Fresh Spirit of Research

Young academics and professors prevail at the Collaborative Research Center „Information Structure"

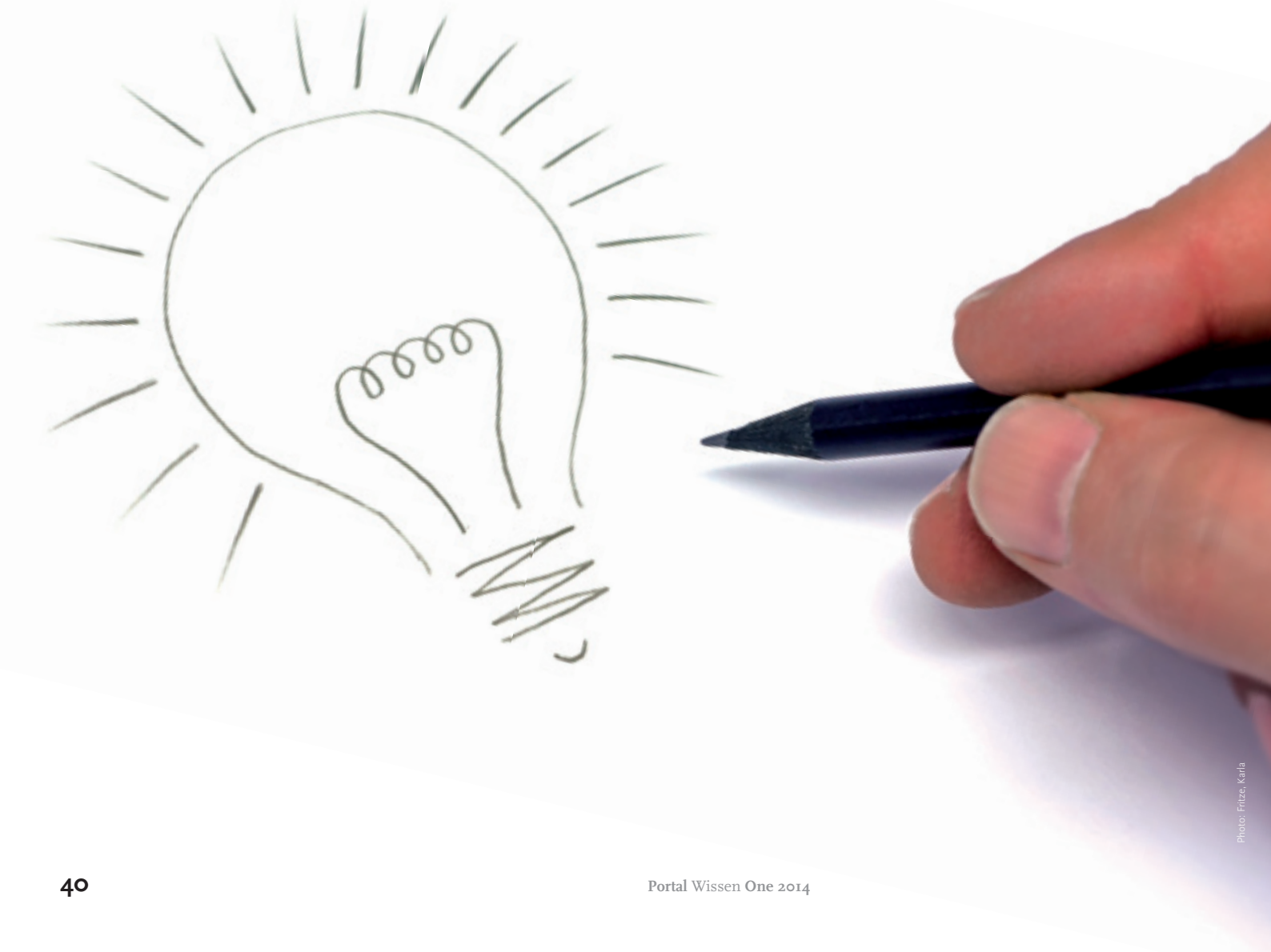

Photo: Fritze, Karla

"Business is good," says Prof. Malte Zimmermann, smiling contentedly. The "business" is the Collaborative Research Center (SFB) "Information Structure", which Zimmermann, a linguist, heads and for which he is a spokesperson. For years now, academics at the University of Potsdam, Humboldt-Universität zu Berlin and Freie Universität Berlin have approached this topic from different angles that gave the research partnership its name. It has taken up the basic concept of the German Research Association (DFG). The idea is to enable innovative research projects across institutes, disciplines and faculties with the help of more than 200 existing collaborative research centers.

It was not a matter-of-course that Zimmermann would lead this long-term research project given that he was still only a junior professor when they applied for the third funding period at DFG in 2011. Even the German Research Association was initially skeptical of this but later approved. Zimmerman says he felt a bit uneasy when he assumed his post. "If there had been disputes with experienced colleagues, I would not have been in a good position. Fortunately, there was a highly collegial spirit in Potsdam, so there were no problems at all." Zimmermann is not the only young academic who assumed responsibility at the SFB at an early stage. "Many sub-projects are led by colleagues who have not habilitated," stresses Zimmermann. He knows the importance of this work for his own career and those of his young colleagues. "Having such a leadership position on your resume definitely means something."

