KOÇ ÜNİVERSİTESİ

ISSUE 13 2019

FRONTIER

If there are difficulties to overcome

THE MIND WILL FIND A WAY

To be able to look at reality from different perspectives through **THE BIGGER PICTURE**

Expectations from social media: **THE VARIOUS FACES OF SOCIAL MEDIA MOTIVATED BY THE MIND**

Is it possible to read people's thoughts? **MIND-READING INTERFACES**

What is mind? Is it specific to humans? Is having mind what separates us from other living beings? The answers to these questions have occupied the minds of thinkers since the Ancient Greek philosophers. Defined as the faculty to understand, comprehend and perceive, for some, the mind is the basis of thought and for others, it denotes all kinds of brain activity including emotions and memory. Putting such debates on concepts and definitions aside, mind has played an indisputably major role in the physical and social evolution of humans. Had we not been able to store the knowledge and experiences we gain from our lives in our memory and carry them forward, or share with others our thoughts through language, we would not have been able to achieve humanity's current progress. Thus, we decided to dedicate this issue of *Frontier* to the notion of "mind", which in many aspects is still a subject of much mystery. Our faculty representing various disciplines approached the subject from many different points of view, each in their own expressive way.

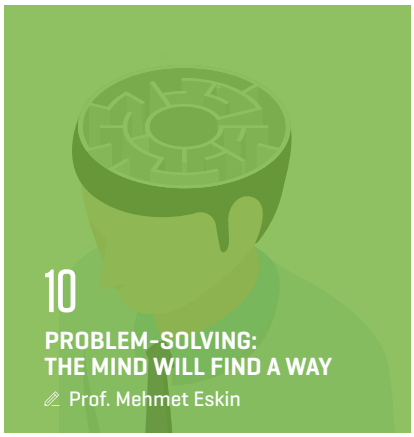
There are close to 3 billion users on social media, and this number increases by the second. People express what they expect from social media through psychological processes directed by their minds. The key question here is: Do our minds determine our standing in social media, or does social media shape our minds? What if we were to say that reading the emotions and thoughts of living beings we encounter is something we do every day, and we do it without placing electrodes in their brains or connecting them to MRI or EEG devices. I recommend that you explore the exciting work done on this process in our Intelligent User Interfaces Laboratory.

Speaking of intelligent interfaces, we know that robots and unmanned intelligent vehicles which communicate with humans, no longer are fantasies in movies. But how will the regime of legal responsibility that arises from the behavior of these intelligent robots be regulated? It is obviously evident that certain principles must already be in place in this regard...

The human mind naturally plays an important role in problem-solving. Coping with difficulties, obstacles, choices, and complexities, overcoming and understanding them is one of the most important skills for all living beings. At all developmental levels, the mind is the most advanced instrument for problem-solving.

As we explore the puzzle of the mind in our 13th issue, I hope your curiosity will also be triggered while reading these articles. As always, we welcome your feedback, so that we can continue to do better.

Prof. Umran İnan, President



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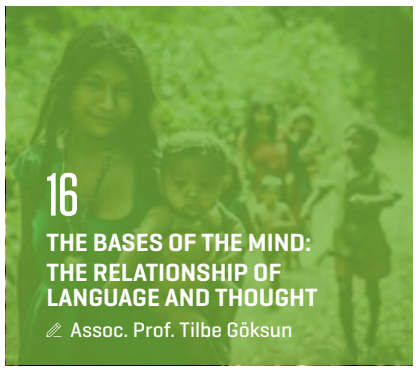

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THE VARIOUS FACES

OF SOCIAL MEDIA MOTIVATED BY THE MIND

The psychological processes guided by our minds determine our expectations from social media and the effects of this platform on our lives.

Asst. Prof. Ezgi Akpınar Uysal / College of Administrative Sciences and Economics, Department of Business Administration

As of 2018, there are approximately 2.62 billion social media users. Every 15 seconds a new user joins social media and the number of users is expected to grow. The average daily time spent on social media is two hours, which means we spend five years of our lives on social media. Time spent on social media is much higher than time spent on eating (three years), self-care (one year and ten months) and event socialization (one year, three months). Adaptation to social media is so fast and broad that individuals have started to shape their lives according to it; a regular day is now so different than it was ten years ago. Instant concert scenes are shared on Instagram, birthdays are celebrated via Facebook, and daily news that has yet to be aired on news channels is immediately seen on Twitter. While customers review restaurants, exhibitions, and events on social media they, in turn, learn about other users' preferences through these channels. So why have users embraced social media to this extent and made it an important part of their lives? Why do we use social media?

SOCIAL MEDIA MOTIVATED BY THE MIND

The reason billions of people use social media for hours is of course not a coincidence. Psychological processes directed by the mind determine our expectations from social media, the extent to which we use it, our sharing patterns, and its effects on our lives. Even the founders of social media channels designed these products without considering such processes. Just as the function of the human brain is complex, there are several complex psychological processes that prompt social media usage. First of all, processes that prompt social media usage do not occur only at the individual level, but develop at the societal level as well. Imagine that Facebook or Instagram is a digital album in which we only saved the content we create and that we did not see the contents created by others or their likes and comments on our posts. Wouldn't it be boring? The key advantage of social media is keeping us in communication with other users. The psychological processes triggered by such an advantage are now turning venues which were unknown ten years ago into the essential elements of our lives.

What is the advantage of connecting with billions of users via social media? First of all, it provides access to information, one of the most important resources for survival. The human mind aims to acquire the most accurate information at the lowest cost. For example, individuals in hunter societies used to look for answers about hunting from other hunters, while modern societies can direct any question to millions of people on social media and receive answers in seconds. Therefore, one of the biggest advantages of social media usage is the access to the content generated by billions of users and the opportunity to share content with them in turn. Individuals wanting to hear about recent news now follow social media instead of waiting for news channels on television. Research has shown that almost half of the users on Facebook and Twitter follow news on social media. This usage habit has even caused the consideration of Twitter as a news source. While access to information on conventional communication channels such as radio, television, and newspaper is limited to the person who receives information directly from the source, it reaches masses on social media with a snowball effect. This pattern enables not only news but also social movements to

The human mind aims to reach the most accurate information at the lowest cost. Social media provides access to information; one of the most important resources for survival.

spread out and find collective support. For example, the Ice Bucket Challenge initiated to create ALS awareness has raised $115 million in donations and attracted around 17 million participants.

Besides providing an important information-sharing network, social media is used for its "social" aspect as well. Social connectedness and the feeling of belonging are some of our most important needs. Social media provides several practical opportunities to satisfy such social needs by enabling users to connect with other users. It allows users to search for current and new social ties and make friends; it is an easy way to cross geographical borders at almost no cost. On such venues, users interact with other users, express themselves, share content, and consume others' content. This interaction strengthens the social ties among users. More than half of the users with no regular face-to-face interaction report that they initiate communication thanks to Facebook's birthday reminder.

A more frequent and more active social media usage such as liking and commenting on other users' posts strengthens social ties with other users. It is interesting that we observe even passive users who engage with social media as a requirement or just to follow news end up with stronger social ties.

As the third point, social media provides users with a chance to express themselves and reflect their identities. Each minute more than 300,000 status updates are made, and approximately 150,000 photos are uploaded. Such huge numbers indicate that self-expression and self-representations are important sources of motivation. So, to what extent do the user identities shared on social media overlap with offline identities? Users can maintain online communication in the same way as offline communication. For example, extroverts spend more time

on Facebook, share more content, and have longer friend lists. It is observed that narcissists have more friends on social media such as Facebook, they update their status more, join more discussion groups, and prefer attractive profile photos. Such behavior supports the inflated sense of self, self-love and self-importance of narcissists display in offline life as well. Unlike offline representation and interaction, users can select the specific parts of their lives to share as well as the specific groups of audience with whom to share. They also can delete unwanted content posted by others. Most especially, it is a big comfort that users have time to think about and edit the content on social media and that online communication does not need to be in sync. This is how users get the chance to elaborate on the content, photos, and identities through which they represent themselves and establish social bonds.

Moreover, users can edit the content in accord with the number of friends or followers on social media. For example, users prefer to share interesting, fun, and positive posts when all followers are the audience. However, they start to focus on followers and share useful information when the audience is limited to a few people. Although social media users are selective in sharing content, pioneer research shows that identities observed on social media are more similar to users' actual selves than ideal selves. It may be difficult to hide their true identities on social media, yet it still allows them to reflect their best version.

Taking these three motivations together, we can say that social media provides instant access to and sharing of information and enables users to strengthen social ties as well as reflect their identities. Beyond the psychological processes generated by our minds, there are psychophysiological and neurological reasons that motivate social media usage. For example, research can estimate Facebook usage frequency through activities in brain parts related to reward mechanisms. One reason for this can be the venue provided by social media for being favored and liked. In addition, biological signals in the human body have shown that Facebook usage is related to psychophysiological conditions characterized by positive valence and high stimulation. In other words, positive feelings and active reward mechanisms in the brain may make social media usage tempting.

These psychological and biological motivations related to social media definitely bring additional value to users' lives. Yet, is social media innocent, good, and always helpful as much as motivations directed by the human brain are? How does social media affect the consumer's mind, life, and perception? Let's take a look at its effects on users' lives, the psychological processes transformations in social interaction it engenders.

Content shared by individuals with low self-esteem receives fewer likes and comments than that shared by users with high self-esteem. This is an indicator of how social media affects not only online but also offline dynamics.

THE VARIOUS FACES OF SOCIAL MEDIA

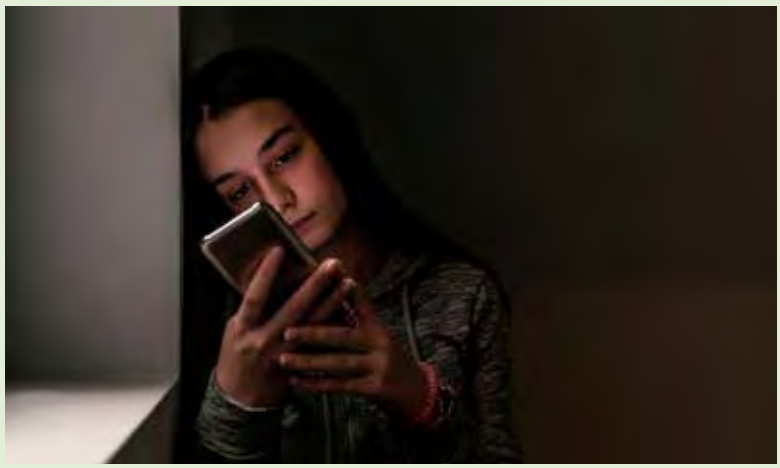
We are living in an era where we prefer video chat instead of traveling for two hours to meet our friends. We experience

the luxury of keeping in simultaneous touch with tens of friends without even leaving home. We are in communication with other social media users while sitting at the dinner table with our family and friends; we are there, but we are not there. Are conventional communication channels being replaced by social media? What are the effects of this new era on users and their social lives?

Are we social but beyond control?
What if we only follow other users and do not create any content? Recent research shows that even passive involvement with social media may bring harm. We see that even following other users' content increases self-confidence and therefore generates behavior with low self-control. For example, exposure particularly to close friends' content causes more unhealthy food choices or more spending. Maybe the most dangerous part is social media that may cause uncontrolled behavior is an addictive resource. It is so addictive that 42% of people who insist on not using social media eventually give up and use it. This percentage is higher even than the percentage of people who insist on not sleeping, eating, or engaging with their hobbies.

Why does social media lead to addiction and uncontrolled behavior? The first reason is that access to social media is easy, cheap, and possible even for short periods. Think of many addictive substances; access to each requires a certain level of effort and financial resource. Access to social media, however, is possible any time via a mobile device. No special venue or time period is required to use social media. Between two classes, on the elevator, waiting at the bus stop, or even in ten seconds when two people find nothing to talk about; social media fills the gap and thus turns into an addiction. Increasing usage time by millions of users also legitimates this addiction. Another reason is that social media channels bring an uncertainty and game mechanism just like in real life.

ARE WE SOCIAL BUT LONELY?



As its name suggests, social media is a venue that facilitates socialization. Does it mean it can substitute for face-to-face communication? Some research groups are worried that communication is evolving from conventional channels to online venues. They suggest that online communication has negative impacts on users and their relationships and it makes them more depressed and excluded when compared to conventional communication (see, for example, Yoffe, 2009). The main concern here is that the frequency of face-to-face communication is in decline; therefore, meaningful relationships and social capital such as moral and material resources shaped around friendships and social environment are deteriorating. However, other research claims the opposite. People who use Facebook more frequently indicate that they increase their social capital through their use of social media and they feel less lonely (see, for example, Ellison et al., 2007). Although this is good news, research also shows that the effects of social media are determined by usage habits. For example, active engagement on social media such as direct messaging, liking, and commenting increases social capital and decreases feelings of loneliness, while passive engagement (i.e., following close friends' accounts), does not provide such benefits (Burke and Kraut, 2014). Another danger is that users suffer from loneliness due to social media changing the dynamics of online communication. The term "phubbing," which is a blend of "phone" and "snubbing" now appears in literature. Imagine that you are with a friend at the dinner table and she is always on her phone. You would feel excluded even in the physical presence of others. When the excluded individual starts to engage in social media to compensate for such loneliness, there comes the vicious circle of exclusion in the presence of each other. In these circumstances relational conflicts arise, the satisfaction derived from that relationship decreases and eventually individual welfare deteriorates (David and Roberts, 2016). Even though we expect social media to facilitate socialization, it may sometimes prompt the risk of loneliness due to usage patterns.

Social media provides users with a chance to express themselves and reflect their identities. Each minute more than 300,000 status updates are made and approximately 150,000 photos are uploaded on Facebook.

Not all content shared on Facebook or Instagram gets the same number or likes, comments, or shares. Even if users do not get as many likes or comments as they would like for some content, there is always another chance. Content creation and content sharing are so easy that tens of selfies are taken just to share only one. While each like brings the question of whether more likes are possible, each posting of content seen brings the question of whether more interesting content is possible; thus users can spend hours on social media. Even though social media is fun and easy to use, people should be aware of their usage patterns such as time spent and content shared.

Are we social but far from reality?

Based on these findings, we can conclude that active engagement on social media such as self-expression and content creation generates more benefits than passive engagement, i.e., looking at the content of others only. But then, does all content benefit all users? Social media users tend to share self-enhancing posts. Therefore, they censor their content, which means the content does not reflect reality. A few years ago, the owner of a garish Instagram account with millions of followers, Essena O'Neill, showed the giant gap between real identities and those reflected on social media by changing her account name to "Social Media Is Not Real" and posting captions such as "I posed 100 times for this photo, I did not eat the whole day just to seem thin." This Instagram phenomenon might seem extreme; however, research shows that photos taken with a sharing goal increase anxiety and decrease the level of satisfaction derived from the experience itself. Intention to share with others generates a feeling such that the event is being experienced by a third person; thus artificial photos are selected to share. In other words, sharing personal identities on social media creates exterior devotion.

These processes do not have the same impact on everyone. Especially individuals with low self-esteem censor their content more because people who

are not happy with their appearance are more concerned about their negative aspects. Still, they share more negative content. Interestingly, the content shared by such users receives fewer likes and comments than those shared by individuals with high self-esteem. This is an indicator of how social media affects not only online but also offline dynamics.

Trying to represent their identities on social media, users benefit from brands and products that they own or they believe represent them. Although talking about possessions or purchases not acceptable in offline life, such content is common on social media. For example, there are nearly 1.5 million posts tagged with #mycar on Instagram. With its features enabling the provision of instant daily moments, social media normalizes the sharing of what consumers eat, drink, and own. As a result, we see that social media posts do not always reflect reality; in fact, they are different from reality and users do not happily portray it. This creates the need for social media users to be kinder to themselves.

CONCLUSION

Social media has become an irreplaceable part of our lives. Many people worry if they miss something on social media, although they have their mobile phones as a key to all information needed. Social media should be used very carefully. On one side, it satisfies important needs such as the desire to have access to information, social connectedness, and identity devotion; and on the other hand, it may prompt loneliness, addiction, and escape from reality. Content should be shared because sharing is fun, not because it is a duty. Access to information should be used not only as a passive observer, but also to express ourselves. Finally, we should represent ourselves with kindness regardless of others' likes or comments and welcome others' representations in the same way. ■

42% of the people who insist on not using social media in a day eventually give up and use it. This percentage is higher even than the percentage of people who insist on not sleeping, eating, or engaging with their hobbies.

