

ACADEMIA

COGNITIVE MISERS, COGNITIVE SPENDTHRIFTS

Prof. Edward Nęcka, a cognitive psychologist from the Jagiellonian University and Vice-President of the Polish Academy of Sciences, talks about cognitive misers, memory traps, and confusion in a myriad of new technologies.

ACADEMIA: One of your fields of study is intelligence. How does it differ from knowledge?

EDWARD NĘCKA: In the most general sense, intelligence can be defined as a cognitive ability of humans. It manifests itself in various ways, including in the ease and speed of absorbing information. That's why we could say one of the natural consequences of intelligence is usually a high level of knowledge. In addition, such knowledge is more extensive and better organized. Of course, we could find people who are intelligent yet have no knowledge in many fields. A person usually specializes in one field, less frequently in two fields, and remains a layman in other areas. If forced to retrain, however, an intelligent layman will be able to do so faster and more easily. In other words, knowledge is an approximate, indirect indicator of intelligence. This is why some intelligence tests in fact test the level of knowledge.

As we acquire knowledge, do we also become better at analyzing information?

This ability is a sign of the efficiency of what could be described as "the mind's engine" – if it works like



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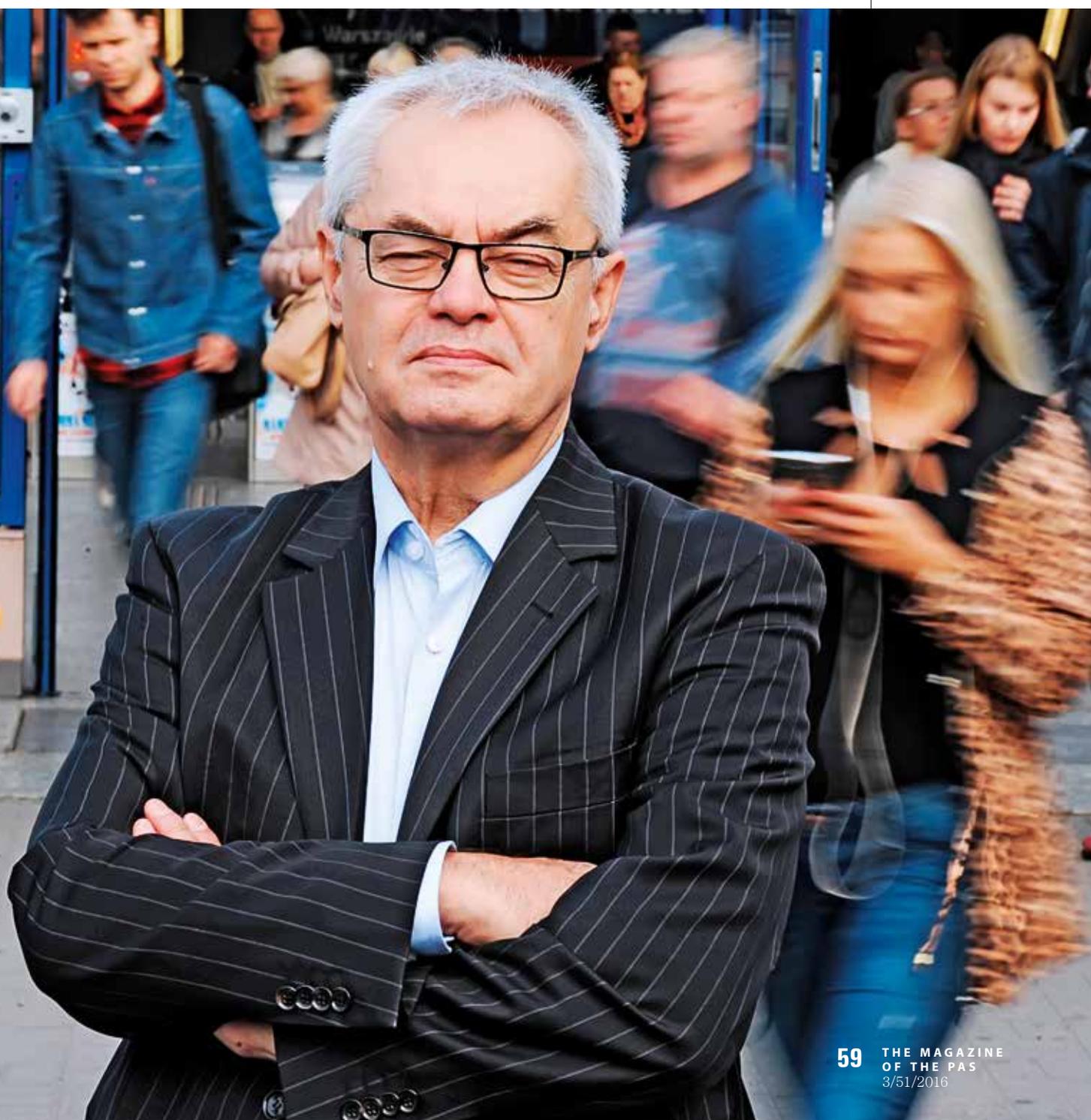
a well-oiled machine, analytical thinking is easier and more profound. Knowledge is not very useful here. Of course, it can be used to formulate farther-reaching conclusions, as a springboard, say for learning other languages. In essence, however, the level of analytical thinking and its efficiency, speed, and accuracy are all results of intelligence.

