Arnhem, 16-06-2025

Beste Acta Psychologica,

In 1964 werd het volgende artikel in Acta gepubliceerd:

> Calis, G.J.J., J.M. Sterenborg and F.J. Maarse, 1984. *Initial microgenetic steps in single-glance face recognition*. Acta Psychologica 55, 215--230.

Als reactie hierop publiceerde Bachmann in 1989 het volgende artikel:

> Bachman, T. 1989. *MICROGENESIS AS TRACED BY THE TRANSIENT PAIRED-FORMS PARADIGM.* Acta Pychologica 70, 3-17.

Bachmann gaat in op het werk van Calis en komt met een aantal bezwaren en een tweetal nieuwe experimenten en een Pilot.

Nu in 2025 is er ruimte om meer aandacht te geven aan het artikel van Bachmann, omdat ik meegewerkt heb aan het artikel van Calis in 1984.

Verder heb ik het artikel van Bachmann in het Nederlands vertaald en al aangevuld met vragen en opmerkingen. Zie de vertaling: *Artikel Bachmann 1989 in Acta Pychogica vertaald NL* (zie bijlage 1)

Daarna heb ik het experiment 1, de pilot en het experiment 2 nader onder de loep genomen. In een artikeltje: *Bespreking Arikel Bachmann 1989 Acta Pychologica* (zie bijlage 2).

Dit laatste artikel wordt afgesloten met de titel: *Concluderend* waarbij ik weer terugkeer naar het werk van Gé Calis en met mijn eigen onderzoek dat het werk van Calis ondersteunt.

Misschien is dit voor de redactie voldoende materiaal om een her publicatie over dit onderwerp te overwegen?

Groeten van
Jan Sterenborg

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Bijlage 1: Artikel Bachmann 1989 in Acta Pychogica vertaald NL
Bijlage 2: Bespreking Arikel Bachmann 1989 Acta Pychologica
Bijlage 3: Oorsronkelijke publicatie Bachmann. *OCR-Bachmann*

Abstract

In the article by Bachmann (1989), in response to the studies of Calis (1981, 1984, 1985), Bachmann describes two experiments to rectify the objections he has with the studies of Calis. Now both authors show the gap that exists between the physical and theoretical explanatory frameworks. Bachmann approaches things more physically and Calis more theoretically. In his argument, Bachmann gives Calis a lot of credit with his remarks about masking and the postulated microgenetic process. This article is intended to clarify this struggle. Does Bachmann succeed in putting wood-cutting arguments on the table to support his own approach or can I, as a student of Calis, make the differences clear and shed more light on Calis' approach. An approach that, in my opinion, bridges the gap in the spirit of Merleau-Ponty and Stephan Strasser.

Between Bachmann and Calis

Author Information

J.M. Sterenborg 27-03-1949

Studied Psychology (1971-1978) at the Catholic University Nijmegen, later called the Radboud University Nijmegen under prof. dr. Franz Mönks.

My graduation thesis was titled: Direct perception and facial recognition in children. Supervised by Dr. Gé Calis.

I worked with Dr. Gé Calis on the repetition of his dissertation research. This led to a scientific article in Acta Psychologica in 1984:
Calis, G.J.J., J.M. Sterenborg and F.J. Maarse, 1984. Initial microgenetic steps in single-glance face recognition. Acta Psychologica 55, 215--230.

In the mean time I worked out the approach of Calis and did some independent research wich lead to the publication in 2020 of a book: Individual Psycological Diagnosis. In this book a summary of the appraoch of Calis with some minor methodological changes and an extension to the field of traumas and fears.

The same research approach of Calis for both the cognitive field and the field of fears and traumas can be covered, so that psychology now stands on two legs and can be called a real science.

In Bachmann's Article (1989)[1], he discusses the work of Calis (1981, 1984, 1985) and tries to rectify omissions in Calis's approach by means of two experiments and a pilot.

Experiment 1

- Personal unknown portraits of 8 male persons
- 2 intensities
- Two stimuli offered one after the other: Stim1 and Stim2
- Presentation time 3 ms per portrait
- The luminance of the flash for the second stimulus was reduced relative to the first by the neutral density filter (30% transmission).
- SOA's equal to 20, 40, 70, 110, or 160 msec. Between Stim1 and Stim2

This experiment involves two *visual* stimuli: portraits of personally unknown men.