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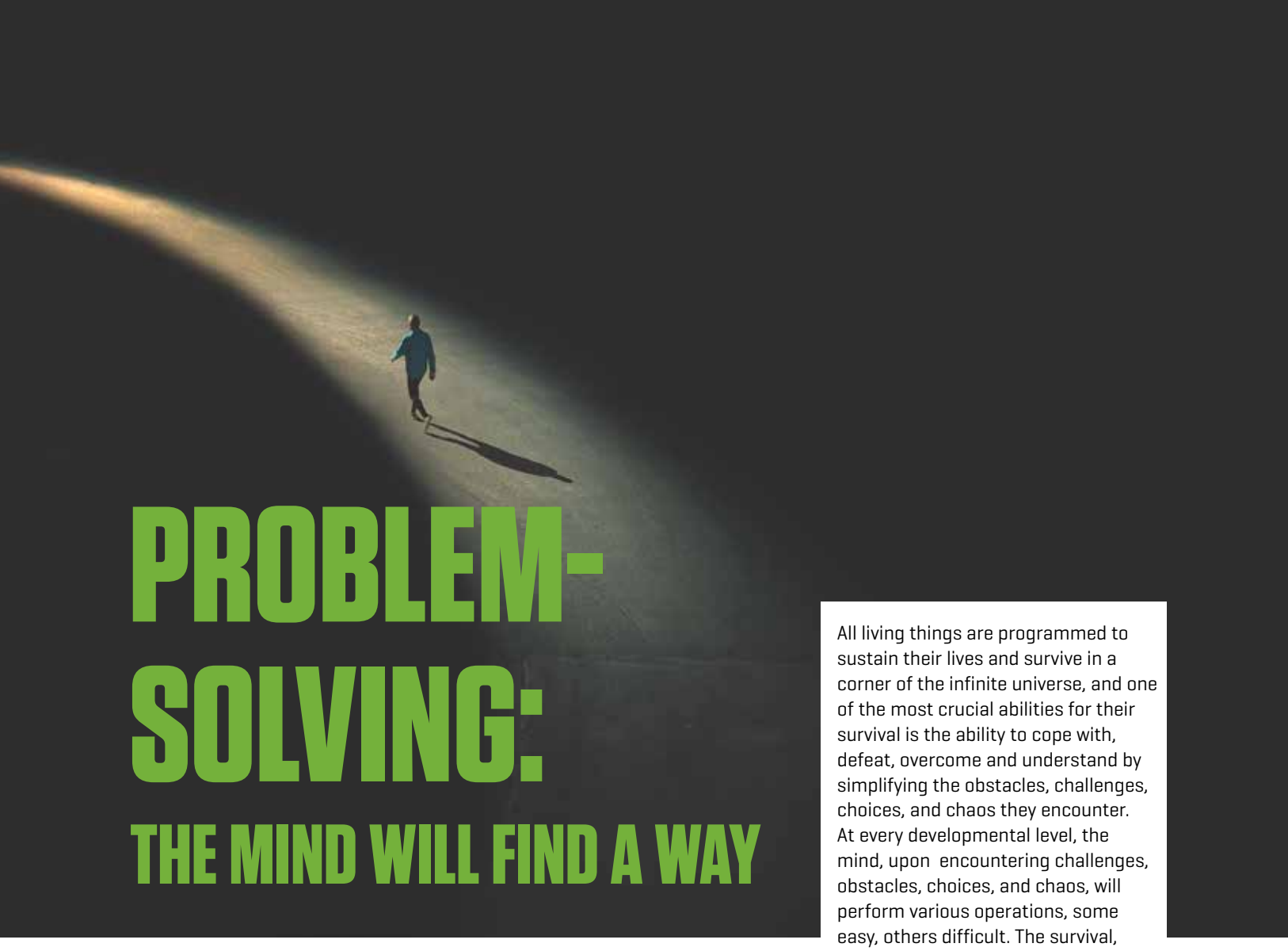

PROBLEM-SOLVING:

THE MIND WILL FIND A WAY

All living things encounter problems during their lifespans. When the mind gives up to these difficulties, psychological distress may arise, and when an effort is made to overcome the obstacles, the mind that maintains or increases the level of harmony in the face of problems resumes its adventure.

All living things are programmed to sustain their lives and survive in a corner of the infinite universe, and one of the most crucial abilities for their survival is the ability to cope with, defeat, overcome and understand by simplifying the obstacles, challenges, choices, and chaos they encounter. At every developmental level, the mind, upon encountering challenges, obstacles, choices, and chaos, will perform various operations, some easy, others difficult. The survival, self-sustaining and successful reproduction of the living being depends on this conduct and the operations that its mind performs. We define the entirety of the operations the mind must perform for the organism to survive and reproduce as problem-solving skills or abilities.

The places of living things in the evolutional scale hierarchy indicates, in a certain sense, the amount of cellular, molecular, organic and systemic organizational complexity they exhibit. For example, there are significant organizational differences between a unicellular organism and a snail. Similarly, there are also significant biological and behavioral organizational differences between a snail and a rabbit. With humans, things get even more complicated. The solution of the challenges,

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Problem-solving is an important mental quality with regard to the psychological adaption and health of a person encountering a problematic situation.

obstacles, choices and chaos faced by complex beings necessitates more complex operational algorithms.

The place of humans in the evolutionary hierarchy indicates a more complex biological and social organization. The human species has largely succeeded in defeating and overcoming the material challenges and obstacles it has faced thanks to its mental faculties, even managing to reach into the depths of space, which it has regarded as a challenge to itself and its abilities. Barring some exceptions, humans have also managed to prevent many diseases, or succeeded in healing them. Aside from these achievements, the problems that have challenged the human mind to the greatest extent have been the challenges, obstacles, and choices brought about by co-existence, such as human relations, environmental destruction, and justice in wealth distribution.

SOCIAL PROBLEM-SOLVING ABILITIES

It is assumed that the most complicated problems faced by humans in daily life are those born of co-existing with others. The solutions to such problems are also those that require the most complicated perception, effort, and skill. The solution or overcoming of these problems is referred to in the literature as social problem-solving.

The most complicated and relatively most difficult problems faced by the human mind are relationship problems between humans. This complexity and difficulty are rooted in the fact that each of the actors involved has their own free will and different motives, objectives, desires and developmental history. The fact that all these indicators vary from person to person, as well depending on each time and situation, can make things more complicated to the point of inextricability.

In academic psychology, there are various modeling and measurement methods for the assessment of human problem-solving abilities. Performance-oriented methods such as the Hanoi and Tower of London methods are suitable for understanding mental processes in problem-solving but are far from having the required flexibility for assessing the solution of social problems. The social problem-solving model deals with the reactions of individuals upon encountering social problems in two partially independent

aspects: The "problem orientation" and the "problem-solving style."

PROBLEM ORIENTATION

Problem orientation, which indicates the qualities of the cognitive, emotional, and behavioral traits people exhibit when they encounter any obstacle, challenge, difficulty or problematic situation, determines the attitude people will take in the face of problematic situations, whether they will act at all, and the characteristics of their actions, if any. The characteristics of these attitudes and actions influence the course and the outcome of the problem-solving process. Therefore, problem-solving is an important mental quality with regard to the psychological adaption and health of a person encountering a problematic situation.

While problem orientation refers to the affective and cognitive traits people exhibit in the face of problems, problem-solving style defines the behavioral and cognitive traits they exhibit with regard to the problems. Having a negative problem orientation prevents people from performing rational problem-solving functions. Individuals with a negative problem orientation adopt a non-functional approach to problems when they encounter them. A non-functional problem-solving style means that the person's approach to the problem is not compatible with the adaptation requirements of the person. To sum up, problem orientation refers to the cognitive and emotional attitude the person adopts in the face of a problem, while problem-solving style refers to the behavioral traits the person exhibits in their actions regarding the problem.

PROBLEM-SOLVING STYLES

The social problem-solving model assumes that people essentially have two kinds of problem-solving styles: Functional and non-functional. The first of the non-functional problem-solving styles is the impulsive-careless problem-solving style and the second is the avoidant problem-solving style. The functional problem-solving style is also referred to as rational problem-solving.

Non-functional Problem-solving Styles

The Impulsive-Careless Problem-solving Style: Individuals who adopt an impulsive-careless style in the face of the problems they encounter act without considering the next step. Those with such a style of problem-solving tend to act from the first thought they think of upon encountering the problem. It should be clear that with such an approach, the problem can recur, or further problems can occur later on. When searching for possible solutions, those who embrace such a style for solving the problems they encounter act with the first solution they can think of. They do not evaluate the possible consequences of the prospective solutions and have not developed metacognitive abilities for evaluating and improving their own problem-solving processes.

The Avoidant Problem-solving Style: This attitude assumed by those who tend to avoid problems rather than act upon them to solve them is also non-functional. As in the impulsive-careless problem-solving style, the avoidant problem-solving style also can cause new problems to arise for the individual later on. Individuals who approach problems in an avoidant style exhibit such behavioral traits as ignoring the problems that arise, acting as if they did not exist, or postponing dealing with them until the problems become unbearable. It is true that certain problems in life can be resolved with time, but refusing to do anything regarding every problem is not a healthy behavioral pattern.

The Functional-Rational Problem-solving Style

Following their first reactions upon encountering challenges, obstacles or difficulties, people decide whether or not to act upon the situation at hand, and should they act, about what kind

TWO KINDS OF PROBLEM OUTLOOKS ARE OBSERVED IN TERMS OF REACTIONS TO OBSTACLES, CHALLENGES, DIFFICULTIES, AND PROBLEMATIC SITUATIONS:

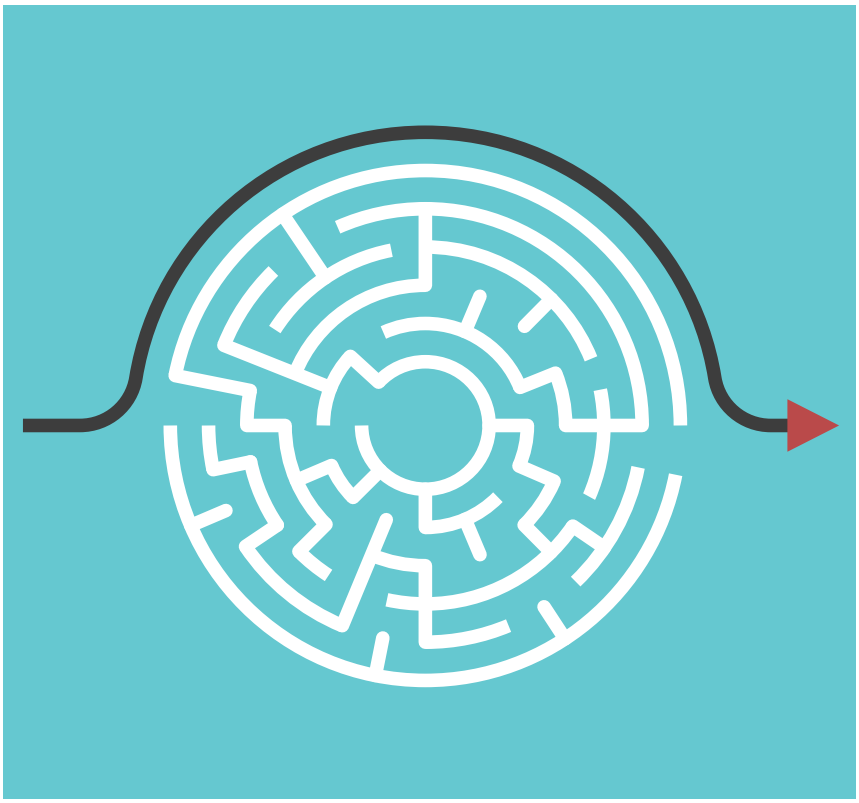
Negative problem orientation: Negative problem orientation means that the individual produces effectively negative reactions against the problems they face, and makes negative remarks. People with negative problem orientation regard the problems they face as threats, and therefore, their emotional reactions are also negative. Another trait of those with negative problem orientation is their lack of confidence in their own skills and abilities at problem-solving. When a person shows negative reactions upon encountering any problematic situation, this will either negatively motivate them in approaching the problem and finding the solution or lead them to reluctance, often to the point of avoiding any action.

Positive problem orientation: Individuals with positive problem orientation, as opposed to those with negative problem orientation, are optimistic that the problems they encounter can be solved or overcome. Those with positive problem orientation recognize problems when they arise, and as opposed to those with negative problem orientation, believe that the problems can be solved. Rather than regarding problems as threats, they see them as opportunities that can contribute to their growth, and believe that they can solve the problems they face. Contrary to the negative orientation, having a positive problem orientation motivates people to solve and overcome the challenges, difficulties, and obstacles they face.

of action they should take. As stated above, the initial reactions influence this decision. Individuals who can approach problems positively must realize a series of operations defined as the rational problem-solving style, which is a functional style, to successfully solve the problems they encounter. This style includes a series of cognitive and behavioral skills that people use in successfully solving problems. These are defining the problem, determining the objective, listing the possible solutions, decision making, execution of the decision, and evaluation.

Defining the problem: The first step in solving any problem is to define the problem: Defining and describing that which causes the situation that creates a difficulty for the individual, or causes a difficulty to arise. What matters here is to define and specify the matter that is the source of the difficulty in a clear and precise way. It is extremely important to recognize the problematic situation that is creating the difficulty and define it as a problem. Becoming aware of the problem is an important step in the solution of the problem. In the words of Gilbert K. Chesterton, "[The problem] is not that people can't see the solution. It is that they can't see the problem." Chesterton's words emphasize that recognizing the problem is essential for solving the problem. It is not possible to act upon a problematic situation without defining it as a problem to be approached and solved.

Determining the objective: What is the situation that one expects to find oneself in once the circumstance that is recognized and defined as a problem is solved or overcome? In simpler terms, what is the point at which one wants to arrive once the problem or obstacle is removed? The existence of an objective is essential for healthy human functionality. Otherwise, the individual's actions and agency will wither away in the indefinite and endless yet confined



geography of the mind. As stated in a proverb, "No wind is of service to him who is bound for nowhere."

The mind can set two kinds of objectives for the overcoming or solution of a problem. First, the mind can exert effort to change the problematic situation and resolve it. Or, the mind can modify itself to reduce the negative effects of the problematic situation or problem. The former applies more to tractable situations, while the latter applies more to intractable ones. The relationship and difference between the two are well said in the "serenity prayer": "God, grant me the serenity to accept the things I cannot change, the courage to change the things I can, and the wisdom to know the difference."

Listing possible solutions: Having defined the problem and specified the objective it wants to realize once the problem is resolved, the mind now has to create possible solution options for the problem it has defined. At this stage, the

Research indicates that individuals whose ability to solve or overcome the problematic situations they encounter is insufficient are more likely to suffer from such problems as depression or anxiety disorder.

person produces various possible solutions for the problem that is in line with the objective.

Decision making: Another step in rational problem-solving in the social problem-solving model is decision making. At this stage, the individual decides which of the options it has produced in the previous step will lead it to the objective it has designated. This stage of rational problem-solving is also referred to as the determination of a suitable solution. What matters here is that the option to be chosen must both fulfill the objective and be the most suitable choice in terms of its cost in execution.

Execution of the solution and evaluation: The final step of the rational problem-solving style is the stage at which the solution is applied and evaluated. Here, the individual first applies the solution it has picked in the previous step for the solution of the problem. Later, the individual evaluates the solution with regard to such criteria as to whether the solution chosen has helped them reach the objective, what has changed with the application of the solution, what has remained the same, and how satisfactory the changes that have occurred have been for them overall.

CONCLUSION

Throughout the life journey of the living organism, the mind encounters countless difficulties, obstacles, and problems. Every living being faces challenges, difficulties, and obstacles, but what matters is what they elect to do in the face of the problems and how the problems will be overcome. Living beings can, for the most part, successfully overcome the problematic situations that arise along their journey. In stressful situations that become complicated, the mind comes under stress and seeks a way out. The mind can sometimes surrender in the face of challenges and may have to bear the burden of its surrender. In such situations, the burden often detracts from the adaptation of the individual and causes psychological disorders to arise. But when the mind tries to overcome difficulties and obstacles through rational means, it will retain or increase its adaptation level and continue its life journey. ■

The existence of an objective is essential for healthy human functionality. Otherwise, the individual's actions and agency will wither away in the indefinite and endless yet confined geography of the mind.

PROBLEM-SOLVING AS AN INDICATOR OF ADAPTATION

In the face of challenges, obstacles, chaos, and multiple choices, the mind seeks the optimum paths for itself, tests them out, and stores in its memory the experiences it has obtained for use in situations that may emerge later. If the situation gets too complicated, the mind will come under stress, and in every situation where it is stressed, it will seek a way out. Even though solutions that the mind can find within its own means often facilitate the individual's adaptation, at other times, they will detract from it. As the stressed mind realizes that the solutions it has sought are not working, it sometimes will completely lose its motivation, and at other times, the situation will lead to the mind seeking destructive solutions. From this standpoint, problem-solving abilities are among the best indicators of adaptation for living beings.

For humans, problem-solving skills are the most important indicator of psychological health. As a psychological device, problem-solving presents an important conceptual framework for understanding the reasons behind psychological issues. This framework provided by the concept is useful for the detection of many mental disorders and makes it possible to infer causality. Aside from the conceptual framework it presents for the (etiological) reasons behind mental disorders, problem-solving is also a method that can be used in overcoming or resolving mental challenges.

Scientific studies have shown that people with insufficient problem-solving abilities suffer more from mental disorders. Individuals who struggle in the face of challenges, obstacles, and difficulties and do not possess sufficient problem-solving abilities are more likely to fall into depression. Depression continues to be one of the most widespread public health problems of our day. Research indicates that individuals whose ability to solve or overcome the problematic situations they encounter is insufficient are more likely to suffer from such problems as depression or anxiety disorder. Those who are unable to resolve the problematic situations they face are likely to develop alcohol or drug dependencies, or at the extreme, choose to end their own lives.

The most important question that indicates that the abilities of the mind to approach problems positively, define them, specify objectives, list possible solutions, choose the best solution, apply the chosen solution, and evaluate the execution in situations where it faces difficulty is an important indicator of adaptation is whether the teaching of these skills is effective in the treatment of individuals who are suffering from mental disorders. Significant scientific findings indicate that the insufficiency of problem-solving abilities is etiologically related to the occurrence of mental health problems and that problem-solving therapy is an effective method in the alleviation of many mental disorders. For example, problem-solving therapy is regarded as an effective method in the reduction of suicide risk in adolescent and young adult depression, and in the curing of adult and elderly depression. Scientific findings indicate that problem-solving therapy is an effective method for curing not only depression but also many other mental disorders that arise following physical disorders, including post-stroke depression.

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THE BASES OF THE MIND: THE RELATIONSHIP OF LANGUAGE AND THOUGHT

"The limits of my language mean the limits of my world."
Ludwig Wittgenstein

How do we think without language? What interactions are involved in the complex relationship between language and thought? Are the limits of our language the same as those of our thinking?

The relationship between language and thought have been discussed and investigated by a broad range of scientists including linguists, philosophers, cognitive scientists, psychologists, and anthropologists. Language is a symbolic tool that we use to communicate our thoughts as well as represent our cognitive processes. Language is the mirror of thinking, and it is one of the ways in which we communicate our rich cognitive world. As Wittgenstein suggests, we may see the world within the boundaries of our language, and we think that way. Therefore, we can argue that the language we speak not only facilitates thought communication but also shapes and diversifies thinking.

Can we understand a concept that does not exist in our language? For example, the German word "schadenfreude" consists of the words "schaden (evil)" and "freude (pleasure), and it means "being pleased because others experience bad things." Does it mean that we do not understand this feeling, or we have not experienced it because no word in English gives the same meaning? Above all, how can we think without language? More importantly, can we even think?

