, in view of the time constraint, the picture contains

more detail than it is possible to transfer during the experiment, forcing the describers to be selective about what features to transfer.

3.2. Subjects

Four subjects were chosen, all of them undergraduate students with no background in cognitive linguistics, nor any particular drawing skills (self-reported). They were grouped in pairs, and the roles of describer and drawer were assigned randomly. The first pair was male/female (describer/drawer). Both were in their twenties and previously unacquainted. The second pair was female/female, in their thirties, and knew each other well.

3.3. Analysis and analytical tools

The data consist of transcriptions of the verbal exchange, the videotaped drawing process and the resulting drawings (appendix). The recordings were transcribed and divided into intonation units (Chafe 1994). For the purposes of this study, the overriding criterion for distinguishing intonation units was the introduction of new ideas (see Chafe 1980), rather than prosodic features, especially in cases of conflicting cues.

Henceforth, the term ‘focus’ will signify focus of consciousness or attention in Chafe’s terms¹ rather than linguistic focus, which we will not deal with in this paper. We do not aim to demonstrate the connection between foci and linguistic units. Instead, the relationship between attentional foci and intonation units is considered as given.

The term ‘topic’ will also be used in a Chafian manner, and is taken to signify a cluster of related foci or ideas². We take topics to be nested or embedded within each other. Chafe assumes a hierarchical organisation of topics by referring to super-topics and basic-level topics. However, when several basic-level topics appear to be open at the same time, they can be said to be embedded within each other and within the overall super-topic. We consider the super-topic to be the task itself, and the handling of referents, their positions, and so forth to be basic-level topics.

¹“Consciousness is an active focusing on a small part of the conscious being’s self-centered model of the surrounding world.” (Chafe 1994:28)

²“We can think of each [...] topic as an aggregate of coherently related events, states, and referents that are held together in some form in the speaker’s semiactive consciousness.” (Chafe 1994:121).

4. Transmission of the elephant picture

The transmission of the picture content is achieved in different ways in the two dyads. The describers' approaches to the task differ, resulting in structurally different descriptions. The interactional styles between the subjects also vary.

4.1. *Dialogue 1*³

4.1.1. *Describer foci.* The describer adopts a bird's-eye view, which seems natural considering the nature of the stimulus picture. A route perspective would be inappropriate, as there is no route to follow. However, the term 'survey perspective' (cf. Tversky et al. 1994) does not seem appropriate either, since it implies a topographic description of an area, rather than of a composite object. The term 'componential view' is therefore more suggestive of the kind of perspective employed by the describer – at least once the initial scanning of the picture is completed, and certainly during the actual description.

The componential view implies a reductionist approach where every part can be fully described by its sub-parts and their relationships to each other. The describer starts by adopting a broad focus encompassing the entire picture, describing the main component, viz. the elephant. He then proceeds to focus on the major sub-structures within the elephant, such as the various chambers. He continues to apply a heuristic recursive search for his focus movements through the elephant.

Once the describer has established the elephant as the framework both for himself and for the interlocutor, he regards it as given and moves his focus to the chambers within. When these are established in terms of shape and location, he re-directs his attention to their sub-structures or interior parts. These topics are organised in a nested manner, with the current sub-topic being active, and all topics of which this is a part being semiactive, up to the level of the super-topic. This means that while the interior parts of a chamber are being focused, the chamber itself is semiactive, as is the elephant as a whole. The describer thus moves from one basic-level topic to another in an ordered manner, closing topics as he moves along. Only the necessary amount of information is active at any single time, i.e. the current basic-level topic and the super-topic.

³The text examples from dialogue 1 are numbered 1.1-1.7, with individual intonation units listed as 1.xxx. Figures in brackets refer to corresponding areas or points in picture 1 in the appendix.

Example 1.1

1.100 A <u>h</u> a först å främst de e en elefant	1.100 A <u>right</u> first of all it's an elephant
1.101 A kan du rita upp först	1.101 A you can <u>draw</u> first
1.102 B en elefant	1.102 B an elephant
1.103 A en elefant me huvet ti [vänst]	1.103 A an <u>elephant</u> with the head to [the lef]
1.104 B [e den] i mitten [av] bilden [eller]	1.104 B [is it] in the middle [of] the picture [or]
(...)	(...)
1.124 A [å] så låter ru den täcka upp i stort sett hela bilden ...	1.124 A [and] then you let it cover <u>most of the picture</u> ...
1.125 A [å]	1.125 A [and]
1.126 B [e]lefanten	1.126 B [<u>the e</u> l elephant
1.127 A elefanten ja	1.127 A yes <u>the elephant</u>
1.128 A ... å huvet ti vänster	1.128 A ... and <u>the head</u> to <u>the left</u>
1.129 B ... huvet ti vänster	1.129 B. ... <u>the head</u> to <u>the left</u>
1.130 A mm	1.130 A mm
1.131 A ... han tittar liksom åt vänster	1.131 A ... he's sort of facing <u>left</u>
1.132 A ... man ser den helt från sidan om man säger så	1.132 A ... you see it entirely from <u>the side</u> as it were
1.133 B mhm <ritljud> <viskar xx> (1)	1.133 B mhm ... <drawing sounds> <whispers xx> (1)

4.1.2. *Drawer reactions.* The goal-oriented approach of the describer is accepted by the drawer. The introduction of the referent does not appear to be a sufficient condition for the drawer to commit anything to paper. The additional information of position is required, which leads to a certain delay over intonation units.