The first stimulus is offered clearly and the second less clearly.
The presentation times of Stim1 and Stim2 were flashes of 3 msec.
Five SOA'S were used: 20, 40, 70, 110, 160

Descriptively, we see in the three graphs Fig. 1-3, that in short SOA's the first stimulus has the upper hand and as the SOA gets bigger, the second stimulus takes over.

How can we explain this?
In my opinion, we can describe this phenomenon purely sensory/physically logically:
First stimulus is brighter than the second stimulus, so with a small SOA, the first stimulus will prevail over the second stimulus. As the SOA increases, the effect of the first stimulus will decrease and the observability of the second stimulus will increase.
A purely physical logic as the basis for explaining the observations.
In other words, forward or backward masking are superfluous explanations here.

It would be interesting to take the same intensity for the first and second stimulus and then see where the cross-over point lies.

[1] Acta Psychologica 70 (1989) 3-17

Discussion Pilot

Difference with experiment 1, which was a *visual* experiment, now a pilot in which two modalities are used: *visual* and *auditory*. And the sunject has to fulfill two tasks: *recognizing* visual stimulus and answering the question: was the beep offered *before* or *after* the stimulus to be recognized?

Bachmann:
One important common prediction is thus the tempora) speed-up of the subjective arrival of the second stimulus after the first one, as compared to the subjective latency with the single-stimulus control.

For testing of this possibility we at first performed an informal pilot study with one of the subjects of experiment 1.

In random sequences we presented trials with ordinary two-stimulus successions at SOA equal to 80 msec, and control trials with single presentation of the second stimulus.

Both conditions were employed 64 times[2].

On half of the trials in both control and main conditions the subject heard a click in the earphones, which actually preceded the (second) visual stimulus by 80 msec; on half of the trials the click followed the (second) stimulus by 80 msec.

The subject's taks was to judge whether the click appeared first relative to the perceived portrait-face, or followed it.

The results showed that with two-transient exposure the portrait was perceived as preceding the click 40 times while with single-portrait control condition this happened only 12 times (from the total 64).

This outcome indeed points to the possibility that one consequence of the MG process, initiated by the first stimulus, is the speed-up of the subjective moment of the arrival of the second stimulus - the signals carrying information of the second input use' the activation evoked by the first input and/or reach the subjective state (completed MG), sufficient for recognition, earlier, because the

[2] Bachmann mentions 64 pairs, there are probably 56 pairs because you don't offer the same face, one after the other, twice.

preliminary genera! computations have been completed already on the first input.

These observations were the starting-points for our experiment 2.

Elaboration of experiment 2:

Number of pairs: 64
Number of single presentations: 64

Pairs combinations of 8 different faces
Single presentations: choice of 8 faces (same faces as the pairs)

In pairs of SOA of 80 ms.

In 32 of the presented pairs a beep before the second stimulus in pairs and in single presentations before the offered stimulus.
In 32 of the presented pairs, a beep after the second stimulus in couples and in the case of single presentation, a beep after the stimulus offered.

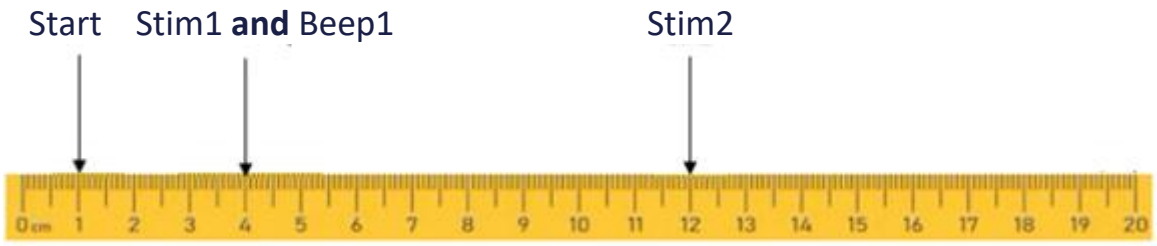
The beep sounded for pairs 80 msec. *before* and *after* the second stimulus.
The beep was 80 msec before and after the stimulus in single presentation.