We can talk about three different interactions when we investigate

the complex relationships between language and thinking. First, the existence of language as a cognitive process affects the system of thinking. Second, thinking comes before language, and the learning of a language interacts with the conceptual process that is formed before language use. Third, each language spoken may affect the system of thinking. Here we will discuss these three interactions under these subsections: "thinking without language," "thinking before language," and "thinking with language."

THINKING WITHOUT LANGUAGE

Unlike animals, humans use language both for communication and for symbolic reasoning. This strengthens the argument that language facilitates concept formation. It is known that animals too communicate thoroughly, give warning cues in case of danger, imitate sounds, and communicate with hand gestures as observed with primates. Still, processes such as cause-effect relations and the acknowledgment of others' thoughts, demands, and goals are believed to be more advanced in humans. For example, hearing-impaired children born to hearing parents, sometimes learn sign language with a delay. Such children can communicate with people inside the home using signs that they develop. However, it is only with a delay that they learn words to describe abstract cognitive and emotional notions such as understanding, thinking, and feeling. Additionally, it is shown it takes longer for them to comprehend the notion of mind, when compared to their peers who can hear and express abstract words.

Another example is about understanding numbers. The Piraha tribe in the Amazon uses a limited number of words that describe numbers. The tribe uses specific words for 1, 2, and 3. They label any number bigger than 3 as "a lot."

Research conducted with this tribe shows that the members have difficulty in numeric tests, especially in the calculation of absolute sizes. Deprivation of the number system in a language seems to affect calculation processes.

Unlike these examples, we see that thinking continues without verbal language. For example, people with aphasia who have trouble speaking due to brain damage can have complex thinking structures despite the problems in their expressing abilities. Our research conducted with brain-injured patients shows that they can express their thoughts in a non-verbal language when they do not have conceptual problems. For example, if spatial knowledge is still available in the brain, they can describe a route with hand gestures when asked.

Research shows the importance of language, especially a language that describes concepts in the emergence of cognitive processes. Despite language and thought being closely tied to each other, the expression of thought is not always achieved with words. People who have speech problems can express their thoughts in other ways using nonverbal communication.

THINKING BEFORE LANGUAGE

The best example to understand whether thought or cognitive processes exist before language is research on babies' comprehension of concepts and how they may change with language. Babies can categorize objects and actions, understand the cause and effect relationship between events, and see the goals in a movement. Recent studies on action representation and spatial concepts have shown that babies' universal and language-general action representation productively changes with the learning of the mother tongue. For example, languages use prepositions to express the relationship between objects, i.e., in,

on, under. However, languages also vary how they use these relations. One of the most significant studies suggests that babies can differentiate between concepts expressed with prepositions such as containment (in) and support (on). The Korean language specifies the nature of these containment and support relationships using the tightness of the relationship between objects: tight or loose. For example, a pencil in a pencil-size box represents a tight relationship, while a pencil in a big basket represents a loose relationship. This is not a possible encoding in the English language. It has been found that while five-month-old babies in the USA were sensitive to the tight-loose relationship between objects, they lost this sensitivity around the age of 2.5. The same experiment repeated with Korean children showed they were sensitive both before and after they learn the language.

In short, while children universally perceive the different relationships of concepts, they differentiate notions expressed in their mother tongue and lose sensitivity in differentiating others as they learn their mother tongue. When they grow up, however, they can still learn such differences if they pay attention or if they receive training to do so.

THINKING WITH LANGUAGE

In the late 1800s, anthropologist Franz Boas laid the foundations of cultural relativity. According to this point of view, individuals see and perceive the world within the boundaries of their cultures. The role of anthropology is to investigate how people are conditioned by their culture and how they interact with the world in different ways. To understand such mechanisms, it suggests, implications in culture and language should be studied. The reflection of this view in the relationship between language and thought is the *linguistic determinism hypothesis advanced* by Eric Safir and Benjamin Lee Whorf. This hypothesis suggests that thought emerges only with the effect of language and concepts that are believed to exist even in infancy fade away due to the language learned. This hypothesis builds a pole among the diverse views on language and thought interaction. Today we see the reflection of this hypothesis on several views. One of them is the linguistic relativity hypothesis, which suggests that languages differ based on their linguistic structures as well as the words of which they consist.

According to the linguistic relativity hypothesis, the language we speak changes our perception of the world and shapes our concepts. In short, language is not used only for communication purposes. In

this view, people speaking different languages have different world views. For example, the Russian and Greek languages identify shades of green and blue in detail and people speaking these languages can differentiate between such shades much more easily and with greater speed. A more striking example comes from languages that use gender in identifying objects. Languages such as Spanish, French, and German attribute gender to objects. More interestingly, an object with a female affix in a language may have a male affix in another language. For example, the word "key" has a male affix in German and a female affix in Spanish. Similarly, the word "bridge" has a female affix in German and a male affix in Spanish. These are random matches in a sense. People with mother tongues like German or Spanish take a test in English as their second language. Some proper nouns (i.e., Tom, Kathy) are matched with different object names, and participants are asked to learn these matches. Some matches are congruent with their mother tongue (if German, Tom – Key, both male), and some matches are incongruent (Tom – Bridge: male and female). The results show that people have difficulty in learning incongruent matches and therefore their attentional mechanisms may be affected by the specific structures in their languages. The essential takeaway is that this effect could be prominent and observed even in a test conducted in participants' second languages. The language features some of the concepts or matches.

The other hypotheses on "the relation between language and thought" suggest that language does not have any significant effect on concepts while thinking. According to this view, the language we speak indirectly and/or temporarily affects our cognitive processes. Symbols specific to a language can affect only online thinking. While speaking, it is inevitable for people to use the notions expressed in their language. However, recent studies show that people speaking different languages that focus on separate aspects of an action (i.e., the manner of the action "hopping" or direction of the action "over") have similar hand gestures that describe the direction of the action. These results suggest that language does not always affect thinking.

While children universally perceive the different relationships of concepts, they differentiate notions expressed in their mother tongue and lose sensitivity in differentiating others as they learn their mother tongue.

CONCLUSION

In conclusion, there is a nested relationship between language and thought. In the interaction processes mentioned above, the role of language changes. Even though the limits of our language are different from the limits of our thinking, it is inevitable that people prioritize concepts in their languages. This, however, does not mean that they cannot comprehend or think about concepts that do not exist in their language. Future research on abstract notions such as emotion transfer or expression of time will shed light on the interaction of language and thought. ■

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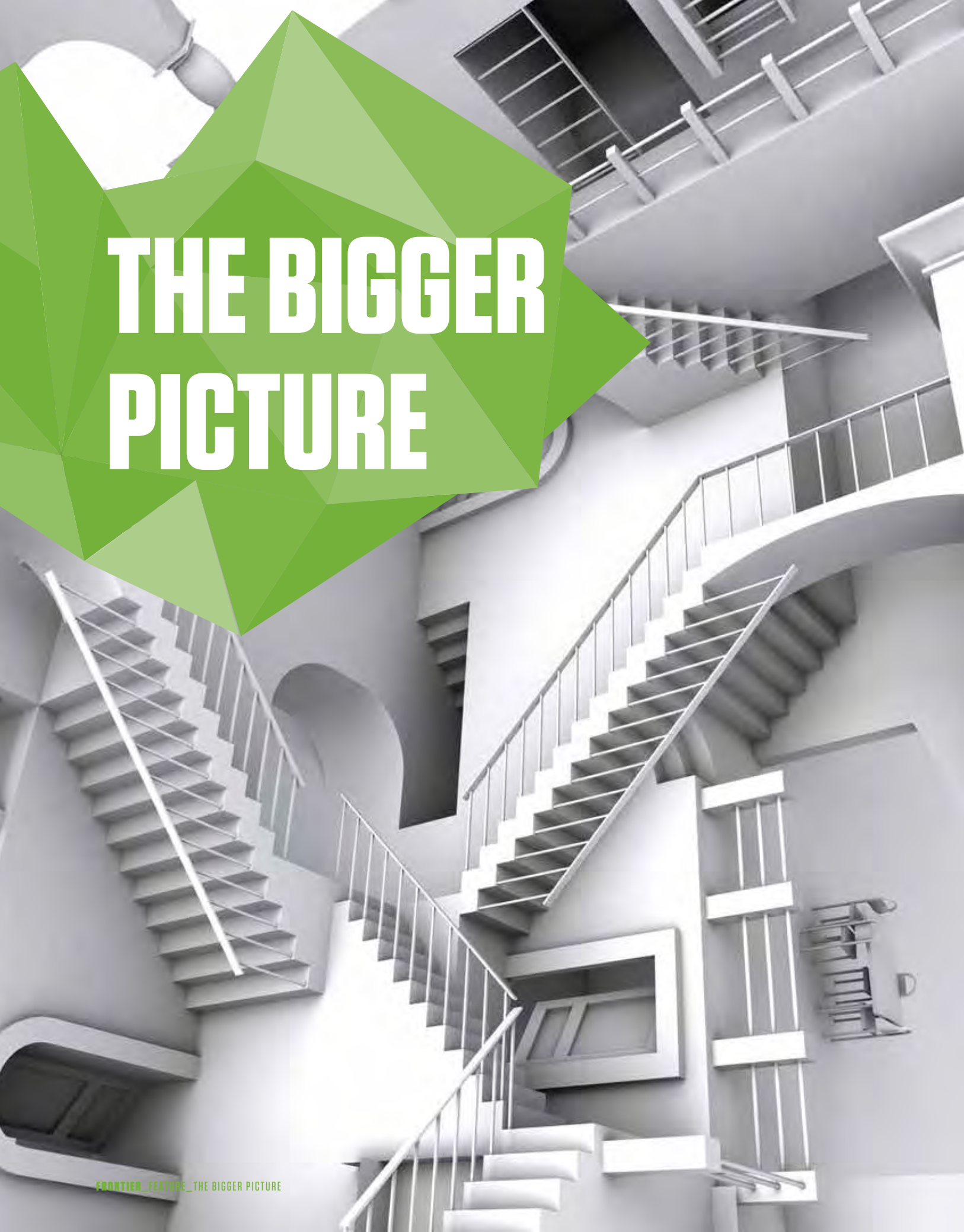
THE BIGGER PICTURE



Prof. Vedat Şar / Koç University School of Medicine, Department of Psychiatry

To be able to talk about the whole scene of truth ('the bigger picture') by looking from different perspectives of reality...

When I was invited to contribute to an anthology about the mind, instead of addressing an esteemed subject of psychiatry or psychology in a straightforward manner, I opted to follow in a popular trend and took on a "crazy project": talking about the Bigger Picture! The clinical and academic experiences that I have had in my field of expertise suggest that nurturing this perspective has become a necessity nowadays.

We have learned that science is primarily practiced by carefully dissecting the observed phenomena; for example, as we do in medicine while we use different lenses of a microscope to collect diverse images of the material at hand. Trying to capture the whole truth in a single shot, for example, by accounting for all variables in a statistical analysis at once or, say, by only using the small enhancing level of a microscope to scan too wide of an area often lead to blind spots in observation due to overlaps between domains of relationships or material, which may consequently hide themselves in each other. Analyzing subgroups of variables separately ("lacunary" evaluation) may help to catch the relationships that were once invisible due to the effect of the dominance of some of the neighboring variables. We are able to fuse the pieces of the information in our minds panoramically anyway after we have collected diverse partial outputs derived from the details of fractions.

An analogous but different approach is often necessary when we are dealing with psychological pain as the complete truth is often unbearable to grasp for the affected subject, on the one hand, unless one approaches the truth in gradual phases. The often highly emotional nature of such painful content of mind can easily push the subject beyond the window of tolerance that should be maintained for every patient as an optimal environment while pursuing diagnosis and treatment. On the other hand, psychological well being requires a healthy relationship with the complete truth; in other words, the continuity in perception as well as an experience of flow. The whole is greater than the sum of its parts when we talk about the healthy mind as well. At the end of the day, this clinical reality about the experience of psychological wholeness can often be observed concretely in patients with dissociative depression when they are treated successfully. Indeed, it is impressive to see the contrast between the chronic unhappiness suffered by such patients whose psychological unity has been disrupted and the state of happiness they ultimately attain after having achieved psychological integration through psychotherapy.

HOMO EST CREATURA QUI MENTITUR

The human being by nature is a "lying" (i.e., deceiving) creature-but firstly to himself! Denying the truth is a way to distance oneself from painful emotions. Yet, one finds his biggest enemy right here: alienation. As addressed by Franz Kafka's depictions, one may become estranged not only from the external world but also from his own self. Soren Kierkegaard wrote that it was one's inability to accept oneself, i.e., alienation, which leads one into despair; the latter being the main driver of an enduring state of "dissociative depression", in my view. When a person is detached from himself, he cannot feel alive and therefore, he cannot feel himself as a living being. Indeed, one may come across individuals who seem to choose "to live close to death" or who "repetitively engage in patterns of suicidal means disguised in a seemingly ordinary ways of living" to feel the sensation of being alive. Self-detachment often renders suicidality possible as it is easier for someone to harm his body if it has been psychologically abandoned already. The experience of being alive, as Carl Gustav Jung stated, requires feeling oneself as a unique being. This is also a requirement of mature love, creativity, and an experience of flow, which usually accompanies the former. On the other hand, discontinuity or interruptions in consciousness and the experience of alienation are hallmarks of dissociation.

The relationships between bodily and cognitive-emotional self-detachment and perceptual detachment from the external world, psychological traumata of early childhood, dissociative amnesias, dissociative identity confusion and alterations, and self-mutilating behavior have been shown by empirical research. Struggling with post-traumatic pain changes the perception about oneself and the external world, and pushes the person into a constant state of fluctuation on a broad spectrum of psychological functions. Not only childhood trauma but denial (minimization) of such experiences have been shown as significantly related to clinical variables. Thus, awareness about the consequences of unrecognized early childhood abuse and neglect makes a difference for the subject as well as for the clinician.

Inevitably, denial, in its broadest sense, leads to seeking a remedy in hiding, cover-ups, and keeping and living with secrets. A person's life can have aspects that are hidden from himself. However, one does not keep secrets only from oneself, but this secrecy also may serve to protect the individual against a potential crisis in the external world that could negatively affect the person in

return. In both settings, having secrets can easily transform into constant role-playing rendering the person unable to feel like himself. In some cases of hidden post-traumatic stress disorder, secrecy of this nature leads to gaps in one's inner world and turns a person into a seemingly incurable psychiatric patient with no clear and accurate diagnosis for decades. Hence, one may come across those who reveal their secrets finally when dying "just to say I lived." With sufficient rapport and communication, such "irreversible" conditions may recover unexpectedly even after years once the inner fragmentation is dissolved. It is not a coincidence that the name Raskolnikov, a man traumatized by his own heinous act who struggled with the secret thereof, actually derives from the word "raskol," which means "divided" in Russian.

DISSOCIATION AND INTEGRATION

While many theories and models have emerged in psychiatry and psychology over time, a "meta" or "supra" theory covering all of them has yet to be generated. Ironically, a silent consensus seems to "unknowingly" occur around the central role of one phenomenon: dividedness (aka dissociation). Yet, the "rumors" about what is divided are plenty. For instance, what Bleuler called "schizophrenia" (split mind), Kraepelin defined as "dementia praecox" (premature dementia) due to the marked disability caused by the condition. Kernberg talked about the phenomenon of "splitting," which is proposed to affect both one's inner world and behavior in "borderline" cases. Psychoanalysis has divided the functions of mind into the conscious and unconscious. Cognitive therapies target schemas, which operate in discrete ways.

While it is arguable that the essential characteristic of these clinical conditions is dividedness indeed, this hidden assumption leads to thinking that division-based disease models are "crypto" dissociation theories; even if the founders of these theories do not seem to know this. While doing this, ironically, for most of the 20th century, psychiatry and psychology, except for an "elite" few clinicians and researchers, have ignored the actual "dividedness" disorders (dissociation and dissociative disorders). For instance, on average, there are 20,000 scientific publications on depression indexed by Pubmed every year while this figure settles around 200 for dissociative disorders. Those who speak of psychological "integration" as the ultimate goal of psychotherapy tend to be mostly among those who study dissociative disorders explicitly.

What saved the clinical practice and the theory on a phenomenon as elusive and complex as dissociation from disappearing in the field of psychiatry and psychology in the 21st century as happened in early 1900s was the general movement in psychiatry that occurred in the second part of the 20th century that shifted the focus from speculative theories to the type of scientific research based on standardized assessment measures rooted in clinical phenomenology. Other important factors were the global improvements in scientific communication opportunities, the increased global accessibility of science to both academics and the greater public, and improvements in the preservation and the accumulation of the knowledge alongside keeping its accessibility forever. Today, even a 15-year old in Turkey can diagnose himself accurately with a dissociative disorder based on self-recruited information, let alone clinicians and researchers. Despite this, today in many countries around the world, while all psychiatric disorders are scanned with general psychiatric diagnostic tools in epidemiological studies, tragically, dissociative symptoms and disorders are disregarded because they often are not covered by these tools. Therefore, dissociative disorders have become a phenomenon of "unknown known" (information that one does not know one knows) among professionals; yet this is another definition of dissociation.

It is another irony that meanwhile dissociative disorders have become a hidden epidemic in all age groups throughout the world. Furthermore, out of all psychiatric conditions, dissociative disorders are those most closely tied to early childhood traumas and are the most powerful predictor of suicide attempts. While there is no specific drug (an "anti-dissociative"

Indeed, a new world of knowledge appears before a clinician with a full capacity to evaluate dissociative disorders. The kinds of ideas that these 'patients' express and the responses they give to mundane questions give the impression that they are describing concrete 'scenes' watched through a 'slit.'

agent has not been discovered, "yet") for dissociative disorders, they can be treated successfully with psychotherapy (restitutio ad integrum is possible). Somewhat surprisingly, this mere fact turns dissociative disorders into an enigma (conundrum) for psychiatrists and psychologists who are used to seeing the opposite of these two facts as common practice.