In example 1.1, we find both negotiated establishment of reference and delay in drawing. The describer introduces the referent in 1.100. The task procedure is then interrupted, such that the description does not continue until 20 intonation units further down, in 1.124. At that point, the referent is still active or semiactive in the describer's consciousness, which is indicated by the use of an unstressed personal pronoun, *den* 'it'. The drawer, on the other hand, has not yet re-focused the elephant, and is therefore obliged to ask for clarification in 1.126. The describer confirms in 1.127 that the pronoun referred to the elephant. In spite of having established the referent, the drawer still does not actually begin drawing the elephant until 1.133 (1), when both the position and orientation of the elephant have been provided.

In those cases where the drawer chooses not to wait for further information, she sometimes proceeds by adding items to the referent which have not been mentioned.

In example 1.2 the drawer proceeds to draw the spokes of the fan in 1.246 (14), before the describer mentions them in 1.248. This time the strategy was

Example 1.2

- | | |
|---|--|
| 1.244 A eh en <u>fläkt</u> | 1.244 A uh a <u>fan</u> |
| 1.245 A ... som e längst ti <u>vänster</u> i kammarn | 1.245 A ... that is furthest to <u>the left</u> in the chamber |
| 1.246 B ... en <u>fläkt</u> (14) | 1.246 B ... a <u>fan</u> (14) |
| 1.247 A aa <u>fläkt</u> sticker ut ja | 1.247 A yeah <u>fan</u> sticks out yes |
| 1.248 A me <u>fem</u> eh <u>ekrar</u> om man säger så | 1.248 A with <u>five</u> uh <u>spokes</u> as it were |

Example 1.3

- | | |
|---|---|
| 1.298 A ... <u>öra</u> då (...) | 1.298 A ... <u>ear</u> then (...) |
| 1.305 A men de e ju som <u>genomskärning</u> (17) | 1.305 A but it's like <u>cross-section</u> (17) |
| 1.306 A så man kan <u>tänka</u> sig att [örat] | 1.306 A so you can <u>imagine</u> the [ear] |
| 1.307 B [oj] | 1.307 B [ooh] |
| 1.308 A man <u>ser</u> inte själva örat | 1.308 A you don't <u>see</u> the actual ear |
| 1.309 A utan man ser bara <u>innandömet</u> [då] | 1.309 A but you only see <u>the interior</u> [then] |
| 1.310 B [mhm] | 1.310 B [mhm] |
| 1.311 A <u>skallbenen</u> på elefanten | 1.311 A <u>the cranium</u> of the elephant |
| 1.312 A inne i <u>skallen</u> på nåt [sätt] | 1.312 A inside <u>the skull</u> in some [way] |
| 1.313 B [<hostar>] ... oj | 1.313 B [<coughs>] ... oh |

successful. At other times, the further information supplied by the describer is found to be conflicting with what has just been drawn, in which case the drawer erases the attempt and starts again.

Occasionally the drawer seems to find the instructions too complex and decides to ignore them temporarily. Her way of signalling this is ambiguous, however, using the word *oj* 'ooh', and the describer does not perceive her feedback as a distress signal. In view of her use of this particular response throughout the discourse, this is hardly surprising.

In 1.298 in example 1.3, the focus is on the ear and the drawer starts drawing the ear in 1.305 (17). Throughout the following intonation units, where the describer goes on to specify the appearance of the head and ear, she acknowledges the information with feedback signals, but does not act on it.

4.1.3. The verbal description. The describer in the first dialogue takes a structured approach. The topics are similarly structured internally, and succeed each other with transitions between topics clearly marked.

All topics are opened with the introduction of a referent, usually in an existential construction followed by indeterminate NPs.

Once the referent has been determined, the speaker goes on to localise the referent by indicating position and/or direction, as in example 1.4, often in a

Example 1.4

1.165 A en <u>övre</u> rum eller kammare	1.165 A an <u>upper</u> room or chamber
1.166 A som e i <u>överdelen</u> av elefanten	1.166 A that's in <u>the upper part</u> of the elephant
(...)	(...)
1.173 A <u>ovanpå</u> varandra liksom	1.173 A <u>above</u> each other sort of
1.174 A så att de finns <u>två</u>	1.174 A so there's <u>two</u>
1.175 A en <u>över</u> och en <u>under</u> [våning]	1.175 A an <u>upper</u> and a <u>lower</u> [floor]

relative clause. This is parallel to Chafe 1980, where foci were recognised as having typical grammatical patterns, and where the introduction of a character in a narrative often was done in a 'there's a ... who' construction. Sometimes the position is indicated before the mention of the referent, but these two sub-topics are always included.