What about understanding reality? We often meet people we consider very intelligent, but they can barely understand the reality around them.

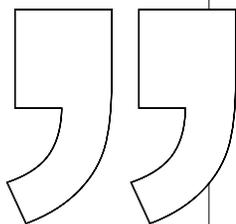
Intelligent yet stupid?

Exactly so.

Let's start with understanding. It involves incorporating new pieces of information into what we already know, or translating what is happening around us, what we read, what we can see and hear, into our picture of the world. In order to do so, we use such tools as analogy: we associate something with something we already know. We can also use such tools as classification. Intelligence, of course, helps us in two ways. First of all, it helps broaden our knowledge, so our understanding is easier, richer, and multifaceted. This means we can make many different classifications or draw many analogies. Secondly, intelligence



helps us understand things. Understanding is a difficult cognitive process that is faster and easier for intelligent people. At the same time, however, intelligence doesn't make us immune to understanding in a way that bears no relation to reality. It could be said that people who are intelligent yet have a dogmatic personality style tend to be even more dogmatic. If the way someone perceives the world is completely at odds with the reality, then this person adds facts to this picture by understanding them in such a way that all individual elements fit together, even though someone else might consider such understanding as an aberration. Intelligence is a very treacherous tool, because it can additionally lead us astray.



Intelligence doesn't make us immune to understanding in a way that bears no relation to reality. In fact, it is a treacherous tool.

Does this mean that such a person may easily believe in conspiracy theories?

Not just believe in such theories but even create and elaborate them. That is one of the properties of the human brain. Pursuing philosophy or mathematics is merely a side effect of its activity. The most basic task of the brain is to enable humans to survive and reproduce, to pass on their genes. It is guided by the motives, emotions, and needs of humans. These are absolute priorities, whereas the truth ranks second or even third. If intelligent individuals opt to arrange their world according to a specific model, say a conspiracy theory, their brains will manage superbly, better than the brains of people who are less intelligent.

Does this mean that the laziness of the brain, its reluctance to waste energy on philosophical considerations, will always prevail?

For now, we are talking about the impact of important emotional or social needs on reasoning and thinking. Boosting or highlighting one's own importance may be a lot more significant than the need to strive for the truth. A similar mechanism governs the need to protect important values, also patriotic or even nationalist values. Everyone has certain needs. The trouble is, how powerful are they? Once a need is activated, it dominates cognition.

As for laziness, there is a theory in cognitive psychology that rests on the concept of the human mind

as a "cognitive miser." According to this theory, the human mind does only what it has to, nothing more. It is satisfied with the simplest explanation, the first explanation that is available. It seeks no further explanations. If it can opt not to do something, it will opt not to. If it can take shortcuts, it will take them. If it can avoid calculations and make rough estimates instead, it doesn't calculate. Such a mechanism was described very well by Daniel Kahneman in the book *Thinking, Fast and Slow*. Fast thinking is the thinking of a cognitive miser, someone who is lazy to do anything.