Paradoxically, the word "trauma" has become used by everyone so generously these days that its content becomes increasingly blurry. This is similar to the taboo dimension of the subject, reminding how Michel Foucault garnered attention with a question about what kind of hidden truth the heavy topic of repressed sexuality suppressed. Indeed, it is hypocritical that the very knowledge about the type of psychopathology (i.e., dissociation) is kept hidden, which is the one most closely related to trauma. This omission may prevent real treatment of trauma; it may lead to re-victimization due to enactment of trauma, that is, present behavior that is related to the past. Consequently, this may cause an intergenerational transmission of trauma-related psychopathology, and carry the chain of traumatization further due to dissociated enactments.

Therefore, clinically working with trauma does not simply mean to have a "conversation" about an "objective" trauma nor is it limited to "empathizing" with the victim, or merely letting the victim talk about trauma as a confession. It necessitates working with the inner world of the individual on the fiduciary basis of the patient-therapist relationship to help him reach psychological integration. "Trauma work" that does not work on psychological integration and disregards the underlying dissociation may do nothing but further divide and alienate the person; examples of such professional experiences continue to increase.

SOCIETY AND THE INDIVIDUAL

Much has been written and discussed regarding the psychological effects of society on the individual. However, the societal consequences of individual psychology have been neglected just as much. A contemporary study claims that the socialist system broke down not because of economic means but for psychological reasons (e.g., as the urge for individual profit trumped the tendency to seek collective profit). Possibly due to the memories of a well-received television series called *Leonardo* that I watched with enthusiasm during my childhood, Leonardo da Vinci for me came to symbolize a way of seeing the human body as the ultimate source of a broad range of knowledge. Indeed, the similarities between societal processes and body functions create the question of why "socio-physiology" is not one of the basic sciences of psychiatry. For instance, the answer to the critical question of why some societies astonishingly submit to and even look for oppression just like some people do might be successfully covered by this field.

The difficulty in understanding the potential impact of the individual's psychology on the system in which he lives stems from the fact that the particular space between the individual and the external world is not yet well understood in the scientific world. The most commonly accepted clinical theories of mind have blind spots about this. While the data obtained by the discipline of social psychology are not reflected in the clinics, theories with a clinical claim such as psychoanalytic object relations or self-psychology have not been designed in a way that can be scientifically tested. Those which approach the condition through the notion of interpersonal attachment have provided scientifically applicable hypotheses yet they look at the topic from a limited perspective.

Particularly in clinical conditions that are rooted in family dysfunctions where systemic problems are experienced lurking at the micro level of a small group, it is not possible to obtain leverage sufficient to heal the family unless the individual is treated successfully. Simply "fixing" the family does not heal the individual either. In contrast, since the "index patient" is at the center of the family balance, it is not possible to prevent him from reacting in accordance with the urges of the "system" until his internal dividedness is healed. That is why a therapeutic alliance with the "patient" is crucial. The lever that heals the patient (and even the family) should be himself whose internal unity is to be established

through psychotherapeutic help. Pointing to the possible presence of a fragmented system even inside of the seemingly unitary individual, Andy Warhol warned against the subtle (almost normative) dissociation of everyday life: "one is a company, two is a crowd, and three is a party."

'AN INN WITH TWO DOORS'

The critical point when defining the space between the individual and society lies in accepting that this interpersonal domain has an equivalent in the inner world of the individual; i.e., the sociological self, which should be a clinical concern for psychiatrists and psychologists. Inner division, which is the matter of discussion here, is often about the enlargement of the sociological self and its encroaching dominance due to developmental traumatization that disrupts its relationship with the psychological self, while the two selves should ideally be in harmony with each other. This detachment is the most basic definition of dissociation.

According to Kierkegaard, the essence of the human "spirit" is the self. The self, on the other hand, is "a relation that relates itself to itself or is the relation relating itself to itself in the relation." If we were to use simpler terminology, the two parties can be described as the psychological and the sociological selves. Resembling Aşık Veysel's "inn with two doors" here, Kierkegaard's definition of the human "spirit" resolves around the concept of integrated self as the (hopefully established) relation between these two selves.

Psychohistorian Lloyd de Mause draws attention to the concept of "social alter," which is based on trauma-related dissociation. In my view, the societal dangers of a dominant sociological self that has abnormally enlarged -hypertrophic- and separated from the psychological self. The "growth panic" caused by a suboptimal childhood not only leads to a self-destructive attitudes in the individual's lives, but it also may come alive in small and large group settings through a collective "re-staging" of the group members' early childhood traumas by mutual engagement in destructive societal activities (e.g., creating a scapegoat, lynch psychosis, war).

'I HAVE NOT HEARD FROM MYSELF'

One of the everyday consequences of psychological dividedness is "apparent normalcy." The dual evolutionary system that is built around the co-dependent relationship between the individual and his group to sustain everyday life (hence, serves for the survival of the species) and while maintaining survival in a life-threatening situation (sustaining the individual) may be separated from each other in a phobic way due to chronic developmental stress; and this, in turn, led to dissociative reaction and disorders. This detachment leads to the type of individual who functions well and even above average in daily life, yet who is distant from some of his emotions or goes into a crisis when he encounters his emotions.

> Kierkegaard realized that it was one's inability to accept himself, i.e., alienation, which leads a person into despair; the latter being the main driver of an enduring state of dissociative depression.

The consequence of such detachment resembles what the Turkic poet Hoca Ahmet Yesevi (12th century) said: "I have not heard from myself." Such an unbearable inner vacuum may lead to "copying" another person or being completely controlled by him. This significant "other" may be an individual, a group, or an idea. In a way, this is similar to the experience of possession or intrusion by a power that is perceived as rooted in the external world, usually believed to be supernatural, culturally accepted, and also may be shared with other individuals. The story of the movie *The Talented Mr. Ripley* is more than an esoteric subject of an art piece. An epidemiological study conducted in Turkey shows that one type of possession experience is reportedly being intruded by the spirit of a living person.

In such a detachment condition, another alternative is that the body tends to take action to fill the gaps in an individual's inner world: psychosomatic illnesses (structural and functional organ abnormalities) or disorders that do not fit well with macro-anatomy and continue to remain "medically unexplained." (Undoubtedly, this terminology will remain valid until the micro-anatomy of cognitive and affective pathways, influenced by today's highly sensitive technology, enters in clinical medicine.) Paradoxically, illness may become a way of life for the individual. It is likely to observe a sudden psychological "improvement" in individuals who have secretly decided to commit suicide or a tendency to attempt suicide in those who seem to be rapidly "improved" as the initial result of this dialectic. As such, the goal of treatment should go beyond fighting with an illness and should protect the individual's unique existence first.

ANTIFRAGILITY AND RESILIENCE

The psychobiological reactions that arise in response to a vital threat are expected to have properties that are protective

Who knows, if we could solve the problem of paradigm harmonization, maybe we would be using 100% of our brain! But what if the opposite holds as well?

of the organism. In this sense, it is possible to assume that psychological dividedness (similar to the example of the sea cucumber which can divide itself or change even into a liquid state and come back integrated and solid again) can create a front line or a "chitin" shell (dominant sociological self) that can be functional in protecting a more fragile core (psychological self). This type of robustness can be more accurately described by the concept of "antifragility" as opposed to resiliency, meaning that in survival, flexibility and benefiting from the stressor overrule rigid resistance. However, such "self-protective" set-up in humans can break apart relationships in the interpersonal sphere, thus, it can lead to an undesirable consequence where it will preclude support from others' "understanding" (recognition) through which the continuous psychological flow of the individual is facilitated.

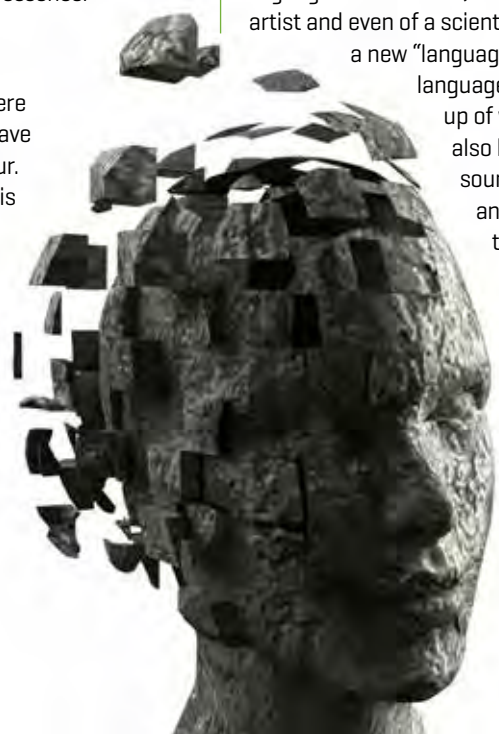
Indeed, the central nervous system responds to chronic developmental stress by decreasing its internal connectivity; when one is reminded of this stressful experience (e.g., insecure attachment in infancy) even after many years, a delay is seen in the rise of situational functional neuro-biological connections by way of insufficient reactivity. A brain imaging study conducted on a group of teenagers who had been sexually abused in childhood highlights significant correlations between the volume of brain regions in question and various clinical variables. Moreover, the study suggests that this extraordinary stressful experience corresponds to "lateralization" (certain functions work predominantly in one hemisphere of the brain). Even though the asymmetry between the brain's right and left hemispheres and the possible restriction of the connections between the two sides go with a clinically pathological condition, this can be considered as the central nervous system's "state of emergency" regime to save important matters.

Correlations such as the one between the thinness of the right frontal cortex and denial ("the event did not occur"), between the thickness of the left frontal cortex and alienation ("someone else lived the event, not me"), and between the size of the anterior cingulate body and the closeness of the source of threat (e.g., being molested by first-degree relatives), and between dissociative amnesia (inability to remember) and the proportion of amygdala size-frontal lobe thickness point to the four aspects of standing against psychological pain; these four phenomena have all different connections, hence, they seem to point to a socio-physiological "division of labor." In this type of organization, the way that denial correlates with the thinness of the right frontal cortex, but yet the way dissociation correlates with thickness of the left frontal cortex might indicate that denial is generally toxic. However, dissociation is a reaction to sustain an unknown "essence."

AUTONOMY OF CONSCIOUSNESS

Consciousness is where the phenomena we have discussed above occur. Then, what the heart is for cardiology and the nervous system is for neurology, consciousness is for psychiatry. There may be qualitatively different states of consciousness besides the different states of awakeness. That means various perspectives ("lens angles") of mind besides vertical and horizontal parallel structures play a role in the generation of these characteristics, such as first or second person, time, and body perception perspectives. As such, "the integrative mode of consciousness" is an important clinical concept to study and understand in both psychiatry, psychology, and neuroscience to pave the way for better treatments.

The sources of strength that ensure the autonomy of an individual's consciousness from oneself and the environment have been discussed for decades. A human is a being that begins to develop by relating to the external world and realizes himself to the extent that he is asked to offer his thoughts and intentions. However, this requires a well-shaped "language" to use in expressing oneself. Impairment of the use of the language for the expression of experiences due to early forms of abuse causes important psychological and behavioral problems. Some experiences may not have a counterpart in everyday language either. Hence, the task of an artist and even of a scientist is to find a new "language" (while this language can be made up of words, it can also be made up of sounds, images, or any other tool) that expresses a reality that cannot be formulated in everyday language. This requires creativity and explains why



Dissociative disorders have become a hidden epidemic in all age groups throughout the world.

creativity (i.e., art) is needed for the psychological wellbeing of the individual and society.

While self-detachment and detachment from the environment are at the core of the trauma-related dissociative psychopathology, integration is at the core of healing and "becoming oneself" is the process and way of reaching psychological well-being, as represented by the phrases of a "recovered patient": "This is me. I am so. I am that." As such, each kind of psychotherapy is a renewed definition of one's identity or that the individual re-identifies with oneself. As Max Frisch stated once, it is arguable whether identity, which is thought as a continuous phenomenon (something identical to itself), can be flexible and may adaptively change in adulthood.

LEARNING, TEACHING, AND HEALING

As I am both a "teacher" and "clinician" (sometimes, they both are simply called pulpits -"hodja"- as a colloquial tradition of our country), I would like to conclude my words with learning and healing. The establishment of a part-whole relationship plays a critical role in both of them. Meaning can only be generated in this way. Concepts that cannot be related to one another neither heal nor help to learn because comprehension (realization) does not happen then. Comprehension is a function superior to perceptual abilities. According to Pierre Janet, to achieve psychological integration, information related to the subject should be considered by him indeed as belonging to himself (personalization), and the subject should be able to experience himself as anchored in the present time (presentification); being able to distinguish between past, present, and future is necessary for finally being done with alienation from time (detemporalization). All of this can happen when synthesis ability is present in a neurobiological sense. Trauma-based dissociation, though reversible, interferes with these functions. In this sense, an alternative definition of dissociation may be the de-synchronization both in an individual's inner world as well as between his/her inner world and external reality; healing from trauma-based psychopathologies occurs with re-synchronization.

Lacan, with his statement "for centuries, knowledge has been used as a defense against truth" implies that, in the academia, what is represented as truth is often the reality of the "master." He has proposed that (true) science is equal to "asking questions," in the sense that one should even question one's perceived reality when necessary. This means that the individual has to be divided to look at the apparent reality from different perspectives. Hence, "patients" with dissociation can see reality through different perspectives due to their increased subjectivity as they focus in on themselves and their disconnection from life. They express the aspects of reality even if they are amnesic to it at least through their detached parts of self.

Indeed, a new world of knowledge appears before a clinician with a full capacity to evaluate dissociative disorders. The kinds of ideas that these "patients" express and the responses they give to mundane questions give the impression that they are describing concrete "scenes" watched through a "slit." Most of the time, they do not even need to stop and think about an answer to a question that is posed to them. This study is a treasure for a clinician on the way to accessing knowledge. This procedure also serves the "patient's" healing. This experience leads to the question of whether (re-created) knowledge heal. Nevertheless, such healing has to happen along with what Hegel describes as "recognition of mutual recognition" *(Anerkennung der gegenseitigen Anerkennung)*, a precondition that entails both understanding and respect.

The truth is that pre-existing knowledge (mindset) may prevent learning and teaching. To add a new piece to an existing picture requires the removal of one of the old pieces. However, it is impossible to replace a piece with a new one that fits the remaining niche meaningfully; what remains as an option is to change the picture as a whole. This explains why scientific revolutions occur through paradigm conflicts. Yet, as every paradigm is generated on the basis of assumed wholeness (by necessarily leaving a part of the truth outside), it can be argued whether a paradigm shift establishes closeness to the whole. Who knows, if we could solve the problem of paradigm harmonization, maybe we would be using 100% of our brain! But what if the opposite holds as well? ■

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MIND-READING INTERFACES

Is it possible to read people's thoughts? Do you wish you could read the contents of another person's mind? What would a world where we could read the thoughts of others look like? As you read these sentences, it probably has not crossed your mind that everyone might have an ability, if limited, for mind reading... Or has it? Is it possible that your thoughts have been read?

Even though it is not understood exactly how thoughts are represented in the brain, we read the emotions and thoughts of the living beings we encounter without having to place electrodes in their brains or connect them to MRI or EEG devices. More often than not, facial expressions, gestures, and the tone of voice clearly reflect what a person is thinking. Humans have extremely advanced perceptual faculties that are programmed to read these important signals in face-to-face communication. However, as unlikely as it might sound, our thoughts are also expressed through channels of which we are not aware. In our work at the Intelligent User Interfaces Laboratory, we have illustrated that people's intentions and thoughts

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Özem Kalay / Computer Engineering Master's Degree Alumna, 2014

▲ Assoc. Prof. Metin Sezgin and master's degree student Alpay Sabuncuoğlu

The reason underlying the fact that people's thoughts and intentions cause different eye movements is that eyes are the sense organs responsible for the intake of visual information.

can be read through the processing of their involuntary eye movements in simple interactions. The output of our studies, which have been turned into a doctoral and a master's theses, respectively, has also secured two patents.

In our first study on reading intentions through eye movements, we illustrated that the basic activities of interaction executed during computer or tablet usage can be anticipated based on momentary eye movements. We established that the eyes form very distinct movement patterns specific to the operation in question during the minimizing or maximizing of application windows, the movement of objects on the screen, or the scrolling down of the page being read. By learning these patterns through machine learning methods, we created probabilistic models capable of predicting operations executed by users.

In another study, we illustrated that mistakes made by artificial intelligence systems can be identified through the reactions that can be read from the eyes of system users. In this study, which we conducted specifically on a sketch recognition problem, we established that in the case where an interactive sketch recognition system makes mistakes (misrecognizing the drawings), the intention of the users to correct the relevant mistake unintentionally registers in their eye movements. We have developed artificial intelligence systems that can model the eye movements of users that vary depending on their intentions, which therefore can read the objectives and intentions of users that emerge during interaction with intelligent systems.

What the two methods we have summarized above have in common is that they can read the intentions of users through their eye movements. The reason underlying the fact that people's thoughts and intentions cause different eye movements is that eyes are the sense organs responsible for the consumption of visual information. The visual information that we require, find, and consume varies depending on our thoughts, goals, and intentions. The routes followed by the eyes as they collect this information express what is to be done with the information collected. A Turkish riddle about the eye describes it as "a tiny ball, wandering over the landscape." As it turns out, the wandering of the eyes over the world involves subtleties beyond the simplicity implied by the riddle. ■

INITIATIVES TOWARDS REGULATING CIVIL LIABILITY RULES ON ROBOTICS

Is it possible to oversee the legal balance in terms of damage caused by the unpredictable behavior of robots both by protecting the rights of third parties and without interrupting innovation?

It is no longer the case that intelligent vehicles driving themselves or robots interacting with humans are just something seen in movies. Our century is witnessing the speedy —and to some, worrying— rise of machines equipped with self-learning tools that are gradually capable of co-existing with, or sometimes even substituting, people in all sorts of areas. The anticipated increase in their level of autonomy, however, gives rise to the fundamental concern that their "emergent behaviors" neither anticipated nor programmed by their trainers may result in several different types of losses such as death, personal injury, or property damage. For this reason, the underlying concern of the jurisdictions seeking to regulate civil liability arising from the acts of robotics is to strike a fair balance between protecting the rights of third parties suffering from such harmful acts and ensuring the safety of products without hampering innovation.

