INAUGURAL MEETING OF THE

european society for cognitive psychology

NIJMEGEN
9-12 SEPT. 1985

FOREWORD

Though murmurings around the idea of establishing some form of European Network for Cognitive Psychology have been heard for some time, it was only in the Summer of 1984 that these became more clearly voiced. As a result of an initiative taken by Alan Baddeley and John Michon, an informal Steering Group was established at the Joint Meeting of the Netherlands Psychonomics Foundation and the British Experimental Psychology Society held in Amsterdam in July 1984.

The outcome of these deliberations was the decision to charge a working group with the task of studying the feasibility of a more or less formalised forum for Cognitive Psychology in Europe, and to organise a Conference; hopefully an inaugural one.

The response from the field was overwhelmingly positive and it gave the Organising Committee all the moral support that was needed to go ahead. The result of three successive meetings of the Organising Committee (and indeed a lot of work in between) will be presented and discussed at the Conference of which this booklet is the programme.

We hope that the Conference will succeed in its principal aim: promoting cooperation between European Psychologists. We welcome you to Nijmegen and hope that you will find the Conference both enjoyable and stimulating.

We appreciate the positive attitude towards our initiative, not only that of those who will be attending the Conference, but also the various agencies and institutions who offered us moral and/or financial support. In particular we wish to mention the US Office of Naval Research and the Royal Academy of Arts and Sciences of the Netherlands who have contributed generously to defray the expenses of the present meeting. We would also like to take this opportunity of publicly thanking Ans van Rijsbergen, secretary at the Department of Experimental Psychology in Groningen, for her excellent work. Her willingness to fit our typing demands into an already busy schedule are much appreciated.

Alan Baddeley
Paul Bertelson
Janet Jackson
John Michon
Wolfgang Prinz

PROGRAMME

Monday, 9th September

16.00 - 16.15 hrs.: Welcome

16.15 - 17.00 hrs.: 1. Patrick Rabbitt:
How can we discuss individual differences in terms of functional models for cognitive processes?

17.00 - 17.45 hrs.: 2. Carlo Umiltà:
Egocentric and relative spatial codes in S-R compatibility.

18.00 - 19.00 hrs.: 3. Inaugural Address. Donald Broadbent:
Structures and strategies: Where are we now?

19.00 - Reception + Dinner

Tuesday, 10th September

09.00 - 09.45 hrs.: 4. Hans-Georg Geissler:
Task-dependent processing of visual information.

09.45 - 10.30 hrs.: 5. Herbert Heuer:
Visual discrimination and response programming.

10.30 - 11.00 hrs.: Coffee

11.00 - 11.45 hrs.: 6. Claus Bundesen:
Visual attention: Race models for selection from multi-element displays.

11.45 - 12.30 hrs.: 7. Dirk Vorberg:
Modelling interference and facilitation in recognising pictures and words.

12.30 - 14.00 hrs.: Lunch

Tuesday, 10th September (cont.)

14.00 - 14.45 hrs.: 8. Joachim Hoffmann:
Selective attention and semantic coding.

14.45 - 15.30 hrs.: 9. David Navon:
Is attention allocation sensitive to word informativeness?

15.30 - 16.00 hrs.: Tea

16.00 - 16.45 hrs.: 10. Dominic Bouwhuis:
Addressing schemes in lexical memory.

16.45 - 17.30 hrs.: 11. Jacques Mehler:
Some results in infant and adult psycholinguistics.

17.30 - Short cycle trip to visit a working windmill
(Optional!)

20.00 - Dinner

(After dinner there will be an opportunity for those interested to get together with Susan Chipman, representative of ONR, for an informal chat around the topic "Long-term trends in European and American Psychology")

Wednesday, 11th September

09.00 - 09.45 hrs.: 13. Georgije Lukatela:
Loci of phonological effects in lexical access for a phonologically shallow orthography,

09.45 - 10.30 hrs.: 14. José Morais:
Phonetic awareness and reading acquisition.

10.30 - 11.00 hrs.: Coffee

Wednesday, 11th September (cont.)