The spatial expressions include single spatial Advs, locative PPs and nominalisations of spatial Adjs and Advs. Body parts are also used to unambiguously indicate location (*svans* 'tail', *skallben* 'bones of the skull'). Shared world knowledge is the determining factor here. Furthermore, the position and/or the direction of referents which are parts of the whole is indicated both with respect to other parts and to the whole:

When the referent has been introduced and localised, the speaker goes on to a third sub-topic, viz. to specify either the referent or the position. This is done with approximations, comparisons, or similes (*precis som en förarplats* 'just like a driver's seat'). Sometimes further nominal details are added and are then treated as the main referent, in that their position is indicated (*ekrar* 'spokes'). Occasionally, mental verbs are used to hedge in the specification (*om du tänker dig en...* 'if you imagine a...'). All topics in dialogue 1 are internally structured in this manner, containing sub-topics for the referent, the position, and further specification.

Transitions between topics are marked by a number of cues referred to by different names by different authors, but perhaps most often as discourse markers (see Holmqvist & Holsánová, to appear, for an illustrative list). These cues might be placed on a continuum from the implicit to the explicit. Pause and hesitation sometimes signal the passage from one focus of attention to another. These cues might be said to be the least explicit. Prosodic cues are somewhat more explicit, and they include rising pitch (*mm* ↑), sometimes combined with exaggerated stress (*sen så är de* 'then there is'). Conjunctions without particular prosodic properties are relied on for minor transitions, i.e. progression from one topic internal focus to another (*å så har den en bete* 'and then it has a tusk'). Complex clauses are occasionally used to express

Example 1.5

1.234	A	mm <andas in>	1.234	A	mm <inhales>
1.235	A	... eeh	1.235	A	... eeh
1.236	A	...och <u>så</u>	1.236	A	... och <u>så</u>
1.237	A	... den <u>undre</u> kammaren kan vi ta	1.237	A	... the <u>lower</u> chamber we can
1.238	A	å <u>fylla</u> lite <u>saker</u> också	1.238	A	and <u>fill</u> with some <u>stuff</u> too
1.239	A	... [e du klar]	1.239	A	... [are you ready]
1.240	B	[ja]	1.240	B	[yes]

explicit transition (*då går vi upp igen* ‘then we go back up’), and perhaps the most explicit markers of all are the control questions marking imminent progression (*e du klar* ‘are you ready’). Note that the degree of explicitness is seen as a purely structural property and not a functional one. The less explicit markers seem to work quite as effectively as the more explicit ones, perhaps with the exception of the minimally marked cues of hesitation and pause.

In this dialogue the describer carefully signals transitions, and markers are often clustered together, especially at points of major transitions.

In example 1.5 we find a combination of markers ranging from the implicit prosodic cue in 1.234, to the very explicit control question in 1.239. There is also hesitation followed by a complex clause introduced by a conjunction. This cluster occurs at a point of transition from one major sub-topic, namely the interior of the upper chamber, to another, that of the lower chamber. This marking of transitions is typical of the first dialogue.

4.1.4. Transmissison of visual information 1. The describer relies on shared knowledge of the constituent parts, leaving the drawer to complete the picture. Body parts, which serve as locative expressions, are rarely further specified verbally. In example 1.6 we will see how the same applies to internal parts.

During this interaction the describer enumerates prototypical items of a driver’s seat. Although the knowledge drawn upon is perhaps less obviously shared than in the case of body parts, the appearance of items is nevertheless not further specified. The drawer still manages to draw corresponding objects once a rough indication of their position as a group has been given in 1.206 (11). It is worth noting that the drawer has already grouped the objects mentally, without prompting from the describer, which can be seen in the use of the plural pronoun *dom* ‘they’, in 1.203. Furthermore, with respect to the orientation of the driver’s seat, the drawer seems to rely on the overall orientation of the elephant to infer the correct direction of the seat. If the elephant faces left, then so must the driver.