TENTATIVE SET OF RULES

In the European Union, this concern

Asst. Prof. Ayşegül Buğra / Law School

Similar legislative initiatives will need to be undertaken in several jurisdictions including Turkey to deal with issues arising from the emergence of robotics.

has paved the way for a tentative set of rules proposed to be applicable with respect to the acts of robotics. The said rules were found in the "Report with Recommendations to the Commission on Civil Law Rules on Robotics (2015/2103 (INL))" prepared by the European Parliament Committee of Legal Affairs Rapporteur and was made public in 2016. The proposals in the Report touched upon, among others, issues such as education and employment forecasts as well as data protection and the ethical concerns that would arise from the exponential use of robotics. These issues were later reiterated in a European Parliament Resolution where the Commission was called on to express their view on the necessity of legislative initiatives towards:

· introducing a civil liability regime for producers of robotics, their owners, users, and programmers and decide whether the liability should be strict (where no fault on the part of the wrongdoer is required for liability to arise) or fault-based (where liability is subject to the wrongdoer being at fault);

· adopting a compulsory insurance scheme similar to motor third-party liability insurance; and

· establishing a compensation fund that would supplement the compulsory insurance scheme where no insurance cover was in place.

'SINGLE INSURER' MODEL

This initiative was timely as certain EU and non-EU countries had already embarked upon minutely legislating on the civil liability and insurance rules applicable to intelligent machines. South Korea, for instance, passed legislation entitled The Intelligent Robots Development and Distribution Act 2008, which grants the right to operate a business to certain providers of insurance with the aim of providing cover for third-party damages caused by the acts of intelligent robots. Moreover, a scheme focusing on substantial insurance law rather than on the regulation of insurance businesses was adopted in the United Kingdom as per the Automated and Electric Vehicles Act 2018. The Act introduced a compulsory insurance system on the basis of a "single insurer" model whereby motor liability insurers would respond where a vehicle in autonomous mode caused damage to third parties or an insured person under the policy. Where it will be established that the third party loss was actually caused by a defect in the autonomous vehicle whereby the producer of the vehicle is liable, the motor liability insurer would be able to have a right of recourse either against the producer, or if the latter is also insured under a product liability insurance policy, against the producer's insurers. The "single insurer" model was favored instead of a two-headed compulsory insurance scheme whereby both the motor liability insurance and the product liability insurance would be mandatorily required. This latter option was proposed initially by the U.K. Department for Transport, although it was later abandoned in favor of the former model following the feedback received from the insurance industry and other stakeholders.

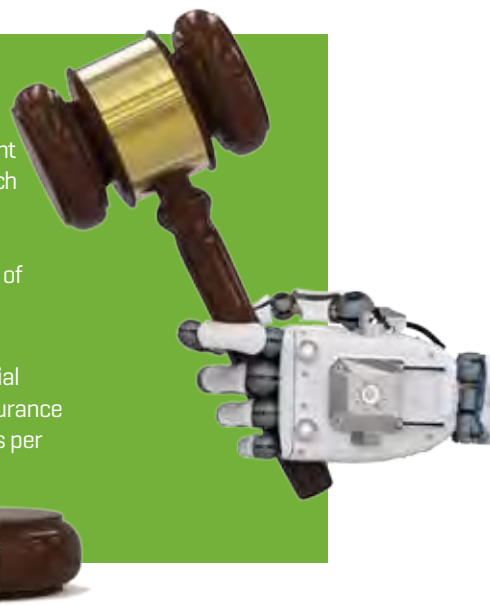
THE LAW KEEPING UP WITH THE TECHNOLOGY

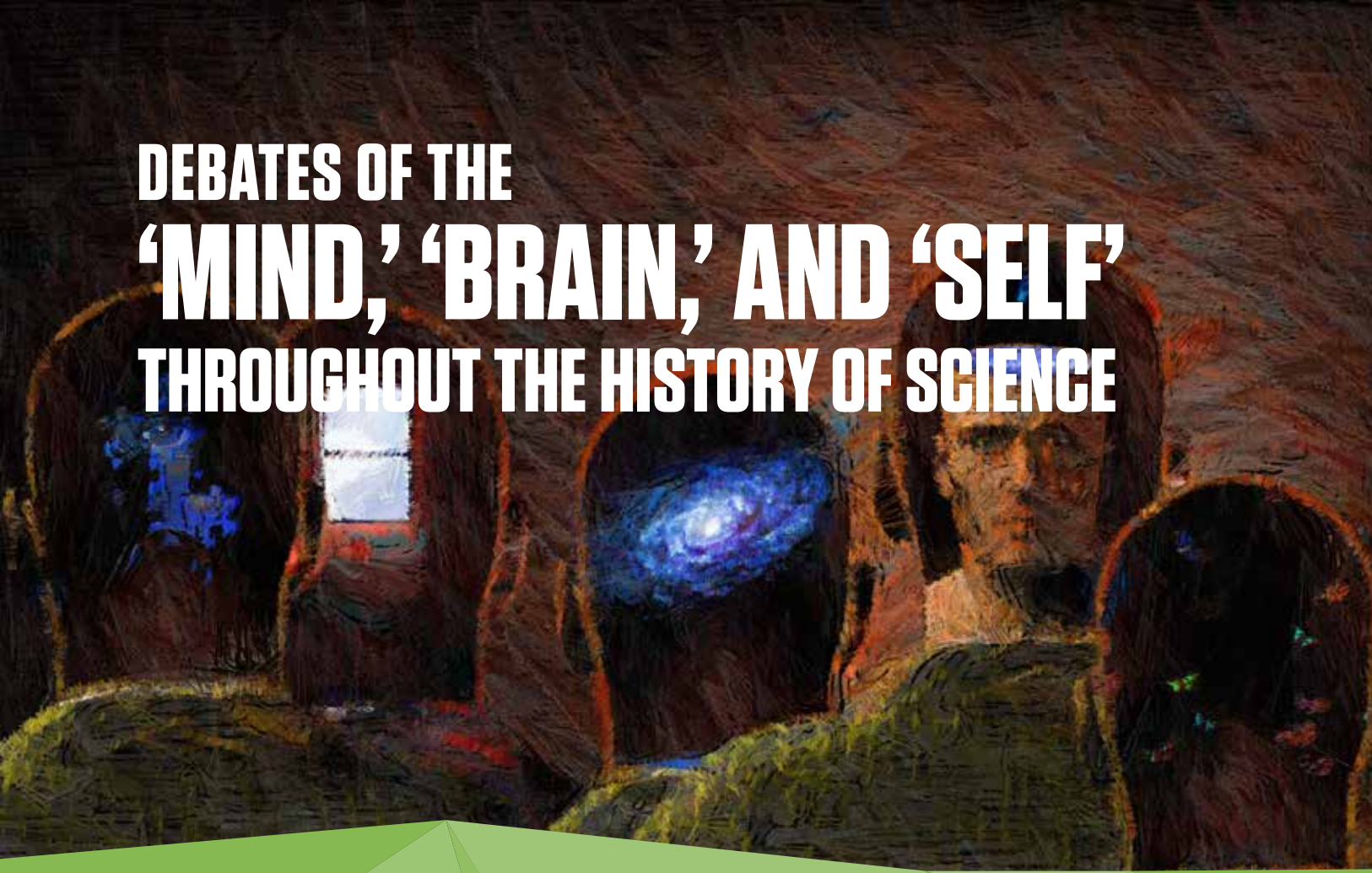
In the light of the above, similar legislative initiatives will need to be undertaken in several jurisdictions including Turkey to deal with issues arising from the emergence of robotics. It is, however, expected that constantly aligning legal rules with the ever-improving technology will be a difficult task. This hurdle would be likely to give rise to rules implemented becoming outdated in short periods of time and would reiterate the long-existing fact of the law falling behind the technology. ■

Examples

South Korea passed legislation entitled The Intelligent Robots Development and Distribution Act 2008, which grants the right to operate a business to certain providers of insurance with the aim of providing cover for third-party damages caused by the acts of intelligent robots.

United Kingdom: A scheme focusing on substantial insurance law rather than on the regulation of insurance businesses was adopted in the United Kingdom as per the Automated and Electric Vehicles Act 2018.





DEBATES OF THE 'MIND,' 'BRAIN,' AND 'SELF' THROUGHOUT THE HISTORY OF SCIENCE

More holistic approaches are needed to understand the human mind, one of the most important subjects in the history of science.

The two most complicated phenomena in nature that have been most questioned are the human mind and the human brain. Therefore, the existence of the human mind, what it is and how it functions has been one of the main subjects of science and the philosophy of science throughout history. Who am I? Where in my body is my "self" located? What are "mind" and "consciousness," and how do they function? How does my brain constitute my mind, my consciousness, or my self? These questions and similar ones continue to occupy us today. The paths followed and theories put forward as we seek answers to these questions have contributed significantly to the development of scientific thought and the scientific method. Even though today's technology and knowledge appear to have shed light on some of these questions, there remains much in the dark that still requires explanation.

DILEMMA OF THE MIND AND THE BODY

The grand theories, put forward as answers to the question of whether the mind and the body are separate units or distinct aspects of an underlying unity, are named the "monistic" and "dualistic" theories. Monistic theories include those approaches that explain human existence solely through bodily existence (materialism) and those that seek all explanations in biological existence, or only those that accept the existence of the mind (the panpsychist view). Dualistic theories, on the other hand, affirm the existence of both the body and the mind, and are referred to as "psychophysical parallelism" and

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"psychophysical interactionism." Psychophysical parallelism argues that the two forms of existence are of equal significance but are distinct, while psychophysical interactionism argues that both are of equal significance but interact and influence each other. Understanding the development of these concepts throughout history will help us understand where we are today and shed light on the path we are to follow in the future. In the early ages, the problem of "the soul, the body, and existence," explained in terms of mythology, became the subject of philosophy later and then became one of the main subjects of science.

A BRIEF HISTORY OF THE EXPLANATIONS OF THE 'MIND'

Before the Age of Enlightenment, it is not possible to separate explanations regarding the relationship between the spirit and the body from the relation between the human and God as the transcendental entity. Almost until the 18th century, answers to the above questions emerged within this context. Philosophers of the early ages dwelled on the subject of what the mind was and how related to the body. At the time, the thinkers studied mind as the "soul" ("psyche" in Latin) and ascribed to it such cognitive functions as thinking, agency, and decision-making. The monistic approach was dominant; while Plato argued a panpsychist approach by accepting only the existence of the soul, Democritus argued for the activeness of the body (matter), therefore following a materialistic approach. Aristotle, on the other hand, accepted both the body and the soul and explained them as two distinct structures, in a sense, leading the way for a dualistic approach.

Philosophers of the early ages dwelled on the subject of what the mind is and how it relates to the body.

Plato was the first to engage with the problem of consciousness. His successor Aristotle was the first to write a systematic treatise on this problem. According to Plato, the soul is of a divine nature; it is not created; in other words, it always exists, and is absolute. Ideas, the original forms of existence, are the essences and first examples of existence, while the world as perceived through the senses, the world of objects, is a copy, a shadow of ideas. The body is a vehicle that introduces material objects to the soul through the senses. In his treatise, On the Soul, Aristotle explains the soul as form and the body as matter. This can be regarded as the first discussion of the soul-body duality. According to Aristotle, our choices emerge as a result of distinct sensations forming a general perception. Consciousness transforms desire and perception into knowledge. Aristotle separates consciousness into two forms: One specific to each person and passive, and another common to every person and active.

Regarding the location of the soul in the body, Empedocles and Aristotle argued that the soul is situated in the heart, while Anaxagoras, Hippocrates, and Plato stated that cognitive processes and the rational spirit were located in the head/brain. What explanations from the early ages to the Renaissance and beyond have in common is that they specified the body as a prison for the soul (the mind) and extolled the virtues of the soul.

In the years after Christ, up to almost the 13th century, explanations regarding the soul, body, and human existence were dominated by the perspective of Christianity. As this period characterized the human spirit as a direct extension of the spirit of God, the possibility that the soul may be suffering from illness was rejected

There existed schools of thought that rejected the separation of the mind and the body and argued that the mind and the body were in such a close relationship that they were almost equivalent.

and mental disorders were regarded as the work of the devil. In the 13th century, thanks to the literature and knowledge produced by Muslim thinkers that led to a rediscovery of Ancient Greek, philosophers in Western culture, a change in perspective began. But still in this period, the mind and its functions were solely regarded as absolute, no work that can be deemed scientific was conducted in this field. However, Avicenna wrote about how various states of the soul can have effects on the body. He explained the spirit, which he termed "nefs," a self-aware entity that was also aware of its awareness as a structure or core distinct from the body and explained the body as its garment.

The great political and social transformations that arose around the world defined the transition from this period to the modern age, and as did the simultaneous revolutionary developments in science. In the modern age, science has replaced religion as the definer and custodian of the universe and as the dominant authority, while philosophy defines itself and its sub-fields through science. The most widely known theory regarding the Mind was advanced by Descartes (1596-1650), known as the founder of modern philosophy as well as the philosophy of science.

Descartes viewed existence as consisting of soul and body. Descartes argued that while the principles of physics applied to the body, this was not possible for the soul. According to him, the human body is mechanical and the movements of mechanical models can vary depending on external objects. The soul, however, functions separately from the body; its sole function is to think. Descartes remarks that to be aware that we think leads us to the conclusion that a "thinking self" exists. In other words, thinking provides proof of existence. In this case, the "self" is a core whose essence and nature is to think, and which needs no place or no material thing to exist. The "self" in question here is distinct from a material body and is equivalent to the notion of the mind.

These ideas changed the notion of the spirit radically and steered the discourse towards cognitive processes. As such, the spirit and the body began to be perceived as two entities belonging to two different domains, each separately examinable, even though they are parallel in certain ways. Of course, there also have existed schools of thought which oppose this dominant opinion, rejecting the separation of the mind and the body and arguing that the mind and the body are in such a close relationship that they are almost equivalent (such as Spinozism). Leibniz (1646-1716) and Kant (1724-1804) argued that the mind is not simply a passive entity that processes sensations from the external world, but is rather an active one, arguing for a psychophysical parallelist approach.

Regarded as the pioneer of the European enlightenment after Descartes, John Locke (1632-1704), held that the human mind comes into the world devoid of content (as a tabula rasa), contrary to the idea

of rationalists "innate principles and the priority of the mind." Despite accepting the existence of the spirit as an entity, Locke argues that knowledge is acquired through sensations. According to Locke, research needs to concentrate on how we acquire these sensations. He classifies all sensations as inner sensations and outer sensations (reflections). While Locke's ideas were further developed by successors such as G. Berkeley and D. Hume, the discourse concentrated further on inner experiences, perceptions, memories, and emotions, rather than the spirit. The ideas that emerged in this period were later pioneers of the approach called cognitive approach.

In the 18th century, as efforts to understand human existence focused generally on the mind, sensations, and perceptive processes, philosophy and science parted ways. Notions that previously had been explained through theoretical assumptions started to be tested and explained with experiments. The pioneers of the science of psychology tried to explain the human mind and the "self" through methods based on the positivist and dualist approach, with definitions of the psyche independent of the body. The schools of thought that comprised the basic approaches of the contemporary science of psychology arose. These schools of thought are referred to as the behaviorist, psychodynamic, humanistic, and biological approaches. (See below Table) Explanations regarding the mind and its activities were produced employing these basic approaches and each approach made significant contributions towards solving the grand puzzle of the mind. Yet, as a dualism that assumes a distinction between the spirit and matter remains dominant today, it would not be wrong to say that most studies are based on the reductionist and mechanistic approach of Descartes.

Throughout the 19th and 20th centuries, studies attempting to explain the physical and biochemical

THE FUNDAMENTAL APPROACHES IN PSYCHOLOGY

The behaviorist approach: Based on the assumption that science should study observable phenomena, behaviorism argues that behavior is the only area where we can monitor the interactions between the organism and its surroundings. Among its pioneers are E. L. Thorndike (1874-1949), J. B. Watson (1878-1958), I. P. Pavlov (1849-1936), and B. F. Skinner (1904-1990). According to the behaviorists, the occurrences in the mind cannot be studied as they cannot be measured.

The cognitive approach: Behaviors are insufficient to understand the human and that to understand behaviors, the inner processes that are its mediators need to be the center of focus. The cognitive approach began with W.Kohler (1887-1967) and E.C. Tolman (1886-1959). Kohler remarks that problem-solving is based on insight, while Tolman spoke of ways of learning that are based on the relationships between the stimuli which he termed "cognitive maps."

The psychodynamic approach: Centered on such notions as the ego and awareness, the pioneer of this approach is S. Freud (1856-1939). This approach tries to understand behavior and the human through the analysis of how personality is shaped by past experiences and the functioning of the mind. It concerns itself with the existence of a distinct psychic structure (id, ego, and superego).

The biological approach: The human is defined as a biological organism, and the bases of our actions and thoughts are sought in the body. This approach is rooted in studies towards understanding two main subjects, the relationship between the body and the mind, and the effect of hereditary factors on our behavior.