11.00 - 11.45 hrs.:	14. Giovanni Flores d'Arcais: Semantic activation in object recognition.
11.45 - 12.30 hrs.:	15. Patrizia Tabossi: Lexical access and word interpretation.
12.30 - 14.00 hrs.:	Lunch
14.00 - 14.45 hrs.:	16. Danièle Dubois: Lexical representations and sentence comprehension.
14.45 - 15.30 hrs.:	17. Philip Johnson-Laird: Discourse and models.
15.30 - 16.00 hrs.:	Tea
16.00 - 17.00 hrs.:	Business Meeting chaired by Alan Baddeley and John Michon.
17.30 -	Reception at Max-Planck-Institute for Psycholinguistics.
20.00 -	Dinner

Thursday, 12th September

09.00 - 09.45 hrs.:	18. Gery d'Ydewalle: The case of recall hypermnesia: The growth of recall over time.
09.45 - 10.30 hrs.:	19. Asher Koriat: Depth of processing and memory organisation.
0.30 - 11.00 hrs.:	Coffee
.00 - 11.45 hrs.:	20. Lars-Göran Nilsson: Motivated memory.

Thursday, 12th September (cont.)

11.45 - 12.30 hrs.:	21. Michael Eysenck: Cognitive factors in anxiety.
12.30 -	Closing remarks
13.00 -	Lunch

PARTICIPANTS

Alan Baddeley	MRC Applied Psychology Unit 15 Chaucer Road, CB2 2EF Cambridge, UK.
Paul Bertelson	Université Libre de Bruxelles, Laboratoire de Psychologie Expérimentale 117 Av. Adelphe Buyl, 1050 Brussels, Belgium.
Claude Bonnet	Université René Descartes, Laboratoire de Psychologie Expérimentale 28 Rue Serpente, 75006 Paris, France.
Dominic Bouwhuis	Institute for Perception Research P.O. Box 513, 5600 MB Eindhoven, The Netherlands.
Bert Brehmer	Psykologiska Institutionen, University of Uppsala Box 227, S-75104 Uppsala, Sweden.
F. Bresson	C.N.R.S., Ecole des Hautes Etudes en Sciences Social 54 Bd. Raspail, 75006 Paris, France.
X Donald Broadbent	Dept. of Experimental Psychology, University of Oxford South Parks Road, Oxford OX1 30D, U.K.
Hans Buffart	Dept. of Experimental Psychology, University of Nijmegen Montessorilaan 3, 6500 HE Nijmegen, The Netherlands.

X Tom Backman

X Claus Bundesen	Psychological Laboratory, University of Copenhagen Njalsgade 90, DK-2300 Copenhagen S., Denmark.
Susan Chipman (representative of ONR)	Office of Naval Research 800 North Quincy Street, Arlington, V.A., U.S.A. 22217.
Cesare Cornoldi	Dept. of Psychology Piazza Capitariato, 35100 Padova, Italy.
Jean Costermans	Faculté de Psychologie et des Sciences de l'Éducation, Université Catholique de Louvain-la-Neuve Voie du Romain Pays, Louvain-la-Neuve, Belgium.
Andreas Demetriou	Division of Psychology, Faculty of Philosophy, University of Tessaloniki Tessaloniki, Greece.
Danièle Dubois X	Université Paris-Sud, Centre d'Etudes de Psychologie Cognitive, Centre Scientifique d'Orsay Batiment 335, 91405 Orsay Cedex, France.
Michael Eysenck X	Dept. of Psychology, Birbeck College, University of London Malet Street, London WC1E 7HX, U.K.
Giovanni Flores d'Arcais	Dept. of Experimental Psychology, University of Leiden Hooigracht 15, 2312 KM Leiden, The Netherlands.

Nico Frijda	Dept. of Experimental Psychology, G.U. Amsterdam Weesperplein 8, 1018 XA Amsterdam, The Netherlands.
Hans-Georg Geissler	Karl-Marx-Universität, Sektion Psychologie Karl-Marx-Platz, DDR-7010 Leipzig, D.D.R.
Jan Heim	Dept. of Psychology, University of Trondheim N-7055 Dragvoll, Norway.
Herbert Heuer X	Fakultät für Psychologie und Sport, Universität Bielefeld Postfach 8640, 4800 Bielefeld, W. Germany.
Joachim Hoffmann X	Sektion Psychologie der Humboldt-Universität Oranienburgerstrasse 18, DDR-1020 Berlin, D.D.R.
Janet Jackson	Institute of Experimental Psychology, University of Groningen Kerklaan 30, 9751 NN Haren, The Netherlands.
Philip Johnson-Laird	MRC Applied Psychology Unit 15 Chaucer Road, Cambridge CB2 2EF, U.K.
Asher Koriat X	Dept. of Psychology, University of Haifa Haifa, Israel 31999.
Jean Francois Le Ny	Université Paris-Sud, Centre d'Etudes de Psychologie Cognitive, Centre Scientifique d'Orsay Batiment 335, 91405 Orsay Cedex, France.