Example 1.6

- | | |
|---|---|
| 1.198 A och i den <u>övre</u> finns | 1.198 A and in the <u>upper</u> is |
| 1.199 A ... en <u>förarstol</u> | 1.199 A ... a <u>driver's seat</u> |
| 1.200 A och en <u>ratt</u> | 1.200 A and a <u>steering wheel</u> |
| 1.201 B en <u>förarstol</u> å [en <u>ratt</u>] | 1.201 B a driver's seat and [a steering wheel] |
| 1.202 A [mm en fö] | 1.202 A [mm a dri] |
| 1.203 B [e dom] längst ti <u>vänster</u> | 1.203 B [are they] furthest to <u>the left</u> |
| 1.204 A ä | 1.204 A no |
| 1.205 A i <u>mitt i</u> ungefär | 1.205 A in <u>the middle</u> roughly |
| 1.206 A [mitt i] (11) | 1.206 A [in the middle] (11) |
| 1.207 B <u>mitt i</u> | 1.207 B <u>in the [middle]</u> |

Example 1.7

- | | |
|---|--|
| 1.146 A ... å så är de eh har den <u>hjul</u> på ...
fötterna (7) | 1.146 A ... and it is uh it has <u>wheels</u> on its
... feet (7) |
| 1.147 A ett sånär <u>halvcirkel</u> som heter | 1.147 A a sort of <u>semicircle</u> named |
| 1.148 A j sm ungefär som ett <u>hjul</u> | 1.148 A y lk about like a <u>wheel</u> |
| 1.149 A som sitter <u>inne</u> i | 1.149 A that is sitting <u>inside</u> of |
| 1.150 A ... i vardera <u>benet</u> om man säger så
(8) | 1.150 A ... in each <u>leg</u> as it were (8) |
| 1.151 A sticker ut till <u>hälften</u> | 1.151 A sticking out <u>halfway</u> |
| 1.152 A ... förståu hur ja <u>menar</u> | 1.152 A ... you know what I <u>mean</u> |
| 1.153 B ... så de e bara | 1.153 B ... so it is just like |
| 1.154 B <u>hjulet</u> sticker ut på [<u>undersidan</u> helt
enkelt] | 1.154 B <u>the wheel</u> sticks out [<u>underneath</u>
quite simply] |
| 1.155 A [mm som en <u>halvcirkel</u> alltså kan
man säga] | 1.155 A [mm like a <u>semicircle</u> you might
say] |
| 1.156 A a <u>precis</u> | 1.156 A yes <u>precisely</u> |
| 1.157 B [mm] | 1.157 B [mm] |

The describer utilises both descriptive expressions of size/shape and spatial expressions⁴ when specifying features in the picture. A good example of a combination of both is found in 1.7, where the describer starts by introducing the referent – the wheels – and its location relative to the feet. He then further specifies the visual properties of the referent. In 1.149 and 1.150 the describer uses spatial descriptions to further localise the referent. The PP *inne i vardera benet* ‘inside of each leg’, could mean any position within each leg, but the properties of the wheels imposes a functional constraint on the position of the referent (the wheels would only be functional at the bottom of the legs). The verb used, *sticker ut* ‘sticking out’, encodes both location and manner. The describer continues to alternate between descriptive and spatial expressions until the drawer acknowledges the information in 1.157. The drawer, on the

⁴Note that *expression* in this context refers to single constituents within a clause rather than the clauses or intonation units themselves.

other hand, already begins drawing in 1.150, but cannot be sure she is doing it correctly until 1.155, when she receives feedback on her control question.

Generally, when the context naturally implies a referent (an elephant can be expected to have a trunk), the locative and descriptive phases constitute separate topics. The describer can focus longer on either type of description, secure in the knowledge that rudimentary information about the referent's location and appearance is shared. When, however, a clash of expectations occurs (for instance, a prototypical elephant has no wheels), the boundaries between locative and descriptive topics are blurred. The describer appears to feel that he must define the referent in both ways as soon as possible to avoid undue confusion on the part of the drawer.

4.2. *Dialogue 2*⁵

4.2.1. *Describer foci.* Unlike in the first dialogue, the describer in dialogue 2 adopts a flat survey perspective. She does not perceive the 'pachydermobile' as a structured composite object, but as structurally simple, consisting only of an elephant-shaped container with unordered items.

This describer begins by focusing on the contour of the elephant, just as the describer in the first dialogue, but, unlike him, she never gives prominence to the various substructures (e.g. the chambers). Instead, she focuses directly on the individual objects, giving scarce positional information, never relating the objects to each other. Furthermore, her movements in the picture and focus-changes from the overall framework (the elephant and its attributes) to the interior (pressure gauge) and back again (the tusk) are based almost entirely on proximity to previous foci rather than based on structural relationships.

As a consequence of this organisation, the semiactive foci consist of those parts already mentioned, and the active focus is what is being currently mentioned. This implies that the status of semi-activity loses some of its discriminatory power, as so large an amount of information is semiactive simultaneously in the minds both of the speaker and the listener.

4.2.2. *Drawer reactions.* This drawer uses a similar strategy to the drawer in the first dialogue, waiting for both description and position before starting to draw. Unlike in the first dialogue, however, the delay is not exploited by the describer to further specify the reference or position. Rather, the roles appear to be inverted in that the drawer has to ask for further information, while the

⁵Text examples from dialogue 2 are numbered 2.1-2.6. Figures in brackets refer to points in picture 2 in the appendix.