In pairs, we see that the beep that precedes the second stimulus exactly follows after the first stimulus has been offered. (SOA = 80 msec and beep 80 msec prior to second stimulus)!

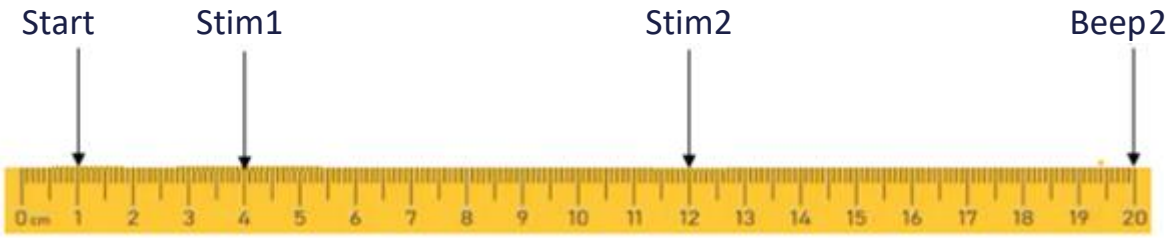
Visual stimulus presentation time: As in experiment 1 (3 msec.)?

The different possibilities on the timeline:

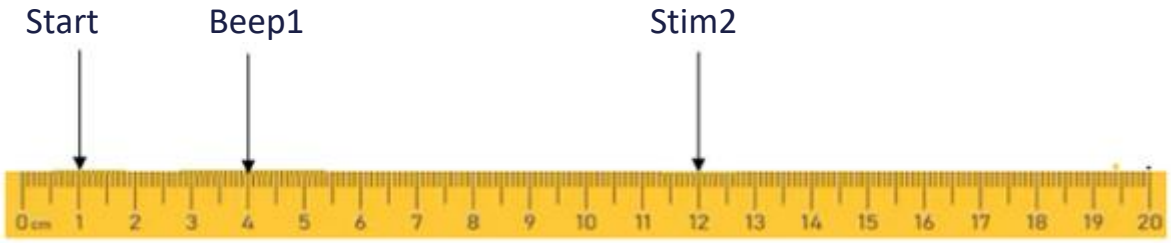
A. StIm1 and Stim2, SOA = 80 msec.
   Beep1 at -80 msec. by Stim2

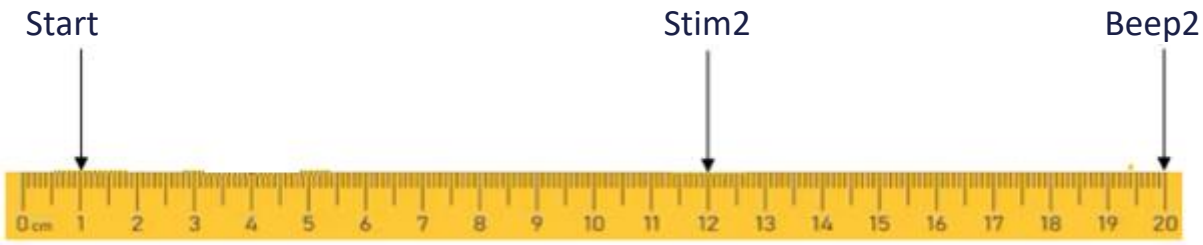


B. StIm1 and Stim2, SOA = 80 msec.
   Beep1 at +80 msec. by Stim2



C. Single presentation: Beep before and after Stim2





The question in C's second situation is: shouldn't the start signal be placed at 9 cm?

It is not clear from the description in the article when the Start moment falls for the second situation in the single presentation. In fact, for all situations it is not clear.

The coincidence in situation A. of Stimulus 1 and Beep 1 raises an additional problem: to what extent does this coincidence suppress the perception of the visual and/or auditory signal? Or does this coincidence make it an extra wake-up call for the two coinciding tasks that need to be performed? Recognizing the person on the offered picture and determining whether the beep was in front of or behind the presentation of the picture.