Willem Levelt (Representative of European Science Foundation)	Max-Planck-Institute for Psycholinguistics Berg en Dalseweg 79, 6522 BC Nijmegen, The Netherlands.
J. Linaza	Facultad Psicología, Universidad Autónoma Madrid 28049, Spain.
Georgije Lukatela	Faculty of Electrical Engineering Bulevar Revolucije 73, Belgrade, Yugoslavia.
Anthony Marcel	MRC Applied Psychology Unit 15 Chaucer Road, Cambridge CB2 2EF, U.K.
Jacques Mehler	C.N.R.S., Ecole des Hautes Etudes en Sciences Sociales 54 Bd. Raspail, Paris 75006, France.
John Michon	Institute of Experimental Psychology, University of Groningen Kerklaan 30, 9751 NN Haren, The Netherlands.
José Morais X	Laboratoire de Psychologie Expérimentale 117 Av. Adelphe Buyl, 1050 Brussels, Belgium.
David Navon X	Dept. of Psychology, University of Haifa Haifa, Israel 31999.
Lars-Göran Nilsson X	Dept. of Psychology, University of Umea S-90187 Umea, Sweden.
Duarte Costa Pereira	Faculty of Psychology, University of Porto Rua das Taipas, 76, 4000 Porto, Portugal.

Wolfgang Prinz	Dept. of Psychology, University of Bielefeld P.O. Box 8690, 48 Bielefeld, W. Germany.
Patrick Rabbitt	Age and Cognitive Performance Research Centre, University of Manchester Oxford Road, Manchester M13 9PL, U.K.
Andries Sanders (Editor of Acta Psychologica)	Institut für Psychologie, RWTH Aachen Jägerstrasse 17/19, D-5100 Aachen, W. Germany.
Eckart Scheerer (Editor of Psychological Research)	Dept. of Psychology, University of Oldenburg Postfach 943, 2900 Oldenburg, W. Germany.
Klaus Scherer (Representative of European Science Foundation)	Dept. of Psychology, Justus-Liebig-Universität Giessen Otto Behaghelstrasse 10, D-6300 Giessen, W. Germany.
Maria Sebastian	Dept. of Experimental Psychology, Facultad de Psicología Campus de Somosaguas, 28023 Madrid, Spain.
Philip Smith	Dept. of Psychology, University of Reading Building 3, Earley Gate, Whiteknights, Reading RG6 2AL, U.K.
Gerhard Strube	Max-Planck-Institut Leopoldstrasse 24, D-8000 München 40, W. Germany.
Patrizia Tabossi	Instituto de Psicologia Viale Berti-Pichat 5, Bologna, Italy.

Carlo Umiltà	Università degli Studi di Parma, Facoltà di Medicina e Chirurgia Via A. Gramsci, 14, 43100 Parma, Italy.
Dirk Vorberg	Psychologisches Institut Gutenbergstrasse 18, 3550 Marburg, W. Germany.
Willem Albert Wagenaar	IZF-TNO Kampweg 5, 3769 DE Soesterberg, The Netherlands.
Johan von Wright	Dept. of Psychology, University of Helsinki Fabianinkatu 33, 00170 Helsinki, Finland.
Gery d'Ydewalle	Faculteit Psychologie 102 Tiensestraat, 3000 Leuven, Belgium.

Student Helpers

Arianne Boon José Kerstholt Anita Venema Sietske Weide	From the Department of Experimental Psychology, University of Groningen, Kerklaan 30, 9751 NN Haren, The Netherlands.

ABSTRACTS (in chronological order)

Monday, 9th September

1. Patrick Rabbitt:

How can we discuss individual differences in terms of functional models for cognitive processes?

Very many recent studies have shown that individual differences in efficiency at simple perceptual motor tasks can be well predicted by differences in attainment at brief, pencil and paper tests of performance I.Q. As a result of this Cognitive Psychologists have, at long last, been forced to consider how best to articulate concepts derived from Psychometrics in terms of functional models for decision processes, long and short-term memory and perceptual-motor control.

We discuss results from a series of 10 experiments investigating correlations between verbal and non-verbal I.Q., test scores on 2 Reaction time tasks, 2 tasks investigating intermediate term memory, 1 task investigating improvement over 5 days practice at a series of complex video-games, 4 tasks investigating efficiency of retrieval from long-term semantic memory and 1 task examining long-term (4 and 8 weeks) retention and recognition of word lists. These results allow us to demonstrate some methodological pitfalls in examinations of correlations between I.Q. test scores and performance at common laboratory tasks. They also allow us to propose a preliminary taxonomy of ways in which psychometric models for "I.Q." and functional models for cognitive skills may be related to each other.