Example 2.1

- | | |
|---|--|
| 2.126 A ... buken på elefanten (4) | 2.126 A ... the belly of the elephant (4) |
| 2.127 A där ska de var en ... b bilmotor
... <fnittrar> | 2.127 A there it should be a ... c car engine ... <giggles> |
| 2.128 B ... <u>under</u> eller i | 2.128 B ... <u>below</u> or inside |
| 2.129 A i ... buken på elefanten
(...) | 2.129 A in ... the belly of the elephant
(...) |
| 2.133 B formen av en bilmotor | 2.133 B the shape of a car engine |
| 2.134 A nä de <u>e</u> en bilmotor | 2.134 A no it <u>is</u> a car engine |
| 2.135 A men de e ba formen av en <u>elefant</u> | 2.135 A but it is only the shape of an
<u>elephant</u> |
| 2.136 B ... <u>hela buken full</u> av en bilmotor | 2.136 B ... the <u>whole belly full</u> of a car
engine |
| 2.137 A [aa] | 2.137 A [yeah] |
| 2.138 B [eller bara] <u>ner till</u> | 2.138 B [or only] <u>below</u> |
| 2.139 A ... jaa | 2.139 A ... yees |
| 2.140 B ... vaddå <u>jaa</u> | 2.140 B ... whaddyamean <u>yees</u> |
| 2.141 A jaa | 2.141 A yes |
| 2.142 B de va en t <u>tvetydig</u> fråga | 2.142 B it was an <u>ambiguous</u> question |
| 2.143 A nä asså | 2.143 A no like |
| 2.144 A du ska ente <u>fylla</u> elefanten me en
bilmo[tor] | 2.144 A you're not supposed to <u>fill</u> the
elephant with a car engine |
| 2.145 B [bara] <u>ner till</u> | 2.145 B [only] <u>below</u> |

describer assumes that the information already given is sufficient, and wants to move on.

Example 2.1 is typical of how information is transmitted in the second dialogue. It shows the drawer trying to extract information from the describer and failing to a large extent. The describer does not fully understand wherein the drawer's difficulty lies, namely in identifying the position of the car engine, but seems to focus on the contour shape of the elephant instead. During this passage, no part of the car engine is drawn. The (4) in 2.126 is the drawer finishing the tail of the elephant, which belongs to the previous topic.

Once the drawer starts to draw the engine, however, she relies on her own (extensive) knowledge about the referent to fill in details not mentioned, even though there is no further information available from the describer.

In example 2.2, the describer remains passive in 2.151-2.168, while the drawer adds engine parts, verbalising all her actions, probably in the hope that the describer will give her feedback. There is no delay between mention and drawing.

Like the first drawer, the second drawer occasionally chooses to ignore information supplied by the describer. This occurs when the describer lists referents without specifying them, e.g. when trying to describe the driver's seat and equipment. In example 2.3 the describer hesitates and expresses uncertainty in 2.184 and 2.185 before enumerating these items. The drawer

seems to interpret this as a signal that these items are unimportant, and consequently chooses to draw only the objects preceding the hesitation, which were clearly labelled. She starts drawing the chair in 2.186 (6).

4.2.3. *The verbal description 2.* As in the previous dialogue, referents are introduced in existential constructions or in personal constructions in the second person singular, sometimes even the imperative (*nu ska du rita...* ‘now you should draw...’).

Referents are then localised or given a direction much in the same way as in the first dialogue. Body parts indicate position unequivocally (*buken* ‘the stomach’, *bete* ‘tusk’). Spatial expressions proper include single AdvPs and PPs. We also find specific Vs being used to express both position and size simultaneously (*som uppfyller hela pappret* ‘which fills up the entire page’).

Thus far, the descriptions in dialogue 1 and 2 are fairly similar. However, further elaboration of referents or positions, as could be found in the first dialogue, are completely lacking in the second dialogue. Topics simply contain referents and their positions. The third topic category found in dialogue 1, that of specification, is entirely absent.

Example 2.2

2.151 B [ja] tänkte börja me de fyra <u>cylindrarna</u> där (5a)	2.151 B [I] thought I'd start with the four <u>cylinders</u> there (5a)
2.152 B där e fyra <u>cylindrar</u>	2.152 B there are four <u>cylinders</u>
2.153 B ... så ska där no finnas en eh	2.153 B ... then there should be an uh
2.154 B ... ja där kan vi ha en eh	2.154 B ... yes there we can have an uh
2.155 B ... mm där e (5b)	2.155 B ... mm there is (5b)
2.156 B ... <u>motorkylaren</u> (...)	2.156 B ... <u>the radiator</u> (...)
2.169 A <harklar sig> ... e ru <u>klar</u>	2.169 A <clears throat> ... are you <u>ready</u>