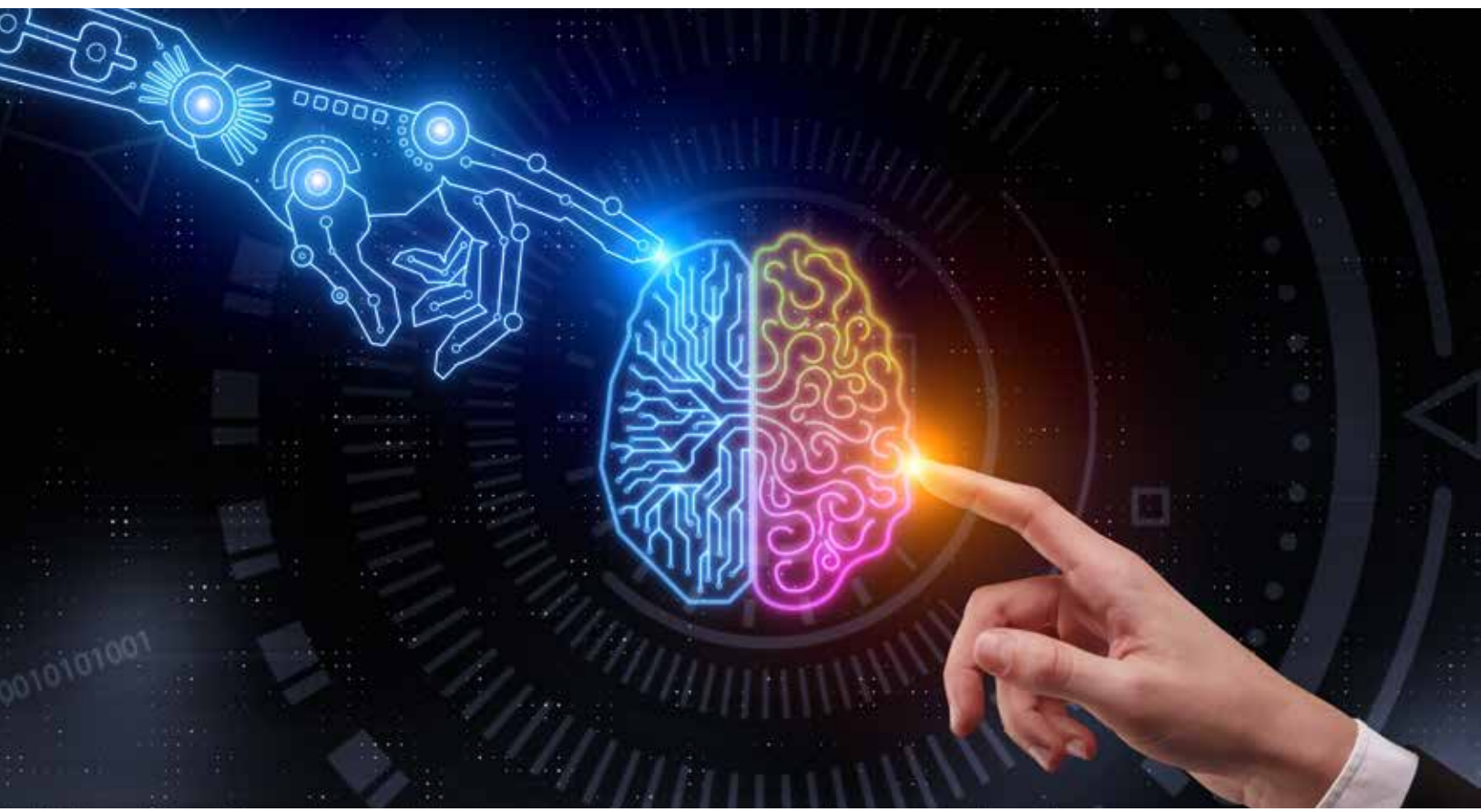
aspects of cognitive processes proliferated. During this period, with psychiatry being defined as a branch of science, all approaches were influenced significantly by the biomedical school of thought. Towards the end of the 20th century, a change of paradigm was witnessed around the world. The human was now defined as much more than accretions of behavior determined by biological an/or conditional reactions or processes without conscious information.

This line of thinking gave way to the emergence of the humanistic approach. The three main concepts of the humanistic approach are the phenomenological perspective, belief in the capacity to choose, and the will to search for meaning. Behavior is only one aspect of the human experience, and it cannot be understood without the meaning imposed on by the individual and the conditions in which it has emerged. C. Rogers (1902-1987), A. Maslow (1908-1970), V. Frankl (1905-1997) and M. Seligman (1942-.) are among the proponents of this approach that is based on the assumption that physical, biological, social, and cultural notions are essentially interconnected and based upon each other (general systems theory).

THE CONCEPT OF 'MIND' IN PRESENT DAY

In our present day, which is referred to as the age of the brain and information, the concept of mind that we use has become a general term that encompasses cognitive, affective and emotional functions. Mental processes, which are defined as the whole of cognitive and affective processes, include perception, attention, memory, problem-solving, intelligence, creativity, recollection, language use, reading, and writing. The means of formation of cognitive functions that comprise the mind is defined as "information processing." This model uses concepts borrowed from computer science (input, storage, recall) and likens the mind to a special kind of computer, defining cognition as an "information processing function." According to this approach, information processing emerges as a result of the consolidation of a variety of processes, and all mental processes take part in the brain.

During information processing, information is processed in the sensory system and the sensory recording system, simultaneously as pre-consciousness and pre-attention. Part of the incoming information, selected through attention, is directed to short-term memory, and part to long-term memory and stored as episodic and semantic of memory traces depending on the type of memory. These memory traces are modified and restructured in long-term memory and new



> ‘As we are drawn into our minds, we seem to have forgotten the ability of using our bodies as a way of knowing.’
>
> Capra

information is synthesized along with existing information. This complicated system works under a metacognitive structure, and it is this metacognition that provides system and information awareness. Another meta system is that referred to as the “executive functions,” which are responsible for such processes as inspection, problem-solving, creativity, and decision-making. The human mind is a supersystem in which all these processes function in parallel and in an integrated manner, and behaviors are a product of all these information processing processes.

AWARENESS OR CONSCIOUSNESS?

Looking back at all these explanations, the question “which mental processes form ‘the self’?” remains unanswered. In this context, is it consciousness that constitutes the “self,” or awareness, which is frequently used interchangeably with “consciousness”? If so, what is consciousness, how does it function, and where is it located in the brain?

Studies so far do not seem to have explained this. In the lexicon of philosophy, consciousness is defined as “the awareness of a person regarding themselves and their surroundings” and “the faculties of a person for understanding, recognizing and knowing themselves.” When the concept of metacognition, which is often used in scientific studies, is taken as the awareness of the “self” of its own cognitive features and its ability to control and examine these features, its similarity with the function defined as “consciousness” is remarkable. In this case, is metacognition a reflection of consciousness and, like all forms of awareness, “related to the self?”

CONCLUSION

Thanks to the knowledge and technologies of the 21st century, the studies towards understanding the human mind and existence are now focused on understanding the functioning of the brain and interneuronal communication. The century we are living in is often called the “century of the brain” for this reason. But the world of science has still not broken loose from the influence of the dualistic approach. The Cartesian approach still forms the basis of most branches of science. As Capra remarks, “as we are drawn into our minds, we seem to have forgotten the ability to use our bodies as a way of knowing.” With this reductionist approach, it seems unlikely that an exact answer will be provided to questions related to the human mind and its processes, or as in philosophy referred how consciousness and the will emerge and how they direct behaviors. In this context, understanding and explaining human existence requires the development of models that encompass more holistic approaches. ■

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IS THE MIND A PRISON AND THE HEART A DOOR TO FREEDOM?

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In the history of literature, some glorify the mind, some the heart. Some look for harmony and embrace both.

According to Nietzsche, the pendulum of life swings between the opposites of reason and emotion (the Apollonian and the Dionysian). In the history of literature, we see reason as either extolled or rejected in the name of praising the heart and emotions, which are deemed its enemies. Some writers, on the other hand, emphasize the importance of ensuring the harmony of the heart and the mind.

IS IT THE SENSES OR THE MIND?

"Have you practiced so long to learn to read? / Have you felt so proud to get at the meaning of poems?" asks Walt Whitman. Like William Wordsworth, Whitman advises closing the book and touching Nature directly. And before him, Sir Philip Sidney speaks of how, to describe his love, he consulted many books, studied the arts of rhetoric, yet always failed. Fortunately for him, in the end, the muse reminds the poet to "look into his heart and write."

The distrust in secondary sources is even more evident in Whitman's poem *When I Heard the Learn'd Astronomer*, where the poet speaks of how he wearies of a lecture by a scientist talking through charts and diagrams, and how he wanders out of the hall to watch the night sky with his naked eye and take a deep breath. In a story by Kay Boyle, as an astronomer spends his time in the attic, his wife lives in the ground floor kitchen. A plumber who speaks in such simple, bodily language as "the elbow may be stopped," in contrast with her husband's abstract language, steals the woman's heart, and she goes down the drainpipe along with him. In another story by John Collier, we see a father, a doctor who completely denies imagination and believes in positive science. When he sets out to punish his son, who claims to have befriended a monster named Beelzy, the imaginary Beelzy ends up eating the father. In *Gulliver's Travels*, Jonathan Swift makes fun of island dwellers who slice their food in geometric shapes and conduct strange scientific experiments.

Many poets have tried to break the shackles of reason. Among them, the Surrealists attempted to imitate the chaotic order of dreams. Saint-Pol-Roux is rumored to have hung a sign that read "Poet at Work" on his door as he went to sleep. For many poets, the mind is a prison. Thus, the freedom of children and the insane is envied. Roethke, who asked, "What is madness but the nobility of the soul at odds with circumstance?", would himself suffer from a loss of his mental faculties towards the end of his life.

Some prefer the worldly life of the senses, while others opt for the more mystical experiences of the heart. "The best gesture of my brain is less than / your eyelids' flutter," remarks e. e. cummings; and in the poem *Snake*, Roethke, while not despising reason directly, envies the simple sensations of a sunbathing animal. In *A Blessing*, James Wright longs to transform into something beyond the boundary between human and animal as he leaves the highway and steps over the barbed wire to caress a pony.

Yet, in the 18th century, in his *Essay on Man*, Alexander Pope has nothing but praise for this very boundary between humans and other beings. The poet

extolls the many good traits of various animals, only to remark that they all come together in the human mind. Risking to contradict what she said elsewhere, Dickinson expresses that "The brain is just the weight of God." In what is perhaps his best-known poem, John Donne attempts various lines of reasoning to persuade the reader that the blood of a flea that bites two lovers is both the marriage bed and the church that has bonded them together.

In both the Sufi and the Divan poetry traditions, it is often emphasized that the mind is devoid of the ability to attain truth. In the words of Rumi, "The horse of the mind has no path to the throne of God." Fuzûlî stresses that reason, which he defines as "blind and wretched," can never reach its objective. Nev'î enrolls his heart, which he likens to a little child, in the school of love, setting reason free.

In our culture, "abdal" is a positive word used for nearly deranged people who give up worldly pleasures and dedicate themselves to God, living without regard to the judgments of society. Likewise, in the folk poem where Karacaoğlan says "My frenzied heart, in admiration / Wanders about, calling 'Elif, Elif...'" , the "frenzied heart" refers to the state of one who has attained true love.

In contrast, there are also poets in our tradition who praise reason, like Necati Bey, who advises, "If you tend towards wisdom in this world / Don't wander off into the wild, if for your reason you care", and Yahya Bey, who remarks that he would rather lose his life than his reason.

It is no surprise that the praise of science and reason is frequent in poems of the Tanzimât period. Tevfik Fikret writes, "The the charming miracles of reason / Will bury superstition in defeat, I've believed." For Beşir Fuad, the heart is only a muscle. He illustrated his belief in scientific thought by committing suicide as if conducting an experiment, noting down his sensations until losing consciousness. Şinasi remarks that it is through the light of reason that good and evil can be told apart.

The Garip movement of the Republic period aimed to create a kind of poetry to be read through reason and Melih Cevdet Anday produced some of the most compelling work towards this end. Nazım Hikmet's poems reflecting his materialist world view naturally appeal to reason. Can Yücel and Metin Altıok are other important poets in this context with their irony-laden poems because irony is an art that requires intelligence and awareness on the part of both the writer and the reader.

THE MIND AND THE HEART

Yet others are frustrated by this duality and choose to embrace the mind and the heart at once. Dickinson argues that "The Heart and the Mind together make/ A single Continent." Fuzûlî is inclusive of both the heart and the mind when he states "The mind and the heart are entrusted to you." Nev'î makes reason the captain of the vessel of the heart and lets it navigate the seas of poetry. Sezai Karakoç, an important poet of the İkinci Yeni ("Second New") movement, imagines "a mind that descended from Mount Sinai" and "A soul that returned from Ascension" in the poem *Ping-pong Masası (The Ping-Pong Table)*.

MORE THAN THE MIND AND CONSCIOUSNESS

The Modernists attempted to create a photograph of the mind through the stream of consciousness technique, the success of which is debatable, as in Dickinson's words, "The Mind is so near itself - it cannot see distinctly." Apparently suffering from a similar difficulty, Nâbî describes the mind as an obscure book.

As I write these lines, my feelings are similar: Until I sat down to write this essay, I was not aware of this, but my dictionary tells me that "mind" amounts to more than reason and consciousness, and that it also encompasses the functions of comprehension and memory. I will not lie: My mind wanders.

WHEN I HEARD THE LEARN'D ASTRONOMER

When I heard the learn'd astronomer,
When the proofs, the figures, were ranged in columns before me,
When I was shown the charts and diagrams, to add, divide,
and measure them,
When I sitting heard the astronomer where he lectured with
much applause in the lecture-room,
How soon unaccountable I became tired and sick,
Till rising and gliding out I wander'd off by myself,
In the mystical moist night-air, and from time to time,
Look'd up in perfect silence at the stars.

Walt Whitman

THE HEART IS THE CAPITAL OF THE MIND

The Heart is the Capital of the Mind—
The Mind is a single State—
The Heart and the Mind together make
A single Continent—

One—is the Population—
Numerous enough—
This ecstatic Nation
Seek—it is Yourself.
Emily Dickinson

Emily Dickinson

HALUK'S CREED

There is a power that created all beings, high and clean
Holy and great; with my soul, this, I believe.

The land is my country, human race my nation... You
Become human when you understand that, this, I believe.

We are the the Satan and the Genie, there is no devil or angel;
The world will become Heaven with human kind, this, I believe.

All humanity are siblings... Dream!
Maybe but still, in that dream, firmly in my heart, do I believe.

No doubt, a bright doomsday will follow
This life of the grave, strongly in this do I believe.

In front of the growing miracles of the mind,
The False will sink into the earth, this, I believe.

Tevfik Fikret

Translation: Nazmi Ağıl

KOÇ UNIVERSITY
RAHMİ M. KOÇ
SCIENCE MEDAL

THE ROBOTS WITHIN

Initiated to award scientists of Turkish origin in recognition of outstanding success and pioneering contributions to universal knowledge in their respective fields, the third Koç University Rahmi M. Koç Medal of Science was presented to Professor Metin Sitti on November 1, 2018. Professor Metin Sitti was deemed worthy of the medal for his pioneering and outstanding contributions to micro and nanoscale robotics for biomedical applications. We talked to Metin Sitti about his research and his work, which played an important role in winning this special award, and his plans for the future.

As a researcher, you have worked on many different projects and made important findings. The medical robots at the center of your latest research are currently very popular. We assume you are not the first to work in this area – we've certainly found many examples in science fiction literature and cinema. What makes your work so unique?

Medical robots are not a new thing. There are very advanced commercial medical robotics systems, especially in laparoscopic surgery, or prostate, orthopaedic, brain and heart surgery. These are large, wired robots that work outside the human body and are the product of research conducted since the 1980s. The particular area I work in includes wireless micro- or nanorobots which can enter the human body and do surgery or deliver medicine, just like the ones in *Fantastic Voyage*. They can be easily and painlessly placed into the body either by being swallowed or injected, they can access very small and narrow regions because they are wireless, and they are pain-free and do not require the patient to be sedated. They are the future of medical technology. But of course, wireless miniature medical robots are still very new: they've only been around for about ten to fifteen years and other groups are working on this area in Japan, Europe, and the US. As for why our work is unique, we recently completed an important progressive step for these small devices. As well as being wireless, we've now designed and manufactured them using soft materials – something like a soft and flexible rubber band. We place magnetic particles in an elastic polymer and control them remotely by changing their shape from outside the body. The robots can change shape, navigate their way around the body, and release medicine. We call these externally controlled soft robots. They are not at all invasive and do not harm the body. Those

▲ The Koç University Rahmi M. Koç Science Medal ceremony. Rahmi M. Koç (left), Prof. Metin Sitti (center), Prof. Umran İnan (right).

large robots we mentioned earlier are quite risky because the slightest mistake can harm a patient severely. These, on the other hand, are harmless and can reach very different areas because they are soft and tiny.

How small exactly are these robots?

Currently, the first prototypes are just a few millimeters across, about four millimeters. We are trying to make them even smaller and scale them down to only tens of micrometers. Today's catheters are also miniaturized to a scale of millimeters, but they have the problem of being wired – this means they are restricted in terms of where they can be used and can also pose a risk to the body. Even at the size of millimeters, our work is unique because our devices are wireless and can be inserted into the body with the same medical functions as a wired device. They can navigate around inside the body and conduct medical procedures – that's why these small, soft robots are our most influential work.

How do the robots move around when inside the body? Are they autonomous? How do they know where to go and what to do?

Generally, the most significant issue with medical devices is safety. We are very good at safety because our robots are soft-bodied, but as you mention, there is the question of how we know where to go, who decides, and who is in control? First of all, we have to know where we are inside the body, so the patient must be inside a machine which can show a physical image of the body, such as an ultrasound, X-ray, or MRI. Because the robot is so small, we use an imaging device like this to let us know what's going on inside the body and monitor the robot's location. The doctor uses a monitor to follow where the robot goes and gives it instructions. And although there is some risk while the robot makes its way around the body, the doctor is in control of the robot the entire time. Once the doctor plots a route, the robot navigates autonomously but must be followed visually at all times. The human body is extremely complicated so it is important to visually track it or it might end up in the wrong place or you might lose it. For the sake of both the process and the patient's safety, it is always better to give control to someone who has extensive knowledge of the human body and an excellent grasp of the entire procedure.

Is the primary function drug delivery?