2. Carlo Umiltà and Mario Liotti:

Egocentric and relative spatial codes in S-R compatibility.

Two hypotheses are available to explain those S-R compatibility effects that arise from the correspondence, or lack of correspondence, between the spatial codes that define the relevant S-R pairings. The first attributes compatibility to the right-left coding of stimulus position in relation to an egocentric reference axis, like the body midline, the head midline, or the vertical retinal meridian. The second points to the position of the other stimulus as the external reference location according to which the position of the command stimulus is coded relatively as right or left. In the literature the two hypotheses are considered to be mutually exclusive, in the sense that only one type of coding would be instrumental in yielding compatibility effects. On the contrary, the series of experiment reported here showed that stimulus position is coded independently in both egocentric and relative terms and which type of code is effective in bringing about compatibility depends on the task requirements and the time courses of the two coding processes.

In Experiment 1 the instructions requested the subjects to make use of the relative codes, whereas in Experiment 2 they had to employ egocentric codes. Accordingly, in the former there was a compatibility effect attributable to the coding of the relative positions, whereas in the latter the compatibility effect depended on the coding of the egocentric positions. In Experiment 3 500 ms were allowed to form the egocentric codes before stimulus presentation, while the relative codes could be formed only upon stimulus presentation. The results showed a compatibility effect due to the relative positions. In Experiment 4 the experimental manipulations were such that the egocentric codes could be achieved only after the stimulus was shown, while there were 500 ms to form the relative ones before its presentation. The results showed a compatibility effect due to the egocentric positions. In Experiment 5 the subjects were given 500 ms to achieve both types of codes before stimulus onset. This time no compatibility effect was found.

It was concluded that compatibility effects can be brought about by both egocentric and relative coding of stimulus position. However, the only type of coding that proves effective is the one that takes place after the appearance of the command stimulus, that is during the stage of response selection.

3. Donald Broadbent:

Structures and strategies: Where are we now?

Psychological opinion tends to sway between a view that people are almost infinitely flexible, and a view that there are definite and unchangeable fundamental mechanisms which always work in the same way and which set limits of flexibility. A popular compromise has been to suppose that 'lower' mechanisms are as determinate as typewriters, while

'higher' ones are unanalysable, autonomous, and perhaps even beyond scientific enquiry. The point of view in this paper favours a different compromise; very early and elementary operations are thought to be done in different ways depending on the goals and experience of the person. On the other hand, both they and more complex operations have definite limits both to the number of operations that can be performed simultaneously, and to the extent to which they can hold temporary representations, working memories, of similar types. There is therefore a good deal of constraint, which allows laws and principles to be laid down. Yet, there is also a degree of strategic flexibility in the operations actually performed, that goes further than would be allowed by theorists of a different persuasion. These points can be illustrated by summarising a number of recent experiments on attention; showing that findings thought universal when one paradigm is used tend to change as soon as the paradigm is altered. The selective operations of attention are not due to unalterable mechanisms; nor does there seem to be convincing evidence of universal and invariant computation of all aspects of the input. What is computed, briefly, is the minimum necessary to perform the task before the person.

Tuesday, 10th September

4. Hans-Georg Geissler:
Task-dependent processing of visual information.

Evidence is presented suggesting the participation of fast deductive and temporally quantized component processes in human classification of visual information. From several sources minimum operation time below 10 ms are estimated. Task-dependence of classification is analysed in terms of serial inference from flexible memory codes representing the categories relevant for decision. Different paradigms are used to identify different levels within a hierarchy of the serial processes involved for category identity in a same different task with Garner type patterns micro-operation times near the assumed minimum duration are obtained. In verbally labelled classification operation times are found to reach an upper limit.

tized processing seem to be supported of otherwise unexplained phenomena of "seeming redundancy".

5. Herbert Heuer:
Visual discrimination and response programming.

Reaction time studies of visual discrimination and motor programming are separate areas of research with different traditions and interpretational frameworks. While models of visual discrimination give little attention to the programming of appropriate responses, models of motor programming in their turn give little attention to the processing of signals. Such a separation is acceptable if the respective processes are independent. Data are presented, however, which suggest that processes of signal discrimination/identification and response programming are intertwined in at least some situations. These data can be accounted for by a reinterpreted and slightly modified accumulator model.