Human beings, however, are dialectic creatures in that they experience a conflict of various contradictory tendencies. In addition to being cognitive misers, humans are also curious about the world. This need to get to know the world and learn is usually associated with creativity rather than with intelligence, but it is present in every human being. Scientists who study animals stress that humans are one of the few species that remain curious all their lives, until they die. Cats and dogs are very curious when they are young, but become less and less so as they grow. On the one hand, we have a need to discover, to confront what is new. On the other one, we take a step back – why would I bother to do something, if I don't have to? When these two approaches clash, sometimes the former wins out, sometimes the latter; sometimes this depends on the area – a person can be a cognitive miser at work and curious about the world in private life.

Does this mean that we can fight against our lazy brains, but we need to want to do so?

There must be a stimulus, a new need. For example, stereotypes and prejudices are the most dangerous manifestations of brain laziness. "We know what black people are like," someone might think. But if such a person sees an extremely intelligent African American, like President Obama, he or she will experience a conflict – maybe not everyone is like that, and if so, then maybe this is a stereotype? Such a person then starts processing these data, wondering what this is about. Unfortunately, this process is sometimes very bizarre: as the saying goes, every anti-Semite has his favorite Jew, someone he respects.

Another reason behind the battle against the cognitive miser may be boredom. It forces us to look for new intellectual stimuli so that the mind's engine can start working at full throttle.

Doesn't the brain worry about wasting energy?

No. Studies show that regardless of whether the brain does something very difficult or nothing at all, it uses a very similar amount of energy. It is a lot of energy, anyway – the brain uses at least 20% of the body's energy, despite accounting for only 1.5% of total body weight. Whether idle or busy, the brain is active in more or less the same way; it only switches from one structure

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to another, for example from the structures that control emotions to the structures that are engaged in reading or lying on the sofa and watching series. Paradoxically, the mind's engine is not fond of doing nothing. For that reason, humans may ponder the meaning of life for no reason at all, or wonder if there is a number larger than infinity. But they may also start devising conspiracy theories. Unfortunately, the human mind, once set into motion, tends to do both good and bad things.

Let's get back to the issue of needs. Some Poles have recently displayed a tendency to flaunt their patriotism, for example by wearing T-shirts with the symbol of "Fighting Poland." Has something happened to our collective intelligence or does the reality we live in prompt us to reveal this special love of our country?

As a layman in the field of sociology, I can say that certain social changes take place very quickly and very easily. Not so long ago, those who were proud of their beliefs, regarded by other Poles as at least controversial due to undertones of nationalism, would not display such views, because there was no acceptance of such opinions and no favorable political climate. So this situation may be a result of the fact that they no longer feel ashamed or that certain attitudes are taking shape. If they are unhappy with their situation, their social standing, if they're frustrated and suddenly someone appears and tells them that there is a conspiracy, there are elites, people, and groups that are scheming, they will believe that. And such people will deny others everything, including patriotism and membership in the national community, so their patriotism will become nationalistic. That is the psychological explanation for the emergence of Nazism in Germany. Of course, we need to keep things in proportion when drawing such comparisons, but the mechanism is very similar.

What can we do to stop that?

It is easy to pass judgment, more difficult to find remedies. But we can surely say that we should not give up. We should remember that in the countries where such ideologies prevailed, they were believed to be so ridiculous, so stupid that they stood no chance of spreading. For that reason, a great responsibility rests on members of the elite: scientists and journalists.

But what can we do to convince a person that perceives reality in a specific way and believes in simple explanations?

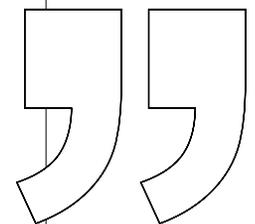
That's a question about social engineering. I believe that we should show such a person that there are other explanations, other answers to nagging questions. Of course, those who are on the other side will stay there for reasons related to their own dogmatism or conformism. But many people are hesitating, looking for their place. Another thing is that sociopolitical

changes are not restricted to specific individuals; these are generation-specific waves. It appears to me that today's 60-year-olds are a lot more liberal in their views and attitudes than those in their twenties or thirties. On the one hand, age is a risk factor: it is linked to mental ossification and sometimes a slide into conservatism. But a lot of that lingers in those who experienced moral and religious freedom, the counterculture of the 1960s and the 1970s. Where does the radicalism of young people come from? They are immature, they don't remember the Polish People's Republic. But there is also the simple mechanism of rebellion: children are often different from their parents. Maybe the grandchildren will be like their grandparents.