To a point, yes. The soft robot's main feature is that we can change its shape remotely using a magnetic field. A sack on the robot opens when its shape changes, which releases the drugs. The first application of this technique might be with cancer therapy, specifically chemotherapy. Currently, chemotherapy involves swallowing or injecting drugs to distribute them throughout the body, but in fact, 95% of cancer medicine fails to reach the correct destination when it is administered, causing side effects. This is why targeted cancer

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drug delivery is so highly sought after and why drug companies are working very hard to achieve this. In our study, we are trying to deliver a large dose to the correct location and release it locally to try and minimize side effects – this would offer a very important advantage. Doing this also increases the actual effect of the drug because it is released in the correct tissue at the highest dosage. This is the robot's main function. Its secondary function is as follows: Let's say you have abnormal bleeding in a blood vein or the brain or the cardiovascular system. We can send the robot to the site of the bleeding and have it change shape into a plug to patch the vein. The bleeding stops and if the conditions return to normal the robot can transform back to its original shape and relocate itself. In this way, we can open and close different channels in the body according to a site-directed fashion. We can also heat the robot externally to give it a third function. The robot contains magnetic particles which heat up when you hit them with rapidly alternating magnetic fields. Cells begin to die at around 45°C, so you can attach robots to cancerous tissue and treat them by heating the robots. This kind of treatment is called hyperthermia and is a form of chemotherapy.

How does the body discard the robots once they finish their jobs? Are there no side effects?

We should first answer the question of how to get the robots into the body. We can do this in several ways according to where they need to be. For example, if our target is the digestive system, they are swallowed. But they need to be injected if our aim is the cardiovascular system or the brain. Therefore, the insertion system changes according to the disease or the targeted location. But there are many problems to consider when putting robots inside a body. First, the material used in manufacturing the robot must be compatible with the body's cells. If the body doesn't like the material, it might react aggressively and create toxic side effects. This is a critical problem, so we manufacture our soft robots using materials the body will like. Second, the body's

immune system will attack the robots just like any biological or synthetic intruder. Therefore, the materials we use must also be friendly, or compatible with the immune system. If this is done correctly the robot will not provoke negative side effects. Finally, problems may arise if there is something wrong with the instructions given to the robot or if something goes wrong with its autonomous guidance. By performing procedures under the supervision of a doctor, we can reduce such problems down to very small rates, close to 0%. So, once the robot or robots (because sometimes we will use more than one) is finished, what next? How do we get them out and what happens if we leave them inside? At this point, we have two solutions. Millimeter-size robots are magnetic, so they can be collected and removed using a magnet and catheter. What we'd rather do, and the method which yielded positive results in initial studies, is to have the robot dissolve completely inside the body. The critical thing is to ensure they dissolve over time because if they dissolve immediately you will lose the robot before it can finish its job.

How do you think this discovery will contribute to science? Which science fields will it affect later? What kind of projects can it lead to?

This technology is very interdisciplinary. Designing, manufacturing, controlling, and operating such a robot requires different practices and expertise. To begin with, you need an understanding and knowledge of materials science because all the materials must be selected and produced correctly. Your team must include someone who knows about materials science, chemistry, and polymer chemistry. A good knowledge of robotics is also necessary. Robotics means you need extensive knowledge of electrical and electronics engineering, mechanical engineering, and programming. Then, besides being able to inspect and control the robot's navigation, you need to know physics and fluid dynamics. And of course, you can't use these robots to conduct medical procedures without knowledge of physiology and medicine. What are the actions of that physiological system, what type of cells are there, what kind of reactions go on inside those cells, is there fluid flow or movement, and are the organs active? For that reason, you need first-class knowledge of anatomy. So our team includes researchers from virtually every field gathered into one group. With any new scientific discovery you are making a major contribution to almost all fields of science. We are discovering new and novel materials. For example, the shape-changing materials of these soft robots are fairly new to science. The way we track them medically, how we insert and remove them: all this requires new scientific methods. These robots are so small (almost nano size) that we can manufacture and release them into the body in hordes of hundreds or even thousands. Of course, they need to be collectively controlled from outside, so we need to understand collective systems. We look at animals, from as small as tiny bacteria, to see how other small animals operate both independently and collectively: we learn so much from nature. Scientifically speaking, we build robots which learn from nature that are inspired by nature. For instance, this soft-bodied robot is a worm, but at the same time, it is another type of soft-bodied jumping animal, or a drifting jellyfish or a swimming sperm. Nature has inspired many of our ideas. What is even more interesting is that while being inspired by nature helps you build new robots, actually building the robots also helps you better understand nature. Pursuing new medical applications, better understanding nature and designing new materials and methods inspire, and will continue to inspire, major inventions.

In a way, this is a kind of biomimicry, in which you mimic the behavior of animals. I understand you also have another very different project: to develop robots by harvesting human muscle cells and adhering them to robot limbs. How do you picture the future? What awaits us twenty to thirty years from now?

There are two or three choices in terms of materials. The first is to manufacture everything synthetically, such as elastic or magnetic materials. Additionally, when we're down to very small sizes like blood veins with diameters of 6-8 microns, a robot has to shrink to the size of a red blood cell in order to penetrate the veins. It is currently very difficult to synthetically produce robots on a cellular scale: some methods exist, but they are not as efficient as biological systems. Therefore, instead of a fully synthetic production, we thought 'why don't we use real cells in the robots?' Mobile living cells such as drifting bacteria, microorganism called algae or even our muscle cells, are already mobile within the body. We also host about 1.5 kilograms of bacteria in our gut, which are mobile and live symbiotically with us. We combine these micron-sized organisms with synthetic drugs and synthetic materials – this is why our project includes the word 'cyborg'. Biological systems are self-motile and driven by chemical energy, so there is no need to feed them with external energy. But when you build synthetic robots you need to provide energy for everything because there is no internal energy source. When you use a cell, on the other hand, it can be mobile for hours or days with the help of the cell's own chemical energy. The beautiful part is cells are aware of the pH, temperature, chemicals, and oxygen found in their surroundings. This is why we also use cells as sensors. In the past, people have built carriages and used horses for transportation, or used the olfactory senses of dogs and pigs to find certain materials and mushrooms. Throughout history

‘The human body is extremely complicated so it is important to visually track it or it might end up in the wrong place or you might lose it. For the sake of both the process and the patient’s safety, it is always better to give control to someone who has extensive knowledge of the human body and an excellent grasp of the entire procedure.’

we’ve used animals for various purposes, and in the same way, we are now using their micrometer-size versions. We produce small robots using the sensory, motor, and chemical properties of micron-sized biological cells. And so the robots of the future will not be entirely synthetic but will bring together advantages of both the synthetic and the natural: in other words, cyborg.

This reminds us of Ray Kurzweil’s book, *Singularity is Near*, in which he says there will be no war between humans and machines but instead there will be a singularity in which they merge...

When I present these subjects at medical conferences, doctors ask ‘will robots replace doctors?’. In the future, a robot could technically replace a surgeon, but this is not our objective. In fact, it isn’t the robot’s objective either. The goal is always to create machines to help humans. Robots have started to replace humans in certain factory production lines, is that good or bad? It is good if you use it correctly and wisely, but as I said, in general, it is better to have robots work with people rather than replace them. This is also our objective: we aim to produce medical robots that work with the doctor, help the doctor, and make the doctor’s job easier. These robots can help in drug delivery, surgical operations, and diagnosis. Of course, early diagnosis is very important. And so, our dream is to develop systems in which robots can be used to roam around and monitor our bodies constantly, notifying the doctor when they sense any abnormal changes. Maybe in the future, as you mention, robots will become an internal part of us.

Patients will always prefer to have a real doctor. Even though we may have successful or talented robots, people still require compassion...

Of course, compassion and trust are important but besides this, there is another ethical debate. If an autonomous car causes an accident, who is responsible? The car’s manufacturer? The person who wrote the algorithms? Or the driver? The same problems apply here. Who is responsible when something goes wrong? If the robot causes an accident while it is not under the guidance of the doctor, then you will need to blame the robot. After all, the point of putting a doctor in control of everything is so that the doctor has legal, psychological and technical responsibility, while also fulfilling certain human needs for the patient. Maybe future robots will be capable of engaging emotionally with patients but ultimately, it is better not to lose the human dimension.

You are in charge of a large department at the Max Planck Institute, a very important place. Do you recommend young scientists to broaden their interests and study interdisciplinary subjects?

Almost all studies have become interdisciplinary. Interdisciplinary teams advance more quickly in terms of making new inventions. But this does not mean you need to simultaneously learn biology, materials, chemistry, medicine, etc. It is essential to complete a focused undergraduate education in a basic field. Interdisciplinary studies become especially important in graduate, postgraduate and doctoral programs, as well as in research. Such students who are open to innovations, new ideas and other disciplines become more successful. Of course, you need to study hard, too. I received my robotics education by completing a double-major in physics and electrical and electronics engineering, topped off with a postgraduate in

electrical engineering. But I didn't stop there. I continue to learn all the time, including biology, medicine, materials science, and many other disciplines. My education taught me a very important ability during my education: learning how to learn. My advice to students is to get solid, extensive knowledge of a core field, move on to newer fields in addition to that education, and learn how to learn. As you place new knowledge on top of your basic knowledge, you will become much more successful. Of course, you also need to learn teamwork. In the end, you may know everything up to a certain depth but you will need experts in biology, materials science and robotics to come together in multidisciplinary teams. Students who have managed to build a certain repertoire but who have also adopted and understood teamwork personally and culturally can become flexible students and are more likely to complete very successful studies.

You were awarded the Rahmi M. Koç Medal of Science. Receiving a reward is certainly a prestigious achievement, but does it offer any other benefits to researchers?

The most important advantage of medals or awards is that they increase the recipient's visibility. These prizes are excellent tools for making a researcher better known in Turkey or abroad. People learn about you, students hear about you and researchers recognize you – this opens a lot of doors. Students come to study with you or researchers approach you for collaborative studies. In this way, it increases the influence of your scientific efforts. Until now, I had received many awards in foreign countries but none in Turkey. The reason why the Rahmi M. Koç Medal of Science is so special for me is that it is the first time I have won an award in Turkey. This makes me very happy. I have never severed my ties with Turkey, and thanks to this medal I will be able to participate in more studies here, train students, and find opportunities for collaborations. By doing collaborative studies here, I hope to boost people's contribution to science.

All in all, we can't deny there are benefits to the people of our country when they have broader horizons and understand science better...

My philosophy has always been not to follow the same direction as everyone else. Currently, young people worry about getting a footing abroad as soon as possible. But if you look at successful countries, they are all trying to find ways to keep talented and qualified people at home. We need to be pursuing science and creating new technology here in Turkey. Letting it all go abroad is dangerous for the country's future. Of course, this doesn't mean that everyone should stay here and no one should go anywhere. We can do science here as much as is possible and students should stay as long as they can: and those who leave – including teachers – should try to return. Everyone asks me why I came to Europe from the US when most people are trying to get to the US. I wanted to be closer to Turkey – that was one of the most important reasons. And I did get closer. Collaborations with Koç University and this medal will, of course, contribute further to this. There are great benefits in supporting and creating collaborations here in Turkey. I also intend to bring contacts and opportunities from abroad. Acting as a bridge is an important role for all of us. I mean, beyond personal success, it is always important to facilitate science, support successful studies and enable students to do research in our country. Koç University does this very well, so I think it's valuable to be supportive.

So, our last question: what important steps should be taken to fulfill young scientists' most urgent needs, or what steps should be taken to support them?

I have seen many systems, from Japan to the US and Europe. The most important thing for the success of our young scientists is a good education and a free environment. That is exactly the time when a young person's personality takes its final shape. It is also the period when their scientific curiosity, their plans and their knowledge pool begin to take shape. Therefore, a free environment and a high-quality education are pivotal. It is important to create an environment that can maintain quality at a certain level while having both financial support and good educators. But besides this, opportunities created by universities are also important. For example, better research opportunities will increase the success of our young scientists in scientific research. Doctoral students are one of the most fundamental elements in research and so some of our good students should be persuaded to do their research in Turkey. To do this, it is imperative to have a research environment that will satisfy these students, as well as overseas opportunities and visits. We are considering joint doctorate programs to enable this. Students could do a doctorate here and at the same time visit the Max Planck Institute in Germany or an institution in the US, and participate in joint doctorate programs. To conclude, we have to create environments where these students can be happier and more successful. ■

Interview: Elif Yılmaz, Communication Office

NEWS

100 TURKS WHO HAVE SHAPED MEDICINE

A survey by *Turkishtime* magazine brought together leading scientists in the field of medicine whose research, inventions, and treatment methods have brought them worldwide recognition. In the rankings created with reference to such criteria as the H-index, number of research projects, and number of citations, Prof. Tevfil Bedirhan Üstün (12), Prof. Tarık Tihan (17), Prof. Münci Kalaylıoğlu (18), Prof. Hülya Kayserili Karabey (28), Prof. Mehmet Kanbay (43), Prof. Bülent C. Urman (48), Prof. Mert Erkan (64), Prof. Kemal Sıtkı Türker (65), Prof. Önder Ergönül (72), and Prof. Vedat Şar (87) ranked among the top 100 scientists.

THE FIRST WHITE COAT CEREMONY OF SCHOOL OF NURSING STUDENTS

School of Nursing held the White Coat Ceremony for sophomore students with the participation of Mrs. Semahat Arsel, Board of Overseers Member of Koç University, on October 5, 2018. This ceremony is expected to become a tradition the students will remember proudly in the coming years.

VEKAM AWARDED FOR ITS CONTRIBUTION TO ARCHITECTURE

As part of the 16th National Architecture Exhibition and Awards held at CerModern in Ankara on April 6, 2018, the Koç University Vehbi Koç Ankara Studies Research Center (VEKAM) was awarded the Jury Special Award for Contribution to Architecture.

SUCCESS STORIES OF THE SHORT FILM AND DOCUMENTARY PROJECT

Design, Technology, and Society program doctoral student Sezen Kayhan completed her short film, *A Hard Day in the Empire (İmparatorlukta Zor Bir Gün)*, and is producing her documentary, *Women with Purple Violets (Mor Menekşeli Kadınlar)*. *A Hard Day in the Empire*, the filming of which was completed in October 2017, tells the story of a tragicomical day in the life of an art department assistant working on the set of a television series set in the Ottoman period. The film made its premiere at the 40th Montpellier Mediterranean Film Festival, one of the prominent film festivals of France. The film went on to be screened at many other national film festivals in Turkey, including the İzmir International Short Film Festival, the İstanbul International Short Film Festival, and the Kısa-ca International Student Film Festival. *Women with Purple Violets*, which tells the story of female fans who have been supporting the Orduspor football club passionately since 1967, won the Feature Documentary Pitching Platform Award at the Antalya Film Forum, organized as part of the 55th International Antalya Film Festival. Sezen Kayhan was selected for a Eurasiadoc Scriptwriting Residency, organized by Docmonde.

SCHOOL OF MEDICINE AWARDED ACCREDITATION


TIP EĞİTİMİ PROGRAMLARINI DEĞERLENDİRME ve AKREDİTASYON DERNEĞİ

AKREDİTASYON BELGESİ

Koç Üniversitesi Tıp Fakültesi

The Koç University School of Medicine was awarded accreditation by the Association for Evaluation and Accreditation of Medical Education Programs (TEPDAD). The accreditation will be valid until 2024. TEPDAD is a registered association of the Higher Education Quality Board and recognized by the World Medical Education Federation as an Accreditation Agency, and contributes to improve the quality of medical education with an ultimate aim of improving health care of the community.

SOLA THESIS AWARD GOES TO BARIŞ YILDIZ

Dr. Barış Yıldız of the Department of Industrial Engineering was awarded the 2018 SOLA (Informs - Section on Location Analysis) Thesis Award with his thesis titled "Relay Location in Telecommunications and Transportation Networks". Dr. Yıldız was invited to the annual INFORMS Meeting .

MARIE SKŁODOWSKA-CURIE ACTIONS GRANT

Asst. Prof. C. Ceyhun Arslan of Deparment of English Language and Comparative Literature was awarded a Marie Skłodowska-Curie Actions grant under the European Union's Horizon 2020 Research and Innovation program for his project, "OttMed: Reassessing Late Ottoman Literatures within a Mediterranean Framework."

THE EUROHAPTICS SOCIETY AWARD

Doctoral candidate Yasemin Vardar, who completed her thesis work with Prof. Burak Güçlü of Boğaziçi University and Prof. Çağatay Başdoğan of Koç University as her advisors, was awarded the Best Doctoral Thesis Award of the EuroHaptics Society at the IEEE World Haptics Conference held between June 9-12, 2019 in Tokyo.

NEWS

SMART FUTURE CONFERENCE

Organized by the College of Engineering as part of the 25th Anniversary celebrations of Koç University, the Smart Future Conference hosted a series of talks and panels on the Future of Cloud Computing, Human-Robot Interaction, Artificial Intelligence, the Rise of Artificial Emotional Intelligence and the Digital Era in the Life Sciences on May 4, 2018. The event saw participation by prominent speakers from various universities in Turkey, the United States, and Europe. Attendees found the opportunity to discuss the latest scientific developments in the relevant fields.

'THE CURIOUS CASE OF ÇATALHÖYÜK' EXHIBITION IN LONDON

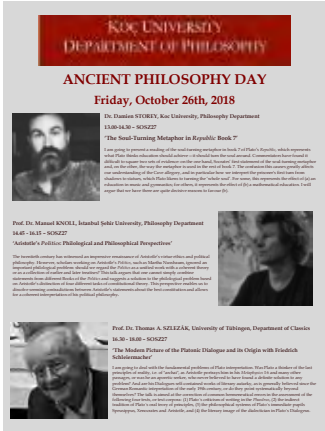
By invitation of the School of Oriental and African Studies (SOAS), Koç University Research Center for Anatolian Civilization's (ANAMED) most-visited exhibition, "The Curious Case of Çatalhöyük," was opened in London, making it ANAMED's first exhibit to travel internationally. ANAMED's major exhibition from 2017, which celebrated the site and the science of archaeology, opened at the Brunei Gallery in Russell Square on October 12, 2018.

THE PERMANENT IMPACT OF TRANSIENT DOCUMENTS

The 1st International Ephemera Studies Symposium, at which activities in various fields related to ephemera in Turkey were discussed, was held for the first time between April 25-27, 2018. The symposium brought together academics, collectors, curators, and experts from Turkey and around the world who carry out studies and research on the subject. The symposium presented a methodical, analytical, and classifying overview of ephemera studies, and has constituted an important step for the sustainable institutionalization of ephemera studies in Turkey on an international scientific platform. Concentrating on the main themes of Information and Document Management, Urban Studies, Collectors and Museology, Cultural Studies and Art and History Writing, the three-day symposium was met with keen interest. The symposium also supported the accredited exhibition "Filatelide Efemera" (Ephemera in Philately), a first in Turkey as well as in the world, in collaboration with the Federation of Turkish Philately Associations, as well as presenting parallel sessions organized by the Federation of Turkish Philately Associations and the Ankara Collectors Association.