Have incorrect identifications also been looked at? For example, that the first stimulus was recognized and that the beep was registered as a pre-registration?

The prediction according to Bachmann is that in the pair condition there is an *acceleration* of the microgenetic process, i.e. the process is activated by the first stimulus and therefore the perception result will increase for the second stimulus. In the case of the single offerings, the acceleration due to the first stimulus is missing and the result will be lower.

How does Bachmann want to demonstrate this with the proposed pilot?

Bachmann:
The results showed that with two-transient exposure the portrait was perceived as preceding the click 40 times while with single-portrait control condition this happened only 12 times (from the total 64). This outcome indeed points to the possibility that one consequence of the MG process, initiated by the first stimulus, is the speed-up of the subjective moment of the arrival of the second stimulus - the signals carrying information of the second input use' the activation evoked by the first input and/or reach the subjective state (completed MG), sufficient for recognition, earlier, because the preliminary genera! computations have been completed already on the first input.

These observations were the starting-points for our experiment 2

One problem with the above described pilot study was that it is not certain whether the subjects in fact judged the click relative to the first visual stimulus or to the second one -they cannot for sure distinguish them with 80 msec SOA.

Thus we had to choose stimuli which can be successfully and easily discriminated on the visual basis, but representing the same general class of the stimuli with the same size as well as employ a shorter and a longer SOA to control the temporal separability of the stimuli.

Discussion Pilot study

Motivation for this pilot based on experiment-1 findings is not yet entirely clear to me.

I have indicated a number of inaccuracies. If you describe an experiment or pilot, the starting point should actually be that someone else can repeat the experiment. Too much speculation in between is not conducive.
Matters are also mentioned that are not clarified or are themselves wrong. For example, the number 64 is mentioned in the pilot but should be 56.
The numer 24 in the article of Bachmann is not substantiated.
Furthermore, data are missing and that is difficult for the overall picture.

And it should not be underestimated that in this pilot we work with 2 modalities: *visual* and *auditory* signals are introduced and the task is increased: *the second stimulus must be recognized and it must be indicated whether the beep has been heard before or after the stimulus to be observed*. Quite a difference from the first experiment.

Furthermore, the coincidence of Stim1 and Beep1 in Situation A is a problem. Unfortunately, this problem recurs in Experiment 2 at SOA = 75 where Stimulus 1 practically coincides with Beep 1 again. And that explains the mentioned ambiguous interaction when discussing the results of experiment 2?

The question that arises is: what is the effect of this coincidence on the perceptibility of the Stimulus and of the sound signal, the Beep1? The condition with SOA = 150 msec ensures that the two stimuli and beep signals are more separated in time and therefore more perceptible. And this makes the analysis easier.

In summary, the pilot study raises the following questions:

- Two modalities are used: visual and auditory.
- The task is made more difficult: one must visually recognize the letter H and further indicate whether the Beep came before or after the second stimulus offered, or before or after the single stimulus.
- The coincidence of Stim1 with Beep1 is a problem, as outlined.
- In my opinion, the number 64 should be 56. No pairs are used with two of the same identities.
- Where is the raw data, which would be helpful to do other analyses yourself?
- The Start position is not described.

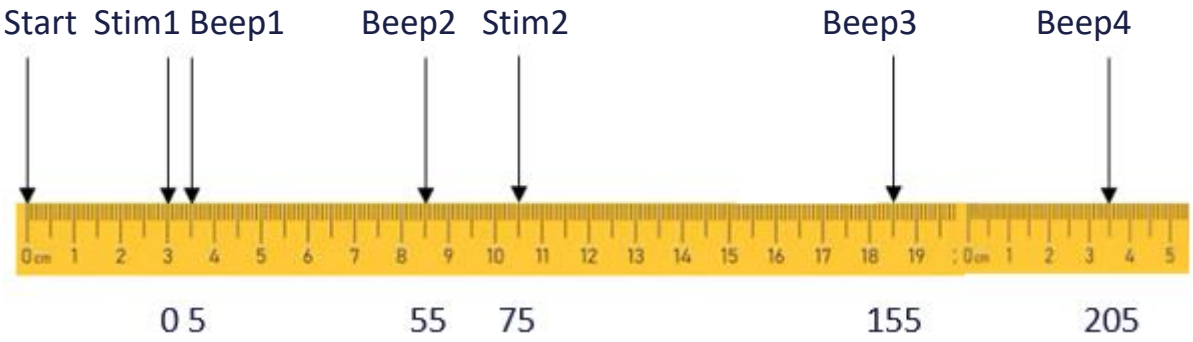
On to Experiment 2

Bachmann's article ends with: Unfortunately, *we have not yet crossed the Rubicon with this article, but our hope is that we are no longer on the bank either.*