The human mind does only what it has to, nothing more. If it can take shortcuts, it does. If it can avoid calculations and make rough estimates instead, it doesn't calculate.

What is the role of language in efforts to convince those who are looking for answers?

Language plays a huge role. It shapes thinking to a considerable degree, which is evident in disputes over moral and religious issues. For example, the Poles are now talking about abortion, rather than the termination of a pregnancy. Clearly, it is enough to use certain key words in the public sphere for several years, thus changing the language of public debate. After some time, people can't understand that things could be any different. Aside from that, this affects decisions and choices. Who controls the language also controls the minds to a considerable degree. As the Polish national poet Juliusz Słowacki wrote, *"I wish that the nimble tongue/ Could say everything that the mind can think."* Usually, things are the exact opposite: the head thinks what the tongue suggests – the conceptual structures of the language, the meanings ascribed to words. According to the theory of linguistic determinism, the humans think in the way that linguistic categories order them to think. This opens up avenues for skilful social manipulation, social engineering that uses deliberate and consistent names of certain phenomena and problems that are convenient to the manipulator.



Can we do anything about that?

We need to do our job, as the songwriter Wojciech Młynarski wrote in one of his songs.

What is happening to the memory of the Poles? What is happening in Poland is a repeat performance of the past events.

Memory is an extremely utilitarian tool. It is guided exclusively by the cognitive needs of humans. It does not record objective facts. Perceiving memory in terms of records, note taking, and films that are re-viewed in the head creates a mistaken metaphor. Memory is always selective and biased. It matches what happened to a specific story or narrative. In other words, if you are telling a story and a detail does not fit, the brain forgets it or changes it in a way that makes it fit. Another issue is that every human being rewrites his or her life story many times throughout his or her life. Why don't we recognize who we were 20 years ago? Why can't we deny doing or saying something, but we are nonetheless surprised? That's because we have "overwritten" these facts using a new narrative.

So the actor Jerzy Zelnik was right when he claimed there were "two Zelniks."

Yes, he was. As a psychologist, I believe him. Another thing is that I believe that he should have refrained

from lecturing anyone on his moral beliefs. That would have been the honest thing to do.

But let us imagine a person who has a full set of recorded memories of what things looked like in Poland, say from the Gomułka era to the present day, but the current narrative conveys the information that things need to be rearranged; for example, there has been a conspiracy from the outset. In such a situation, a kind of "intruder" could creep into these seemingly objective memories. We have hard evidence from labs that confirms that it is possible to implant false memories in humans.

In what ways?

In one of the first experiments, the subjects were shown a short film of a car accident and asked to describe what they'd seen. They were also asked questions, for example "When did the car pass a barn?" After some time, when the subjects were tested on what they remembered from the film, they were asked if there was a barn in the film. Most of them answered positively, although there was no barn in the film. The mechanism is simple: if the asker mentions a barn, the memory of a barn is implanted. In some experiments, the effect was observed in 20% of the subjects, in other experiments, the figure reached 50%. If we can implant memories of things that have never happened in people, then we can easily "overwrite" an actual event with a different interpretation. In defense of memory, I can say that it does not lead us astray completely – only to a certain extent, by making its content subordinate to ongoing needs.