Example 2.3

2.179 A ... a de e en stol	2.179 A ... yes it is a chair
2.180 A ... en stor <u>stol</u>	2.180 A ... a large <u>chair</u>
2.181 A ... å en <u>ratt</u>	2.181 A ... and a <u>steering wheel</u>
2.182 A ... å sen e de en massa instru som ...	2.182 A ... and then a lot of instru that ...
2.183 B en <u>instrumentbräda</u>	2.183 B a <u>dashboard</u>
2.184 A ...tjtjaaa	2.184 A ... weell
2.185 A ... inte riktigt	2.185 A ... not quite
2.186 A ... de e inspelnings ... apparatur (6)	2.186 A ... it is recording ... apparatus (6)

Example 2.4

- | | |
|---|--|
| 2.239 A ... de e <u>nån</u> eh | 2.239 A ... there <u>is</u> a uh |
| 2.240 A <u>tryckmätare</u> framtill också då me | 2.240 A <u>pressure gauge</u> at the front too
with |
| 2.241 A ... ja vete <u>sjutton</u> vare e | 2.241 A ... I <u>really</u> don't know what it is |
| 2.242 B <u>vardå</u> framtill | 2.242 B <u>where</u> at the front |
| 2.243 A ... aa framme i <u>huvet</u> nånstans | 2.243 A ... uuh at the front in the <u>head</u>
somewhere |

Moreover, it is immediately obvious that the spatial indications are much less developed in the second dialogue, despite the surface resemblance with the first case. First of all, the positions of referents which are parts of the whole, such as the chair and the steering wheel, are never related to the positions of other objects, but rather to the whole, and only to the whole. This gives the spatial directions a vague quality. In addition, many of the spatial AdvS are imprecise, either because they are essentially deictic and lack a reference point visible to the drawer (*där* 'there'), or because they actually express uncertainty (*nånstans* 'somewhere').

In example 2.4, the referent is initially located 'at the front', which is a direction relating the referent to the whole. However, this is immediately followed by an explicit expression of uncertainty in 2.241. After the clarification request by the drawer in 2.242, the describer manages a spatial PP which might have been informative since it contains a body part ('the head'). The PP is immediately attenuated, however, by the use of the vague Adv *nånstans* 'somewhere'. This instruction still leaves the drawer with a sense of uncertainty as to the location of the pressure gauge. To summarise, the internal structure of topics in dialogue 2 is poorer than in the first dialogue.

With respect to transitions between topics, the same markers are employed in the second dialogue as in the first. We find pause used as a marker, prosodic cues (*buken på elefanten* 'the belly of the elephant'), conjunctions (*åsså stora ögon* 'and big eyes'), and control questions (*haru gjort de* 'have you done that').

In the second dialogue, there is no differentiation between minor and major transitions. Movement between topics is marked in the same way as movement between topic internal foci. There is no clustering of cues, and the most favoured markers are conjunctions. Moreover, minimal marking, that of pause alone with no further cue added, occurs in this dialogue (see example 2.5), but not in the first.

The slight pause in 2.239 is the only indication of focus transition. Moreover, exaggerated stress as a prosodic cue occurs on lexical items (*bete*

Example 2.5

2.239 A ... de e nån eh

2.240 A ... tryckmätare framtill också då
me

2.239 A ... it's a kind of uh

2.240 A ... pressure gauge at the front
then with

'tusk'). In the first dialogue, prosodic cues instead coincide with feedback signals or non-lexical elements. It might be assumed that the combination of stress as a transition marker and the introduction of a new referent results in too much information being transmitted at once. In the first dialogue, transition marking occurs separately from the introduction of the next referent, assuring redundant – if sequential – marking. The lack of clear transition marking in the second dialogue is in line with the lack of structured movement between topics in general.

4.2.4. *Transmission of visual information 2.* As in the first dialogue, shared knowledge is important. However, in the second dialogue there is an over-reliance on shared knowledge.

There are no descriptive specifications whatsoever of the referents. Occasionally, a vague adjectival modifier accompanies the referent (*en stor stol* 'a large chair'). It carries no semantic weight, however, since the scale is undetermined. As a consequence, the drawer is left to rely on her world knowledge and her own prototypes of the referents. At times, when the describer gives no information, the drawer carries this very far.

In 2.224 in example 2.6, the drawer reacts to the describer's use of plural with respect to the eyes, and corrects her, as she begins to draw a single eye. Furthermore, the drawer takes it upon herself to determine the sex of the elephant in 2.229 even though no sex has been, or can be, implied from the picture. She even adds eyelashes in 2.228 (10 cont.).

Similarly, spatial specifications are, with two exceptions, related to the elephant framework without any further elaboration. Elephant body parts serve as the only locative indications (*buken på elefanten* 'belly of the elephant'). This reliance on shared knowledge and on the elephant as the sole reference framework is fairly successful. The result, however, is a dialogue riddled with misunderstandings and cross-talk.