6. Claus Bundesen:
Visual attention: Race models for selection from multi-element displays.

A choice model for selective report from briefly exposed visual displays (Bundesen, Shibuya, & Larsen, 1985) is further investigated and related to a general class of selection models called "independent race models". The choice model relates performance to the number of targets and distractors in the stimulus display by the way of the Choice Axiom. In race models, the selection process is viewed as a race between items toward a store of limited capacity such that the first K items entering the store are the ones selected. If processing times for individual items are independent and exponentially distributed, selection occurs strictly in accordance with the Choice Axiom. Moreover, for virtually any independent race model, the asymptotic selection probabilities under uniform expansion of the set of items in the display satisfy the Choice Axiom. Thus, the choice model for visual selection is implied by the exponential race model, and it works as an approximation for almost any independent race model.

7. Dirk Vorberg:
Modelling interference and facilitation in recognizing pictures and words.

In a Stroop-like task picture-word pairs are to be recognized. Naming and categorizing latencies are studied as a function of the stimulus-onset-asynchrony between picture and word. The results are described in terms of a quantitative model based on interacting parallel channels.

8. Joachim Hoffmann:
Selective attention and semantic coding.

The mechanisms of selective attention ensure the automatic focussing of information processing capacity on relevant information. In other words: the actual relevance of information determines the allocation of attention which in turn, suggests that the determination of relevance has to be a pre-attentional process.

An analysis of selective attention has to consider the following phenomena: A stimulus can be processed faster if we attend to it, but, unattended stimuli can also be semantically identified. There are processing performances which are nearly independent of the amount of attention allocated to them, and stimuli can be effective even if we cannot remember their processing. A theoretical framework in terms of sub- and superthreshold activation processes in semantic networks is proposed to account for such phenomena.

One specific prediction of this theoretical approach is, that in processing simultaneously presented stimuli, attention will be automatically attracted by the stimulus which most quickly activates a concept above a threshold. This prediction is met in several experiments: our subjects have to detect a prespecified object among a set of objects, they have to name one of several presented objects, and they have to ignore distractor objects in a flanker test. It can be shown that objects which are conceptually identified the fastest, are also those which automatically attract processing capacity. In this way, attention is semantically controlled.

9. David Navon:
Is attention allocation sensitive to word informativeness?

When two words are presented simultaneously, where one of them is predictable from the context and the other one is not, it is conceivable that attention is captured by the expected word (cf. Flowers et al., 1981), or that attention is directed to where it is presumably needed more, namely to the unexpected word. To explore these possibilities we used a paradigm in which the subjects' primary task was to report either or both of two words presented simultaneously, and attention was measured by the performance of a secondary task of detecting small notches in a letter stroke. This measure of attention was found in a preliminary test to be sensitive to attention manipulated by means of an arrow pointer.

Word predictability was manipulated by the compatibility of the words with an incomplete sentence presented immediately before them. The sentence was semantically congruent with either one of the words or neither of them. The mode of word report (partial vs. full) was manipulated between subjects. No difference was found in either mode between the notch detection scores in the expected and the unexpected words. Neither of those scores differed from the score for trials in which both words were unexpected.

The results are interpreted as suggesting that at the time of selection, or attention allocation, cues about word identity are not yet available.

10. Dominic Bouwhuis:
Addressing schemes in lexical memory.

The left-to-right organization of our alphabetic script reflects the sequential nature of the spoken word. This property has also been underlying the belief that visual word recognition proceeds from left to right, especially with respect to the relatively slowly developing articulatory code. But the sequential point of view is also central to models that posit morphological or syllabic decomposition and other parsing procedures.

Though sequential processing seems natural for spoken word recognition, recent theoretical results by Marcus (1983) show that strict

temporal/sequential processing may not be necessary for that purpose.

Inasmuch as the human eye can process visual information in parallel, sequential processing in word recognition seems less pressing. It is also regarding the variability in eye fixation position difficult to warrant proper conditions for this to occur. A number of experiments will be reported that indicate that visual processing seems to occur all over the world simultaneously. It appears that subjects can almost just as well recognize incomplete words that are exposed from right-to-left as those exposed from left-to-right. Experiments of this kind show also a dissociation in the processing of existing words and pseudowords. It will be argued that nonwords induce a different addressing procedure which is more speech-like than that of real, well-known words.