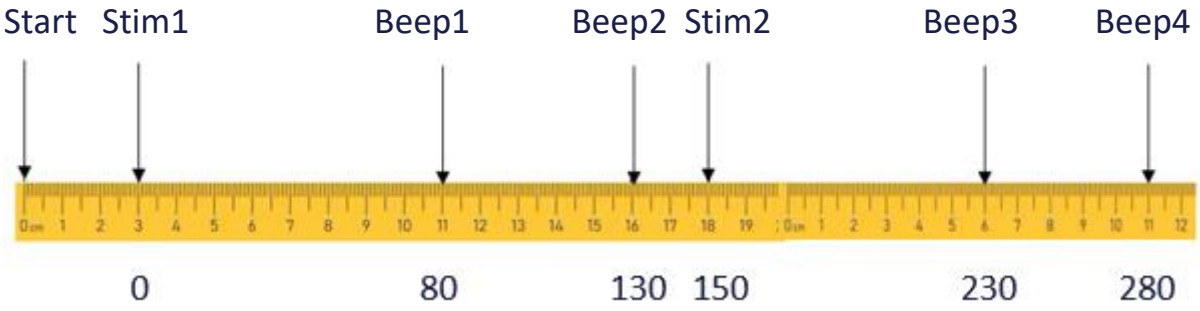
Bachmann gives a lot of support to Calis' arguments, but where will this lead to?

Three situations for experiment 2:

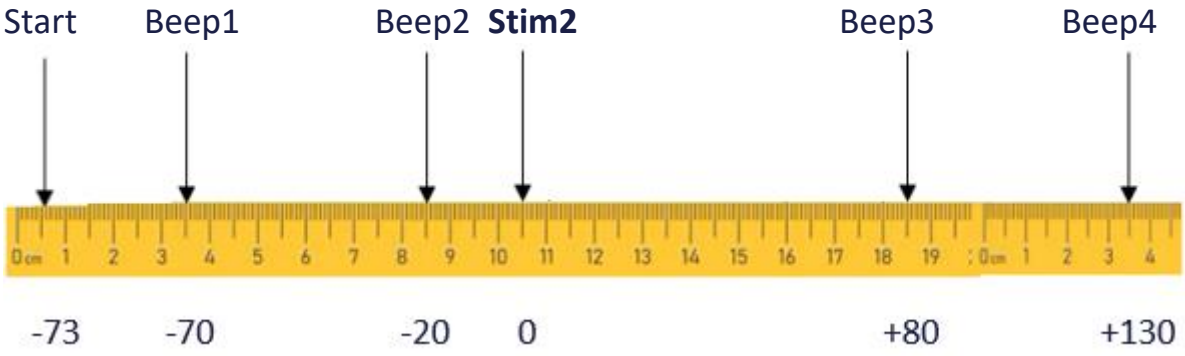
1. SOA = 75
   Beep1 = -70 of Stim2, Beep2 = -20 of Stim2,
   Beep3 = + 80 of Stim2 and Beep4 = +130 of Stim2



2. SOA = 150
   Beep1 = -70 of Stim2, Beep2 = -20 of Stim2
   Beep3 = +80 of Stim2 and Beep4 = +130 of Stim2



3. A single stimulus THV with the four beeps



Summary:

2 x SOA
2 x intensities for the first stimulus BXR
4 x beep options around the second stimulus

2 stimuli: first stimulus BXR and second stimulus THV as a pair
3 intensities BXR 2 and 0.2 and THV 0.1

We repeat this pair 24 times with the three conditions = 24 x 2x 2 x 4 = 384 offers.