Prof. Edward Nęcka

- MS: 1977
- PhD: 1981
- DSc (*habilitation*): 1988
- Professor: 1995

A full professor of the Jagiellonian University, he also collaborates with the SWSP University of Social Sciences and Humanities in Warsaw. A corresponding member of the PAS since 2002 and an ordinary member of the Academy since 2012. A member of the PAS Committee on Psychology and several other scientific societies: the European Society for Cognitive Psychology (ESCoP), the International Society for Intelligence Research (ISIR), and the Association for Psychological Science (APS). As a psychologist, his research interests focus on the cognitive mechanisms of individual differences, especially creativity and intelligence. He is currently engaged in a MAESTRO project devoted to the behavioral, cognitive, and neuronal mechanisms of self-control. He has authored and coauthored six monographs and two textbooks as well as 133 articles and book chapters. His most important works appeared in leading psychology journals (such as *Journal of Experimental Psychology: Learning, Memory and Cognition*; *Personality and Individual Differences*; *Intelligence*; *Creativity Research Journal*, and *Frontiers in Psychology*) and edited collections published by reputable publishing houses (such as Academic Press, Cambridge University Press, Springer, Erlbaum, the American Psychological Association). According to "Publish or Perish," Prof. Nęcka's h-index is 19 and his total number of citations is 1,995. He presided over the scientific and organizational committee of the large international conference of the European Society for Cognitive Psychology in Kraków in 2009. Moreover, he co-organized the international symposium "Individual Differences in Cognition" (Kraków, 2006) and chaired several symposiums during international conferences (such as EAPP 2006 and the International Congress of Psychology 2008). He was the dissertation advisor of 29 doctoral students. Ten of his students have obtained post-doctoral DSc degrees (*habilitacja*) and one of them is a professor.

In the context of memory distortions, the flagship example is Poland is the massacre of Jews in Jedwabne. In the early 21st century in Germany, studies were conducted regarding awareness of what happened during World War II. Not only did most of the participants claim they never had any Nazis in their families, they also pictured the postwar resettlements using images from the transport of Jews to the extermination camps – cattle wagons, soldiers with dogs, beating, hunger. Can we ascribe someone else's history to ourselves when we find that convenient?

Nazi Germany started the war, ruined Europe, and murdered millions of people. This was done by the state apparatus, whereas average Germans did not actually see the transports, the killings, the persecution. They were spared that, so they only remember their own history. Sometimes, the history of those expelled was not as tragic as that of Jews, but it was indeed horrifying. That is very difficult to those who were children back then and saw different things. That is their truth. Confabulation protects them from the awareness that horrible things were done in a sense in their name. It is hard to live with such knowledge.

So they picture themselves as victims, say “you did the same thing.” But there is also a different mechanism: many Germans have chosen arrogance and hatred of the Poles and Jews. They simply despise us. And there is one more thing: what we’re talking about right now is collective memory, not individual memory.

But it is possible to manipulate collective memory as well. Is this the mechanism that has been set in motion in Poland?