11. Jacques Mehler:
Some results in infant and adult psycholinguistics.

Wednesday, 11th September

13. Georgije Lukatela:
Loci of phonological effects in lexical access for a phonologically shallow orthography.

A major question in research on English word perception concerns the use of phonology in the mapping from the printed word to its internal lexical representation. In this paper it is argued that because of its greater simplicity and regularity the Serbo-Croatian örthography constrains the reader to a phonologically analytic strategy. Because of the bi-alphabetic nature of the Serbo-Croatian orthography - in particular, the fact that phonologically ambivalent stimuli can be easily produced out of letters that have the same visual form but different pronunciation - it becomes possible to orthogonalize visual and phonological effects. Exploiting the ambiguous characters and the fluent bi-alphabetism of native readers of Serbo-Croatian it is hypothesized as follows: If lexical access and naming proceed with reference to the phonology, then a morphophonologically ambiguous letter string might be expected to extend response and/or naming time relative to a letter string that receives a unique morphophonological representation. Indeed, it has been found that naming and lexical decision on morphophonologically ambiguous letter strings is relative slow and prone to errors. Moreover, it has been found that associative contextual priming reduces dramatically both the latencies and error rates of the ambiguous words. A larger association effect occurred for morphophonologically ambiguous words than for unique words. The effect was larger when the prime and target in a pair were written in the same rather than in different alphabets. On the contrary, the same association effect occurred for visually degraded unique words and for words dispayed intact. These results support the phonemic-encoding hypothesis.

13. José Morais:
Phonetic awareness and reading acquisition.

Three issues will be dealt with: the relationships between phonetic awareness and reading acquisition, the nature of the cognitive capacities

that make phonetic awareness possible, and the eventual influence of phonetic awareness on perception and comprehension of language.

The data on the relationships between phonetic awareness and reading acquisition support an interactive view. For most people, it is the confrontation with learning to read in the alphabetic system that elicits phonetic awareness. On the other hand, phonetic awareness is a critical factor of success in learning to read.

Indications about the nature of the cognitive capacities that underly phonetic awareness may be obtained by inspecting the development of phonetic awareness, by correlational studies and analysis of errors. Two capacities at least seem to be required: capacity to ignore meaning and focus on the sound properties of speech, and capacity of segmentation.

The lack of phonetic awareness does not imply that phonetic processing does not take place during the perception of speech. Recent data indicate that speech perception includes a stage of extraction of phonetic features regardless of whether or not the subject is able to segment speech into phones explicitly. However, phonetic awareness may influence the relative weight of perceptual outputs and expectancies of meaning in the identification of the linguistic stimulus.

14. Giovanni Flores d'Arcais and Robert Schreuder:
Semantic activation in object recognition.

To recognize and to name an object is one of the most common operations in daily life. The psychological processes underlying such an operation, however, are still to a large extent unknown to cognitive psychology. Our paper intends to offer a small contribution to the knowledge of these processes.

Our work assumes that to recognize and to name an object requires the access to a particular conceptual representation. This conceptual mode is seen as a complex structure within which several semantic components can be isolated. On the basis of previous work on word recognition (Schreuder, Flores d'Arcais and Glazenborg, 1984; Flores d'Arcais, Schreuder and Glazenborg, 1985), our work has tried to isolate in particular two classes of components, namely a class of "perceptual" components, which includes characteristics corresponding to perceptual components of objects, and a class of more abstract components, for example of functional type. For example, the representation of the object

"table" might include conceptual information of the type "having an horizontal surface", "mostly with four legs" etc. (all this information being based on perceptual data), and also "can be used to put objects on it" (functional characteristics), "is part of house furniture", etc.

In the present study we have investigated some aspects of the process of activation of the conceptual representation which is necessary for recognizing and naming an object. We will report on the results of some experiments on the naming of simple objects presented with contour pictures. The process of activation has been studied by examining the effects of facilitation on the naming of an object in a picture called upon by the previous presentation of the picture of another object. In other words, we have used a priming paradigm in which two objects are presented in succession, which could be related by the fact of belonging to the same class (e.g. violin and saxophone), or by a relation of perceptual similarity only (pipe and saxophone), or as being similar perceptually and belonging to the same class (violin and guitar), or completely unrelated (violin and pipe). The experiments have examined the effects of the presentation of the first object on the time necessary to initiate the denomination of the second. The results of the experiments have shown the existence of different activation patterns of the semantic components in the conceptual representations corresponding to objects.

15. Patrizia Tabossi:
Lexical access and word interpretation.

It is an established fact that words can receive specific interpretations depending on their context of occurrence. This is obviously the case with ambiguous words. But the phenomenon is far more general and, as many experimental studies have shown, it also applies to general terms (e.g. CONTAINER), verbs, and simple unambiguous words, such as PIANO (Barclay, Bransford, Franks, McCarrell, and Nitsch, 1974; Anderson and Ortony, 1975; Garnham, 1979).

While the phenomenon is well-known, it is less clear how the lexical interpretation gets established during the process of language comprehension. In recent years, a great deal of psycholinguistic research has concentrated on the issue of when context becomes effective so as to affect lexical interpretation. Current views hold that context becomes effective only after all information about a lexical item has been retrieved

from the mental lexicon (Swinney, 1979; Onifer and Swinney, 1980).