Example 2.6

2.223 A [åsså] stora <u>ögon</u> på elefanten	2.223 A [and] big <u>eyes</u> on the elephant
<harklar sig>	<clears throat>
2.224 B <visselljud> men den e här e ...	2.224 B <whistles> but this one is ... from
från <u>sidan</u> (10)	<u>the side</u> (10)
2.225 B så de kan bara bli <u>ett</u> [öga]	2.225 B so there can be only <u>one</u> [eye]
2.226 A [aa <u>ett</u>] öga då	2.226 A [yes <u>one</u>] eye then
2.227 A ... mm	2.227 A ... mm
2.228 B ... me <u>ögon</u> fran[sar (10 cont.)]	2.228 B ... with <u>eyelash</u> [es (10 cont.)]
2.229 B de e en <u>flicka</u> en <u>tjej</u>	2.229 B it is a <u>girl</u> a <u>lass</u>
2.230 A [aa	2.230 A [yes

5. Comparison and discussion

The progression of the drawing acts, as indicated by the indices in the resulting drawings (see appendix: pictures 1 and 2), reflects the differences in focus movements between the dialogues, both for the drawer and the describer. The first drawing shows the well-planned manner in which the first describer organises his description (what we have called a componential view), with each subpart being finished before the next one is started. The progression in the second drawing, however, reflects the second describer's ad hoc approach (flat survey view).

The indices trivially show the foci chosen by the drawers. By relating the finished drawings to the transcripts and the drawing acts, however, it is possible to determine which verbally transmitted foci have been accepted by the drawers, which ones have been lost, and which foci the drawers added on their own.

The describers' focus movements across the stimulus picture are closely followed by the drawers. The drawers do not move the focus of their own accord. Drawer initiatives include expanding individual referents, and supplying additional details (e.g. spokes, gear-discs, dipsticks, eyelashes, etc.).

With this in mind, it is interesting that both dyads have been almost equally successful in solving the task, artistic achievement aside. Both drawings bear close overall resemblance to the stimulus picture. The describers have concentrated largely on the same features of the pachyderm, and the drawers have accepted and ignored largely the same items. Major structures, like the driver's seat, can be found in both drawings. Other elements, like the camera, are absent in both drawings.

The time limit imposed on the task and the instructions to aim for overall resemblance might have induced the subjects to filter out detailed elements. The question remains, however, why the same elements have been filtered out in both experiments. A functional explanation may be that the purpose of the

wheels is more obvious than that of the video equipment in the elephant's rear end. This, in combination with the fact that there is no single linguistic label for the absent elements, might explain the correspondence between the drawings. In the first experiment, this filtering was done by the describer, while in the second, the drawer did most of the filtering.

The difference between the dialogues also manifests itself in the interactional style. The first dialogue is characterised by the describer assuming sole responsibility for solving the task. The communication is asymmetrical, with the describer alternating between instructions and control questions. The drawer's contribution is largely confined to clarification requests of a minor nature. She never takes the initiative (cf. Linell 1990).

The second dialogue, in contrast, is much more symmetrical. No clear describer dominance can be found, despite her informational advantage. Both subjects contribute content matter to the solution of the task in an alternating fashion. Contrary to what might be expected of a symmetrical dialogue, however, the interaction in this dialogue is not characterised by co-operative contributions. Instead, the subjects seem to entertain two parallel monologues. This explains the numerous misunderstandings in the dialogue. The fact that the subjects were acquainted before the experiment could explain the interactional symmetry, and the lack of inhibition about interruptions (Linell, Gustavsson & Juvonen 1988).

In view of these observations, a few comments regarding communication are in order. As noted by Allwood 1996, Chafe ignores the issue of whether or not interactants can be assumed to have common foci. Although he mentions speaker intent and possible speaker awareness of what goes on in the mind of the listener, he still sees communication in terms of the 'conduit metaphor' (Reddy 1979). This assumes that a speaker intention is coded, transmitted as a signal, received by a listener and decoded without further elaboration. However, these experiments show that the conduit metaphor is inadequate and misleading. Decoding of the message is never straightforward, since the decoder/listener/drawer always manipulates the information received, adding or subtracting elements. In this sense, the listener actively influences the speaker's attention and elaboration of topics. This is seen in the drawings generated during the experiments. Moreover, the experiments illustrate the need not only for a common knowledge base, but also for the importance of establishing common foci of attention.