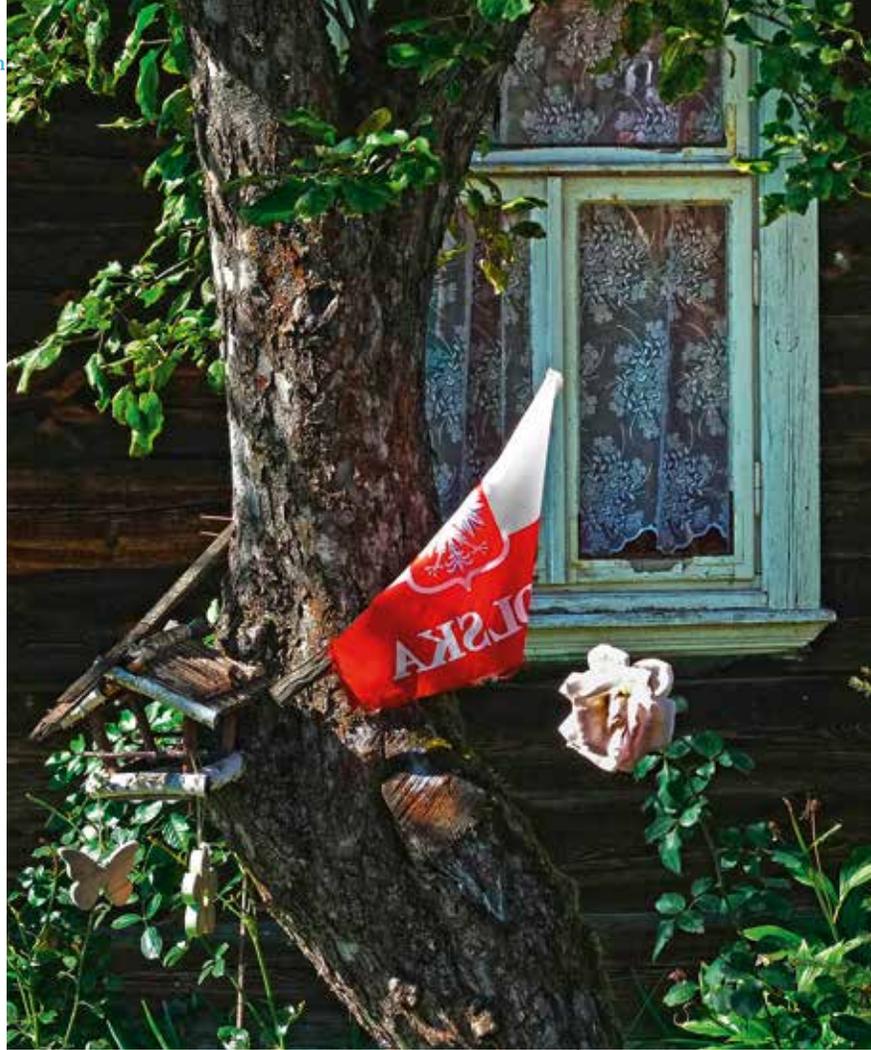
Yes. Some people believe that, as Prof. Andrzej Friszke said, it can be decided for history to be taught differently as well as understood differently. But it is impossible to make such decisions. It is only possible to influence the content of textbooks. But what students are taught in class depends largely on teachers. And there are parents, the Internet, and other sources.

Let’s get back to the present day. We used to know the phone numbers of most of our friends. We no longer do, because we keep our memory in our phones. If we need information, we don’t try to recall it, we simply ask Google. In your opinion, what are new technologies doing to human intelligence, knowledge, and memory?

I’d like to know the answer to this question, too. On the one hand, there are data that show that new technologies have a positive impact on people. For example, some computer games help us develop certain mental skills. This holds true not only for strategy games that make us think but also ordinary shooter games, which improve psychomotor skills. One of the signs of intelligence is neural processing speed, or the speed at which the nervous system works. There are many games that help train working memory, or the ability to store and use several elements for short periods of time. On the other hand, technologies deprive people of many skills, such as mental calculation. In the past, people who went to the market had to be able to calculate prices very quickly. That was very good for the development of the mind. Things look even worse for long-term, semantic memory, or general knowledge. But it needs to be said honestly that everything is happening before our eyes, so it has not been well tested yet.

But studies are ongoing?

Yes. We recently conducted experiments to find out if certain cognitive functions could be enhanced through training. We patterned the experiment on computer games. It turned out they did have a positive impact on cognitive functions, but that did not translate into general skills. This shows that you can improve your attention or your working memory by playing computer games, but your general intelligence will not change. Modifications, if any, will be barely significant and short-lived. Nevertheless, I am more afraid



that people are no longer able to search their memory. They choose the easy way. And this ease is treacherous, because the vast resources available on the Internet may vary greatly in terms of their reliability.

In an August issue of the weekly *Polityka*, Łukasz Wójcik wrote about political ignorance among Western citizens. According to American lawyer Ilya Somin from the George Mason University, this is a result of conscious choice, not stupidity. An example was mentioned: “The knowledge needed to evaluate complicated economic projects is so extensive that, from the perspective of an average voter, it would be extremely inefficient to invest time in acquiring it.”

Yes, people choose ignorance out of desperation. It is impossible to do anything else in such a complex reality. This is where yet another issue comes to the surface: modern media are ruining attention as a skill. It is extremely difficult to concentrate in interactions with these media. When we are looking for information, there are hundreds of things that distract us. We sometimes forget what we’ve been looking for. Carelessness means that the relations with other people suffer, too. And these cannot be replaced by intelligence or knowledge

INTERVIEW BY ANNA ZAWADZKA
AND KATARZYNA CZARNECKA
PHOTOGRAPHS BY JAKUB OSTAŁOWSKI

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