However, two experiments on the access of ambiguous words challenge this view. They show that prior sentential context affects access to specific aspects of the meaning of an unambiguous word, both facilitating the retrieval of those aspects that are contextually pertinent and inhibiting the retrieval of those that are contextually irrelevant.

Two further experiments also investigated the effects of context on the access of ambiguous words. Again, the results showed that contextual effects can be obtained, provided that contexts biases one reading of the lexical ambiguity and does so by rendering salient one aspect of the meaning of that reading.

Overall, these findings strongly suggest that lexical access is a context sensitive process. They also pose some constraints accounts of how prior context affect the recognition of a word in language comprehension.

16. Danièle Dubois:
Lexical representations and sentence comprehension.

The question of the mental lexicon, of its structure, its interaction with the "knowledge of the world" and its "access" in language processing seems a very important topic in contemporary cognitive psychology.

In the present paper, we propose to illustrate some aspects of those general questions specified on the investigation of:

- typical representations and the lexicon,
- instanciation as a concept-driven (top-down) process in the course of sentence comprehension.

1) Typical representations and the lexicon.

In a first production task, we collected examplars of 22 semantic categories (referring to natural artefactual objects and to human activities), under two different instructions (a "verbal" one contrasted with an "imagery" one). The distributions of the different exemplars thus obtained lead to discuss:

- the generality of the existence of a prototype for every category investigated,
- the differential contribution of the lexical organization to categorical structuration.

A second production task contrast 3 "typical" exemplars with 3 less typical ones for each of the 22 previous categories, on lists of properties produced for each of them by another set of subjects. A "lexical" and a "semantic" analysis of each set of properties across the different types of exemplars and different categories is discussed supporting the hypothesis of a cognitive rather than linguistic determination of categorical organization.

2) Typical representations, lexicon and sentence comprehension.

We investigated IF, HOW and WHEN typical representations are involved in sentence comprehension and more precisely in the INSTANCIATION process. Different on-line experimental paradigms were run using the same linguistic material. The variability as well as invariance in sentence processing give empirical evidence to the following arguments:

- The different experimental paradigms lead to different task-oriented "levels of comprehension" (even the "lexical access" is a complex and task-dependent process).
- Language comprehension is conceptual dependent: When a full semantic interpretation is required by the task, it involves concept-driven and top-down processing.
- Cognitive organizational principles, such as typicality, "drive" the instanciation process.
- These cognitive principles are not specifically linguistics.

17. Philip Johnson-Laird:
Discourse and models.

This paper presents a theory of how discourse is understood, compares this theory to others, and gives some supporting experimental evidence. The theory assumes that the first stage of comprehension consists in constructing a superficial linguistic or "propositional" representation. This is then used, along with general knowledge, to construct a representation of the most likely state of affairs (a mental model) described by the discourse. The two stages are, of course, interleaved, and the interpretation of a specific sentence will be influenced by the model of the previous discourse. The theory predicts that three main factors should affect comprehension: the surface form of the sentences should influence the construction of the propositional representation, the referential expressions and their ordering in the discourse should affect

the ease with which co-reference is established, and the relation of the information in the discourse (its plausibility) to general knowledge should affect the integration of propositional information within the model. Experiments on the interpretation of discourse, recognition memory, and the detection of inconsistencies, bear out the importance of these factors.

Thursday, 12th September

18. Gery d'Ydewalle and G. Haentjens:
The case of recall hypermnesia: The growth of recall over time.

In recent years, a number of publications have shown a growth of recall as a function of retention interval: With longer retention intervals, more and more items are recalled. Obviously, this rather unexpected increase of recall only emerges with some stimuli in loosely-defined experimental settings. Eight experiments were carried out in order to unravel the necessary conditions for obtaining hypermnesia. In a first series, the possibility of generating internal (semantic) cues at the retrieval stage was investigated in its relationship with hypermnesia. The findings from a second series of studies leave no doubt that the depth of processing at the encoding stage is the critical factor and explains sufficiently the observed recall increase. A number of other potential confounding variables were partialled out. The importance and implications of hypermnesia for a general theory of information processing and retrieval will be outlined.

19. Asher Koriat and Rachel Melkman:
Depth of processing and memory organization.

The talk focuses on the general idea that the organization of information in memory may vary depending on the depth of processing during input, as well as on the conditions for retrieval. A distinction is outlined between two types of memory organization. Conceptual organization implies a hierarchical structure in which items are grouped according to

a principled taxonomic system (e.g., cow - horse). Associative organization, in contrast, is based on direct links among the members of a group (e.g., cow - milk). Two studies examined the propositions that conceptual relations may require more effort to be encoded during learning and more effort to be utilized during remembering than associative relations.