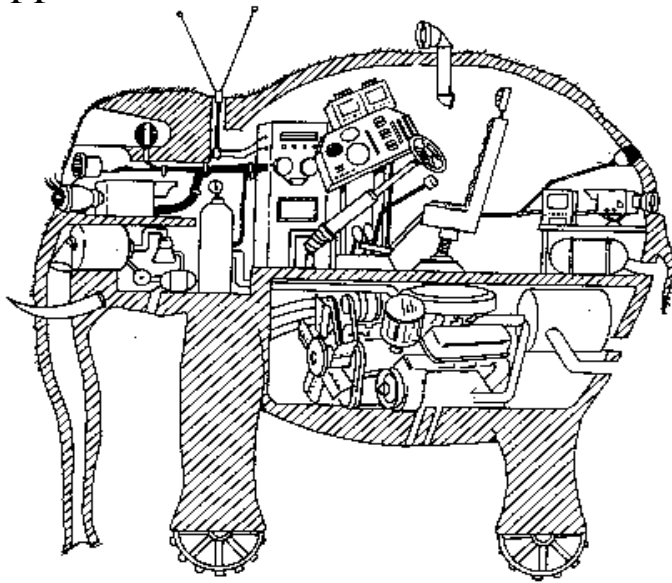
6. Summary

We have investigated how visual information is transmitted verbally in a cooperative context. An experimental design was set up permitting elicitation of data from two dialogues. The purpose was to study the connection between visual foci and linguistic elements by comparing the verbal descriptions of a stimulus picture with the resulting drawings. Similar results are achieved despite differences in describer and drawer strategies for solving the task, as well as in interactional styles.

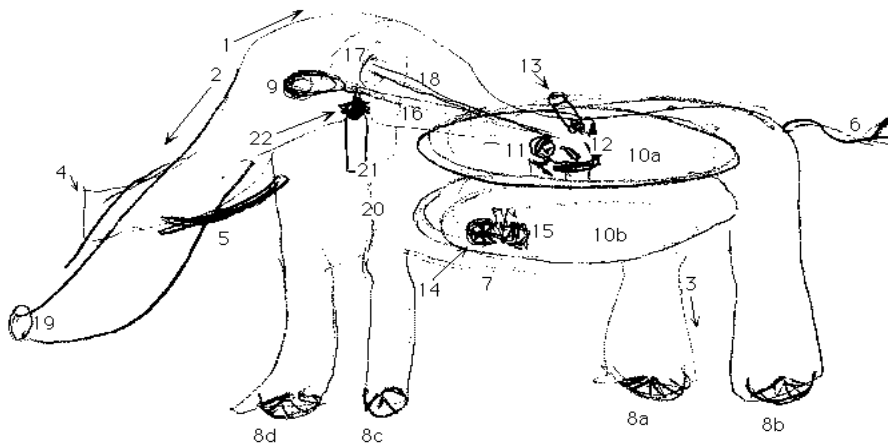
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Appendix

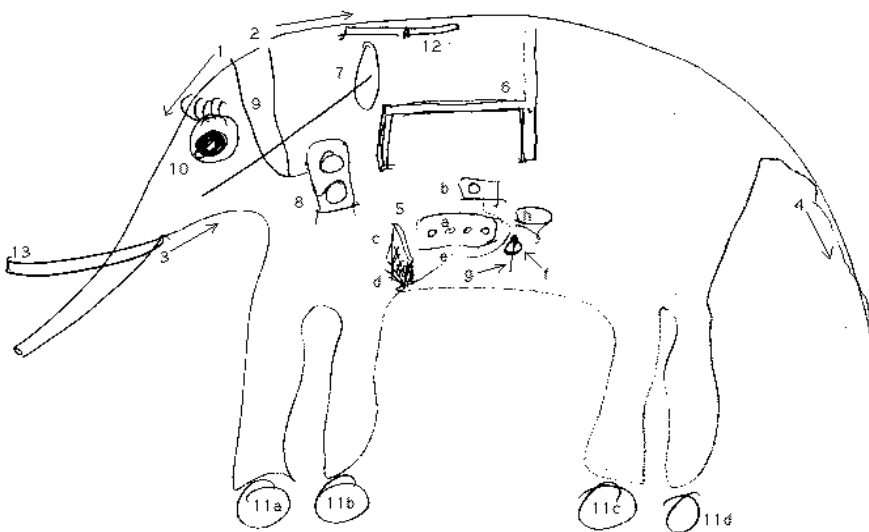


Stimulus picture. (Reproduced by kind permission of *The Journal of Irreproducible Results* ©.)



- 1-4 elephant's contour
- 5 tusk
- 6 tail
- 7 stomach contour
- 8 wheels + spokes
- 9 eye
- 10a upper chamber
- 10b lower chamber
- 11 steering wheel
- 12 chair
- 13 periscope
- 14 fan + spokes
- 15 engine
- 16 tube
- 17 ear
- 18 cable
- 19 end of trunk
- 20 line
- 21 tube
- 22 gauge

Picture 1.



- 1-4 elephant's contour
- 5a cylinders
- 5b radiator
- 5c radiator
- 5d gear-discs
- 5e tube
- 5f container for oil
- 5g dipstick
- 5h funnel
- 6 chair
- 7 steering wheel
- 8 tape recorder
- 9 antennae
- 10 eye+eye lashes
- 11 wheels
- 12 periscope
- 13 tusk

Picture 2.