Thus, each subject received 24 X 2 X 2 X 4 = 384 studies in the paired trigram condition that were randomly mixed with the 384 control studies of exposure to single (THV) trigrams.

The task of the subjects was to assess whether the central letter (H) of the trigram THV preceded or followed the auditory click.

Results:

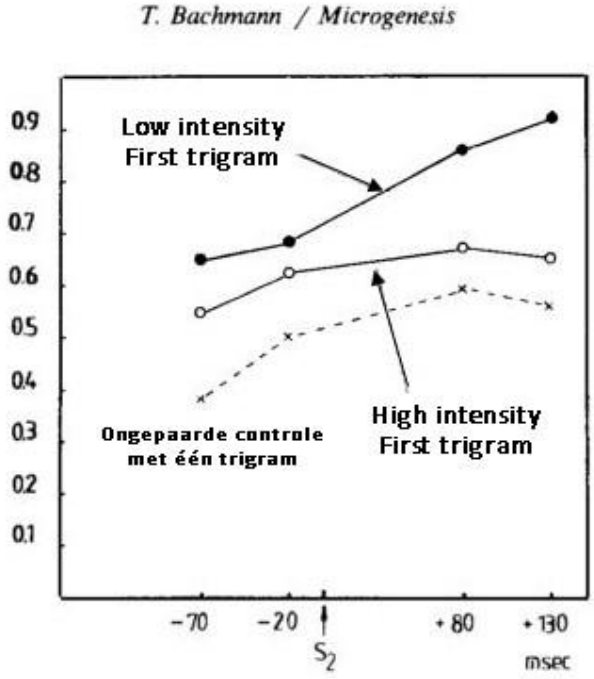


Fig. 4. *Means of the proportion of 'letter before click' responses as a function of the interval between the click and the second, reference, trigram (THV) for different first-trigram (BXR) intensities in the paired-trigram conditions (solid lines), and for the unpaired, single-trigram control (dashed line), averaged for four subjects and two SOAs between the trigrams in the paired condition (SOAs of 75 and 150 msec). The tempora! position of the second, reference, trigram marked by S, and an arrow.*

Why not more pictures e.g. of SOA 75 and 150 separately?

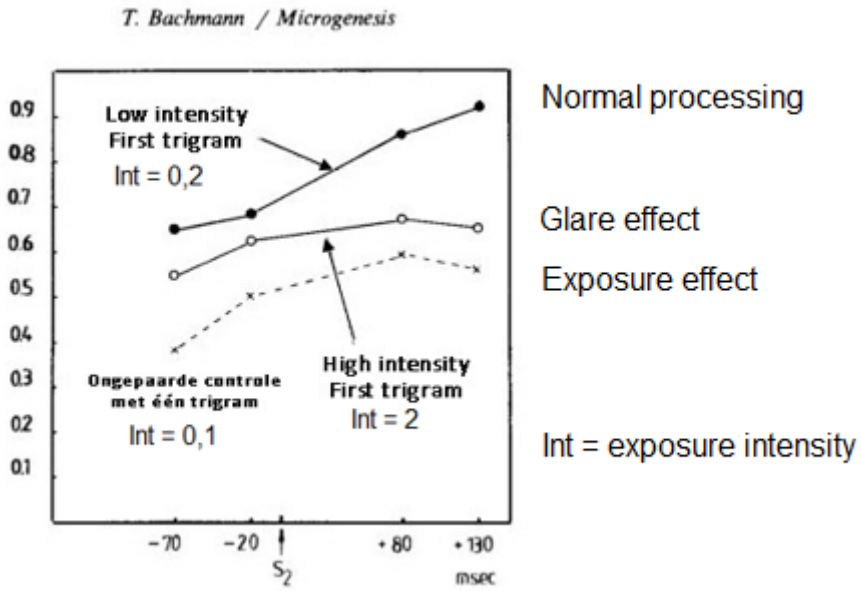


Fig. 4a. Global description of results

Bachmann:

Taken together, the results of experiment 2 seem to show that in microgenetic buildup of the visual image the preceding transient visual event may speed up *the succeeding microgenetic process of the following, spatially coinciding second visual stimulus of the same general class.*

It appears to be actualized considerably sooner as compared to its presentation in isolation.