In Experiment 1 a list of 28 words was used, which could be grouped into 14 conceptual categories or, alternatively, into 14 associative categories of two words each. The words were presented under either shallow or deep encoding conditions. Increased depth of encoding resulted in increased conceptual clustering but had little effect on amount of associative clustering. Similar amounts of associative and conceptual clustering were observed during early output positions, but conceptual clustering tended to increase with recall trials suggesting that it might depend on the establishment of a retrieval scheme. In Experiment 2, after memorizing a list of words, subjects recalled the words either with or without the requirement to perform a secondary task while recalling. Relative to the undisturbed recall condition, the secondary task condition indicated stronger associative than conceptual clustering. The results were seen to suggest that associative relations may be more automatically encoded during learning and more automatically activated during remembering than conceptual relations, and that different types of memory organization may become salient under different attentional conditions.

20. Lars-Göran Nilsson:
Motivated memory.

A question of potential interest in theory as well as in practice in the area of human learning and memory is whether it is possible to motivate individuals to extend their cognitive resources to a performance beyond a level obtained without such additional motivation. A series of four experiments were conducted with the purpose of studying the role of motivation (operationally defined as large monetary rewards) on memory performance. In all four experiments the subjects were motivated to improve their performance prior to test. The data of all our experiments gave clear support to the notion that subject cannot extend their cognitive resources beyond the level of performance they are motivated for

simply by accepting to take part in a memory experiment. The results of these experiments are discussed in relation to theories of motivation and theories of memory.

21. Michael Eysenck:
Cognitive factors in anxiety.

It is of both theoretical and practical importance to establish the salient differences in cognitive functioning that exist between anxious and non-anxious individuals. In a series of experiments on both normal and patient populations, we have explored the ways in which threatening and non-threatening information is processed by the anxious and by the non-anxious. In both the visual and auditory modalities, anxious individuals show a sensitising pattern of selectively processing threatening information rather than non-threatening information, whereas non-anxious individuals show the opposite defensive pattern. A similar pattern has also been obtained in a study concerned with the initial interpretation of homophones having a threatening and a non-threatening meaning. We have suggestive evidence that at least some of these selective processing effects occur at pre-attentive levels, and this finding (if confirmed) may be of relevance to an understanding of 'free-floating' anxiety.

11. Jacques Mehler:

Some results in infant and adult psycholinguistics.

Students of speech processing aim at uncovering the invariants in the acoustic signal that result in higher level processing. The speech signal is processed, words are recognized, words are concatenated into sentences and sentences are the basic units of language.

In my laboratory we have studied extensively the way in which the acoustic signal is handled. Most of our studies have been carried out in French but some of our findings are valid for processing in general. In French, the syllable plays a critical role in mediating word recognition. It is the first element that is used during lexical access. Processing of monosyllabic words is difficult to distinguish from processing of syllables. Polysyllabic words are recognized after analysis of the first syllable. Our studies have shown that it is important in studying speech processing to make the phonological structure of the language in which the studies are conducted explicit. Indeed, language differences have been demonstrated in some of our studies. Syllables, valid for processing French, play a different role in English. English, and probably any language that relies on contrastive stress, relies on longer acoustic segments to arrive at lexical stress. Oxytonic languages rely on syllables. It is uncertain what the units are for languages relying on tone, first syllable accent, etc.

Almost all the experiments in our laboratory use the monitoring technique. However, other experimental procedures have been used to corroborate the validity of the monitoring studies. For instance, the click detection technique yields very similar results to the phoneme monitoring technique for processing of subject and object relatives.

Our laboratory has also explored the structural organization of the lexicon. In English it has been reported that open and closed class items are represented in different lexicons, one which is accessed through a frequency sensitive research, while the other through a frequency independent search procedure. In French, open and closed class words are accessed through frequency sensitive search procedures. These results will have to be re-evaluated in the light of recent reports claiming that the frequency effect is the result of response buffers rather than of accessing mechanisms.

Lastly, we have used some visual presentation methods to explore how the syntactic geometry of sentences is constructed in time. We used the RSVP method in conjunction with the presentation of probes. Words in sentences were sequentially presented, one at a time, on a computer screen (ten words in less than one second). After all the words had been presented the probe or probes were displayed, the interval between the probes and the presentation of the words being an independent variable. These studies have demonstrated that RSVP with probes uncovers processing that cannot otherwise be observed.