Although there was not a stampede for this post, Prof. Zimmermann was nevertheless very grateful for the support he received. This encouragement might have come from his previous work at the Humboldt-Universität zu Berlin. When he moved to Potsdam he was already familiar with some Berlin projects and people, which facilitated a close collaboration between Berlin und Potsdam promoted by the SFB.

The University of Potsdam, as the applying institution for the SFB, manages the association. In Potsdam, the linguistics and German departments play a decisive role at the SFB. Altogether 53 scientists in 19 projects with a common academic interest in information structures research at the intersection of pure linguistic subject matters and other cognitive domains like attention control and memory.

But what is behind this rather cumbersome term 'information structure'? A simple sentence might illustrate the basic concept: Leon and Luise are talking with each other. Leon says to Luise, "Peter is going to Potsdam tomorrow." Depending on what information is new to Luise, Leon will stress the person, time or place. By using a certain accentuation, he tries to structure the information. Information structure deals with how to process verbalized information to make it appropriate to the state of attention and knowledge of the participants in the discourse. This is also called information packaging. When examining the structuring of information, three aspects are particularly theoretically interesting: the interaction of the relevant formal levels (phonetics, phonology, morphology, syntax, semantics, the choice of lexical means and the composition of texts), the general cognitive processing of the information structure and a cross-linguistic typology for information structural devices. "On the one hand, our question is a linguistic one because we ask for the linguistic means to package information. On the other, they are generally cognitive because the non-linguistic elements refer rather to the discourse's object, to background knowledge and context," Zimmermann explains.

"The project shows not only the bridge between language and cognition but also between Potsdam and Berlin."

The four-year project – and thus one of the shorter ones – of Prof. Katharina Spalek from the Humboldt-Universität zu Berlin and Prof. Isabell Wartenburger from the University of Potsdam illustrates the intersection between verbal and non-verbal elements. "It shows not only the bridge between language and cognition but also between Potsdam and Berlin," Wartenburger says, introducing her project. "There is an intensive exchange between colleagues but eventually each team works on

THE SCIENTIST

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Photos: Fritze, Karla

its own sub-discipline." Together with her colleagues, the researcher, a junior professor when she assumed the project management, analyzes the effects of contextual information on processing language. Wartenburger and Spalek proceed from the observation that context cannot be communicated only linguistically, for example by using a certain sentence or sentence structure, but also by visual context or stimuli. This Potsdam sub-project deals with the processing of object clauses, i.e. clauses that begin with the accusative case. In their study they used for instance the sentence, "The owl [acc.] paints the hedgehog [nom.] in the park". You would normally introduce a simple statement with the subject and say, "The hedgehog [nom.] paints the owl [acc.] in the park." The researchers wanted to find out experimentally how context influences the processing of this atypical word order in the listener.

INTEGRATED GRADUATE SCHOOLS OF COLLABORATIVE RESEARCH CENTERS

The goal of the Integrated Graduate School is to promote scientific independence and qualification of PhD students at collaborative research centers. This will make collaborative research centers more attractive for young academics.

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While the subjects were sitting in front of a monitor and listening to a number of sentences beginning with an object and subject over a loudspeaker, their brain activity was recorded using electroencephalography (EEG). Atypical word order irritated the subjects; brain processing became more complicated. Using an introductory sentence or a visual stimulus facilitated processing. Eventually they compared whether the preceding contextualizing sentence, "What about the owl?" had the same effect as a visual stimulus, for instance a picture with a

Test person with an EEG cap.

Photo: Neurocognition of Language Group

hedgehog and an owl. "We want to find out whether visual context can influence understanding information structure by controlling attention," says Wartenburger. She finds it plausible that context placement also works visually but no studies have been done so far. The tests that have been conducted show that arranging verbal and visual conditions in a comparable way is more difficult than expected.

If they manage to prove the assumption that visual context really does minimize processing problems, the results could be translated into practical application like in the therapy of stroke patients with speech disorders (aphasia). "We know that aphasia patients have problems with these object clauses. They often wrongly interpret these object-initialized clauses," the Potsdam researcher explains. Whether these project findings will be relevant for therapy and ultimately for everyday communication has to be examined in due course. For a start, Prof. Wartenburger and her staff will continue to back up their assumptions with scientific evidence over the remaining two years of their project.

"We want to examine if it is also possible to implement the understanding of information structures visually."

The SFB has already gained academic recognition, Zimmermann explains. "I think the SFB's work has already been successful because a uniform terminology in the international research on information structure had not existed beforehand. When someone talked about focus or topic, you never knew whether it meant the same. The SFB has considerably contributed to a uniform usage. Now they say: 'We do it like the Potsdam people.'"

The first-ever analysis of many languages with regard to information-structural phenomena is also an important empirical achievement of the SFB. During the first stage of funding, 16 languages were classified in a large-scale project. Among them were Australian, various African and Central American languages with the aim of preparing a comparable linguistic corpus. The researchers also somewhat successfully identified cross-lingual trends. "As opposed to German, very few languages use focus accentuation to structure information. Our initial hypothesis was that these languages accentuate differently," says Zimmermann, who took part in this project himself. "We, therefore, assumed that accentuation was fundamental to successful communication. One unexpected finding was that some languages do not do this or do so optionally."

"There was a big project that classified 16 languages worldwide."

The SFB "Information Structure" ends in June 2015, but that does not make its current director melancholic. "Twelve years are enough to plough through a theme. After that it is time to head for new shores."

SOPHIE JÄGER

Figure: Commissioned by the Collaborative Research Center „Information Structure"