This in turn refers to the possibility that in MG[3] the energetic activation-mechanisms and/or algoristic preprocessing mechanisms may necessarily play an important role.

The MG is initiated by the first stimulus and given that the following stimulus arrives within the same single MG cycle - usually less than 200-300 msec - it will be using the activation and/or preliminary computations evoked by the preceding input and hence will be actualized earlier.

[3] MG= MicroGenetic process

In single, unpaired exposure its actualization arrives after the time-consuming activation accumulation process or algoristic preprocessing have had enough time to elaborate its specific sensory data.

Discussion experiment 2

Bachmann has a name in the research world: if we look at his list of publications, we cannot ignore him. But if you know the work of Gé Calis, there is still a lot to be noted about Bachmann. Calis was also complex in his approach, but never careless. And with Bachmann we see that things are missing in the description and that raises many questions.

On the other hand, it is a nice article that shows Bachmann's struggle to a territory that is not familiar to him, the area in which Calis operates.

What is the real argument for doing experiment 2?
I can guess. Bachmann wants to get a clearer picture of how the microgenetic process works. Where does it start and where does it end? Is there an acceleration in the process due to the presence of an initial stimulus? Why the emphasis on the results: stimulus 2 before the beep?

My own analysis of Fig. 4. is at Fig. 4a
The reasoning is as follows:
In this experiment, we are dealing with 3 different light intensities:
Stim1 value 2
Stim1 value 0.2
Stim2 value 0.1

Logic already explains to a large extent why the dotted line in fig. 4 and 4a is at the bottom of the figure. This Stim2 was the worst visible.

The line above that with the luminance value 2 for Stim1, you would expect it to be the best visible (as Bacchmann remaks), but the picture shows that it doesn't work out that way. Personally, because the brightness of Stim1 is *20 times stronger* than that of Stim2, I would argue that the subject is blinded by the stimulus Stim1, causing the perception result to drop.

The top line shows that Stim1 with luminance 0.2 best matches the luminance of the target stimulus Stim2 which has the value 0.1.
I would describe this situation as *the normal course of events*: the processing of Stim2 can build on the information obtained on Stim1 in a more natural way, in a microgenetic sense, and there are few physical disturbances to be found.

It is a pity that no single condition has been recorded with Stim2 luminance = 0.2 then we would have had a better comparison with the High intensity situation in fig.4 . My expectation is that those lines would roughly coincide.

Why does *low intensity* stand out above the others in fig. 4?

Here it is a pity that we do not see a difference in the results between the SOA = 75 and the SOA = 150 conditions.

In the SOA = 75 condition, just like in the pilot study, Stim1 and Beep1 almost coincide and that could be an extra "wake-up call" for the microgenetic process. And so is Beep2, although the effect is about the same as that of Beep1.

At SOA = 150, Beep 1 and Beep 2 are separated from Stim1 in terms of time and the attention is more focused on *what is to come*: Stim2. This situation has a more natural character.

Added together, the two SOA's provide a more advantageous picture, as can be seen in the graph.

Why even better results with Beep3 and Beep4?

Both with SOA = 75 and with SOA = 150 there are no disturbances to report to Stim2 in advance, i.e. these are also the most favorable conditions to perform both tasks: recognizing the letter H and determining whether Stim2 is preceded by Beep 3 and Beep 4. The times after Stim2, Beep3 at 80 msec and Beep4 at 130 msec give the subject more time to process Stim2 calmly. And then 130 msec. turns out to give an even better result than 80 msec.

Why there is asymmetry in time between the beeps before Stim2 and after Stim2 is not substantiated.

In conclusion:

The assumption of a microgenetic process is here, with the top line in Fig. 4, the most likely explanation in my opinion. There are no physical disturbances, so the process does not have to be constantly adjusted. Bachmann's statement that talks about an *acceleration* of microgenetic process does not seem adequate to me. The microgenetic process determines what has been built up when the test is finished. And on that basis there will be an answer.

If this accumulated information is a lot or specific, you will get many good answers regarding the situation offered. Where there is little build-up, you get more wrong answers or less good answers. This has little to do with acceleration, but more with the conditions for a good or bad answer. More correct answers is not faster but better. In this case, Bachmann interprets the results physically and not process-wise.

The great thing about Gé Calis' approach is that through his research approach you can determine whether a test subject uses a certain concept or form property in *immediate* perception.

You have to understand that the normal concepts Calis uses have been expanded with a *sequence* indication.

For example, the concept of gender with the two extremes Man and Woman, in Calis:
Man, *followed in time*, by a Man,
Woman, *followed in time*, by a Woman
as a condition Gender+.
And secondly:
Man, *followed in time*, by Woman,
Woman, *followed in time*, by Man
as a condition Gender- .
As a concept GenderSequence (SV in dutch)

If this condition differentiates into a worse presentation time condition, then the conclusion is: *this person uses a gender concept in direct perception*.

In the static analysis, there is then *a first-order significant interaction*.

A fact has been established! A very big achievement by Gé Calis.

Now I also have a few comments about the approach of Calis (1984).

Calis assumes personally known people to be recognized for the first stimulus *and* the second stimulus. The problem that arises is with regard to the Identity and discussions arise about what is or is not taken from the first stimulus to the second. Calis corrects this with static formulas based on probability and thus corrects any possible identity advantage.

Now I didn't like that methodologically, all kinds of discussions afterwards.

For example, Bachmann writes that one of his objections is the use of personally known stimuli and he proposes to use personally *unknown* persons in experiment 1, who were known to the test subjects through a short training.

Now I have solved this Gordian knot as follows: As the first stimulus always a personally unknown person and as a second stimulus a personally known or through training known person.

The task is then to identify the *second* known person in the order of the presentation.

The whole discussion of whether identity information has been included from the first stimulus is thus off the table. The only thing that is interesting is: what information you take with you from the first to the second stimulus. In any case, it can't be identity info.

Furthermore, it is important for the subjects to know who to identify, so familiarity with the persons offered as a second stimulus is only an advantage, the subject has a clear and focused task to fulfill.

Furthermore, it is methodologically better to limit the presentation time for the second stimulus. This benefits the differentiation of the desired concept or form-property. If the test subject uses the concept or the form property in direct observation, the concept will differentiate in the condition with the lesser time offer and a fact has been established. Static analysis then says a significant main effect as far as the presentation time is concerned and a first order significant interaction between presentation time and intended concept.

If the test subject *not* uses the concept or the form property in direct perception, the concept will *not* differentiate in the condition with the lesser time offer and another fact has been established!

And so the research I carried out was set up[4]. And in doing so, I confirmed Calis approach.

Results of own research[5]

*We see a significant main effect in terms of presentation time order (ABTV) and then a significant interaction between presentation time order and gender order (ABTV*SV).*

ANOVA - Antwoord

Cases	Sum of Squares	df	Mean Square	F	p
ABTV	6.613	1	6.613	56.151	< .001
SV	0.612	1	0.612	5.201	0.025
ABTV ✻ SV	1.012	1	1.012	8.598	0.004
Residual	8.950	76	0.118		

Note. Type III Sum of Squares

Fig. 5. Static analysis, with Anova[6], of the person to be examined E.

ANOVA - Antwoord

Cases	Sum of Squares	df	Mean Square	F	p
ABTV	6.050	1	6.050	52.851	< .001
SV	1.250	1	1.250	10.920	0.001
ABTV ✻ SV	0.800	1	0.800	6.989	0.010
Residual	8.700	76	0.114		

Note. Type III Sum of Squares

Fig. 6. Static analysis, with Anova, of the person to be examined R.

The idea of *immediate* perception goes back to Merleau-Ponty and Prof. Dr. Stephan Strasser[7] .

With his approach, Calis bridges the gap outlined with the new resources.

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[4] These studies have been published in the booklet: *Individual Psychological Diagnosis*.
[5] Research data are avialable.
[6] The data analysis was made by the free program of the University of Amsterdam, JASP https://jasp-stats.org/
[7] https://gezondheid-info.jouwweb.nl/in-het-nieuws/strasser/merleau-ponty

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