ANCIENT PHILOSOPHY DAY

The Ancient Philosophy Day Seminar was held on October 26, 2018, with the participation of Dr. Damien Story of Koç University, Prof. Manuel Knoll of İstanbul Şehir University, and Prof. Thomas A. Szlezak of Tübingen University.


KOÇ UNIVERSITY
DEPARTMENT OF PHILOSOPHY

ANCIENT PHILOSOPHY DAY

Friday, October 26th, 2018

Dr. Damien STORY, Koç University, Philosophy Department

13.00-14.30 – SOS227

'The Soul-Turning Metaphor in *Republic* Book 7'

I was going to present a reading of the soul-turning metaphor in book 7 of Plato's *Republic*, which represents what Plato thinks education should achieve – it should turn the soul around. Commentators have found it difficult to square two sets of evidence on the one hand, Socrates' first statement of the soul-turning metaphor and, on the other, the way the metaphor is used in the rest of book 7. The confusion this causes greatly affects our understanding of the Cave allegory, and in particular how we interpret the prisoner's first turn from shadows to statues, which Plato likens to turning the 'whole soul'. For some, this represents the effect of (a) an education in music and gymnastics, for others, it represents the effect of (b) a mathematical education. I will argue that we have there are spatial distance reasons to favour (b).

Prof. Dr. Manuel KNOLL, Istanbul Şehir University, Philosophy Department

14.45 - 16.15 – SOS227

'Aristotle's *Politics*: Philological and Philosophical Perspectives'

The twentieth century has witnessed an impressive renaissance of Aristotle's virtue-ethics and political philosophy. However, scholars working on Aristotle's *Politics*, such as Martha Nussbaum, ignored an important philological problem: Should we read the *Politics* as a coherent treatise, as a philosophical theory or as a collection of earlier and later treatises? This talk argues that we cannot simply combine statements from different Books of the *Politics* and suggests a solution to the philological problem based on Aristotle's distinction of three kinds of political constitutional theory. This perspective enables us to dissolve seeming contradictions between Aristotle's statements about the best constitution and allows for a coherent interpretation of his political philosophy.

Prof. Dr. Thomas A. SZLEZÁK, University of Tübingen, Department of Classics

16.30 - 18.00 – SOS227

'The Modern Picture of the Platonic Dialogue and its Origin with Friedrich Schleiermacher'

I am going to deal with the fundamental problems of Plato interpretation. Was Plato a thinker of the last principles of reality, i.e. of 'archai', as Aristotle portrays him in his *Metaphysics* 14 and many other passages, or was he an agnostic seeker, who never believed to have found a definite solution to any problem? And are his Dialogues self-contained works of literary maturity, as is generally believed since the German Romantic interpretation of the early 19th century, or do they point systematically beyond themselves? In the first part, I will discuss the modern picture of Plato's dialogues, the interpretation of the following four texts, on most purposes: (1) Plato's criticism of writing in the *Phaedrus*, (2) the indirect tradition of Plato's oral theory of principles, (3) the philosophical systems of Plato's immediate pupils Speusippus, Xenocrates and Aristotle, and (4) the literary image of the dialectician in Plato's Dialogues.

NEW TRENDS IN HEMATOLOGY

Bringing together world-renowned speakers in the field of hematology from around the world every year with the contributions of the Koç University School of Medicine and enhancing its scientific profile and number of participants every year, the New Trends in Hematology Program was held for the 12th time on February 15-16, 2019, at Koç University and CVK Park Bosphorus Hotel. At this important event, expert speakers in their respective fields from around the world, as well as participants from various provinces of Turkey discussed the latest advances in the field of hematology.

'SAF'S WORLD PREMIERE IN TORONTO

Saf, the second feature film directed by MAVA lecturer Ali Vatansever, made its world premiere at the 43rd Toronto International Film Festival, held between September 6-16, 2018. Written by Ali Vatansever, the film was screened as part of the "Discovery" section of the festival, which hosts films by emerging directors of world cinema. The film follows the life of a couple as it is transformed as rumors of an urban transformation project spread through their neighborhood. A Turkish-German-Romanian co-production, *Saf* was supported by the Turkish Ministry of Culture and Tourism Directorate of Cinema, Film und Medienstiftung NRW, and Eurimages. *Saf* has received awards at prestigious film festivals such as Palm Springs International Film Festival, the 10th Bari International Film Festival, Ankara Film Festival and the 12th !f! Independent Film Festival.

OTTOMAN ARCADIA

ANAMED hosted the exhibit "Ottoman Arcadia: The Hamidian Expedition to the Land of Tribal Roots" between May 10, 2018, and May 5, 2019. The exhibition focused on three albums of photographs commissioned by Sultan Abdülhamid II via an official expedition in 1886 that were gifted to the German chancellor Otto von Bismarck. At the exhibition curated by Bahattin Öztuncay, Ahmet Ersoy, and Deniz Türker, the original photographs bearing informative handwritten captions in Ottoman Turkish and French were displayed in their entirety for the first time alongside photographs, albums, videos, and books from other collections.

NEWS

SYMPOSIUMS ORGANIZED AS PART OF THE 'NURSING NOW' CAMPAIGN

The Koç University School of Nursing (KUSON), country representative of the "Nursing Now" campaign for Turkey, organizes activities and events as part of the campaign which was launched by the Burdett Trust for Nursing in London in collaboration with the WHO (World Health Organization) and ICN (International Council of Nursing). The campaign aims to enable the global visibility of nursing with a variety of activities to be held all around the world until 2020, which is the year that marks Florence Nightingale's 200th birthday. The tenth student symposium, titled "In the Era of Change: The Role of Nurses," and the Koç University Nurses Week Symposium organized within the context of "Health for All," are some of them.

The Koç University School of Nursing Student Symposium was held on March 22, 2019, with the participation of nursing students from public and private universities in Istanbul. During the symposium, nursing students from six participant universities made presentations on the products, solutions, and methods nurses have invented using their experience and creativity to make a difference in the lives of patients. They also took part in a workshop on innovative and design thinking lead by Kworks, Koç University Entrepreneurship Research Center.

The Koç University Nurses Week Symposium was organized on May 3, 2019, as a part of global Nurses Week celebrations with the participation of Annette Kennedy, the president of International Nurses Council (ICN). During the symposium, participants discussed the roles of the World Health Organization, media, and nurses in the mission of "Health for All," which was declared as the theme of the year by the ICN. This year, the symposium, organized every year in collaboration with the Vehbi Koç Foundation Health Institutions and the Semahat Arsel Nursing Education and Research Center (SANERC), was held as a part of the "Nursing Now Campaign."

WEAVING HISTORY

VEKAM organized "Weaving History: Mystery of a City, Sof" exhibition between May 11-September 16, 2018. Curated by Prof. Filiz Yenişehirlioğlu and Dr. Gözde Çerçioğlu, the exhibition tells the story of the historical journey of the Ankara region's camlet fabric called "sof," a precious trade artefact indigenous to Ankara that has been exported to many trade centers around the world since the 15th century, and history of sof weaving. Among the artefacts exhibited were mohair from Topkapı Palace Museum, Sadberk Hanım Museum, and the Ankara Ethnography Museum; contemporary artefacts woven and knitted with mohair thread; and the painting titled *Ankara Manzarası (Ankara Landscape)*, which is regarded as an important document about mohair weaving and sof production in Ankara.

EDUCATION SUPPORT TO YOUNG RESEARCHERS

Organized with the collaboration of the Koç University School of Medicine, UNESCO, the Reproductive Health and Infertility Association, and Koç University Research Center for Translational Medicine (KUTTAM) in November 2018, the Frontiers in Reproduction Course aimed to enable young researchers who are deprived of educational opportunities due to war and economic difficulties to acquire up-to-date knowledge and technical information in the field. The course, an intensive researcher training course that has been presented at the Marine Biology Laboratories in the United States for a long period of time, offers applied education in advanced laboratory technologies used in reproductive biology and stem cell research, PCR, egg and sperm imaging, mitochondrial DNA analysis, cell division studies in immortalized cancer cells and in vitro fertilization technology, among many other important subjects.

YUSUF FRANKO IN ANKARA

ANAMED's popular 2017 exhibition, "The Characters of Yusuf Franko: An Ottoman Bureaucrat's Caricatures," opened in Turkey's capital Ankara on November 23, 2018, as part of the 2018 European Year of Cultural Heritage. The exhibition offered Ankara residents the opportunity to observe the colorful social milieu to which Yusuf Franko himself belonged. Supported by the Çankaya Municipality and Delegation of the European Union to Turkey, the Ankara edition of the Yusuf Franko exhibition was displayed at the Zülfü Livaneli Cultural Center in the Çankaya district.

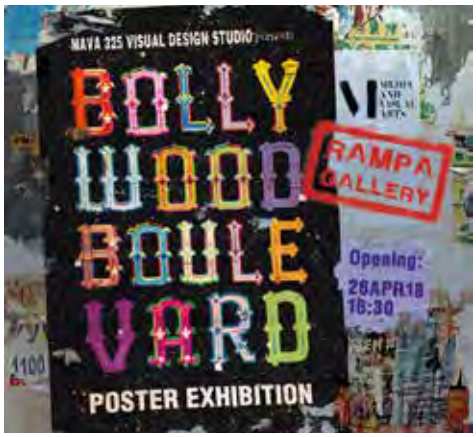
FACES OF JULIOPOLIS

The "Faces of Juliopolis: 3D Facial Modelling" workshop was held on October 17-18, 2018, at the Ankara Orchard House of VEKAM with the participation of Prof. Fabio Cavalli of Trieste University. The workshop was organized as part of the "Bioarchaeological and High-Tech Research in Human Skeletal Remains from the Ancient City of Juliopolis" project, which has been supported by VEKAM since 2017 and conducted by Dr. Ali Metin Büyükkarakaya of the Hacettepe University Department of Anthropology. The overall aims of the workshop were the reconstruction of facial traits (re-facing) and the scientific definition of their analysis, as well as discussions on the possible applications of this analysis in the field of archaeology. The participants discussed the advantages and pitfalls of the various methods proposed over the past 150 years and reviewed the history of the various theories regarding facial reconstruction. This was followed by an analysis of the relationships between facial skeletons and facial traits in real cases, practically performing the computer-assisted reconstruction of a face starting from a facial skeleton and critically analyzing the results obtained.

'REMEMBERING LIFE'

Autobiographical memory refers to the type of memory that includes people's recollections and their knowledge about events they have experienced. Despite the fact that there has not been a critical mass of researchers in many areas of psychology in Turkey, there is a good number of researchers working in the field of memory, particularly on autobiographical memory. With the idea that emerged during a conference on autobiographical memory periodically held at Aarhus University, a group of young researchers were asked to write chapters on the topics they had been working on that integrated these areas. This book is the culmination of that collaboration. The aim of the book *Remembering Life (Hayatı Hatırlamak)*, published by Koç University Press, is to inform the general public about memory in a comprehensible manner and to act as a handbook for people already familiar with the area. Even though *Remembering Life* is primarily a book on memory, many of the chapters discuss the way memory is related to developmental psychology, social psychology, cultural studies, and psychopathology. One of the co-authors of the book is Prof. Sami Gülgöz of the Department of Psychology at Koç University.

NEWS



POSTERS INSPIRED BY BOLLYWOOD FILMS

The students of the Media and Visual Arts Department's MAVA 325 Visual Design Studio exhibited the posters they designed as part of the course at the Rampa Gallery in April 2018. Reimagined and recreated, the film posters in exhibition ranged from the famous vagabond Awaraa to Turkish films inspired by Bollywood, to today's blockbuster action and epic films. The design process started with a detailed presentation on Bollywood films by Assistant Professor İpek Çelik Rappas. The students created a mood board (a collage of the visual material related to the subject for the development of compositional variations) based on the presentation. The draft posters were created in two groups, nostalgic and modern films, and were developed in accordance with the themes of the films, using Adobe software and various techniques studied by the students as part of the course. Before the opening, which was attended by the Consul General of India, Purnojyoti Mukherjee, Ahmet Gürata, the Chair of the Bilkent University Department of Communication and Design, delivered an entertaining speech on "Bollywood in Turkey" to the students and the audience.

NEW BOOKS ON LAW

The new and later editions of books by Prof. Nur Centel, Prof. Hamide Zafer, Asst. Prof. Mehmet Polat Kalafatoğlu and Asst. Prof. Cem Veziroğlu of Koç University Law School were published. The 15th edition of the book *Ceza Muhakemesi Hukuku (Penal Procedure Law)* by Prof. Nur Centel and Prof. Hamide Zafer was published with new updates to reflect the latest legal changes. The book *L'arbitrabilité en Matière de Propriété Industrielle (Arbitrability in Industrial Property Matters)* by Asst. Prof.Mehmet Polat Kalafatoğlu was published in March 2018 by the L'Harmattan publishing house. A revised and expanded second edition of the book *Kaldıraçlı Devralma ve Anonim Şirketin Finansal Yardım Yasağı (Leveraged Buyouts and the Ban on Financial Assistance for Anonymous Companies)*, co-authored by Asst. Prof. Cem Veziroğlu and Asst. Prof. Fatih Arıcı of Istanbul University Law School, was published by the XII Levha publishing house in October 2018.

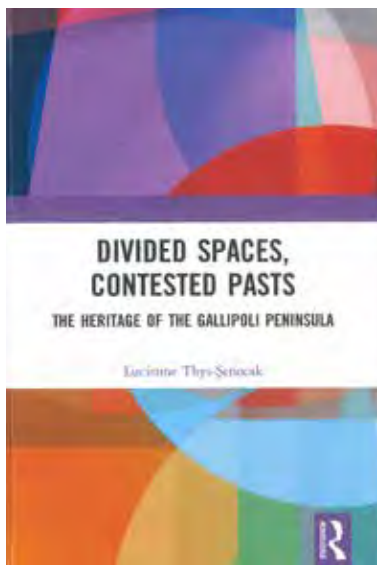
A GUIDE FOR SUSTAINABLE SOCIAL ENTREPRENEURS OF THE FUTURE

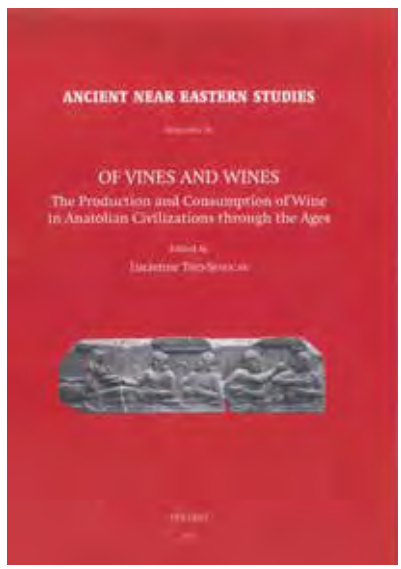
The Change with Business project, conducted for the last two years by the Koç University Social Impact Forum (KUSIF) in collaboration with the UniCredit Foundation and the Vehbi Koç Foundation to help the development of the social entrepreneurship industry, has concluded with an inspiring publication. Titled *Cases of Sustainable Social Entrepreneurship*, the book presents a sampling of successful social entrepreneurship examples with a sustainable business model that create positive social impact, aiming to inspire social entrepreneurs and everyone interested in the field. The five cases of social entrepreneurship featured in the book, all of which are members of the Ashoka Turkey network, are the AçıkAçık platform, which helps bolster the bridge of trust between non-governmental organizations and donors and brings them together; Good4Trust, which provides a meeting point for ecologically and socially ethical producers and consumers who prefer to consume their products; Otsimo, which develops mobile applications for children with special education requirements; Düşler Mutfağı (Kitchen of Dreams), which organizes training workshops for socially and physically handicapped participants and aims to give them professional skills in the field of cooking; and B-Fit, which aims to provide women with exercise and socializing opportunities and support women entrepreneurs. In addition to general information about and the vision statements of each project, *Cases of Sustainable Social Entrepreneurship* also includes information regarding the detailed business models, future plans, and investment initiatives of the featured projects, and is therefore a rare and valuable guide for the social entrepreneurs of the future with its selection of successful cases.

PROCEEDINGS OF THE 10TH INTERNATIONAL ANAMED ANNUAL SYMPOSIUM PUBLISHED

The proceedings of the 10th International ANAMED Annual Symposium, edited by Asst. Prof. Ivana Jevtić and Asst. Prof. Suzan Yalman from Koç University's Department of Archaeology and History of Art, were published in English and Turkish versions with the title *Spolia Reincarnated: Afterlives of Objects, Materials, and Spaces in Anatolia from Antiquity to the Ottoman Era.*

TWO NEW PUBLICATIONS





Two new books by Prof. Lucienne Thys Şenocak of the Department of Archaeology and Art History were recently published. The book *Divided Spaces, Contested Pasts* explores the history of Gallipoli peninsula's heritage. *Of Vines and Wines* focuses on the production and consumption of wine in Anatolian civilizations through the ages.

NEWS

WALADU: THE DEVELOPMENT AND STRUCTURING OF BA COURSES IN ARCHAEOLOGY IN IRAQ

The Waladu Project launched in 2017 as a joint three-year project by Bologna University, Koç University, and Ludwigs-Maximilians University with three Iraqi partner universities, Baghdad, Kufa, and Qadisiyeh Universities, offers Iraqi archeologists junior and senior staff training programs at these European universities. One of the highlights of the project was the summer school organized at Koç University in 2018, where four students from each of these universities were selected to attend classes on archaeobotany, petrography, GIS, Ancient Near Eastern archaeology, and cultural heritage preservation. It was a unique opportunity for the participants to meet, attend classes, research projects, and explore the city together. Of the project, Asst. Prof. Çiğdem Maner of the Department of Archaeology and History of Art said, "During the visits to Baghdad and Najafin, I was able to see remains from the Mesopotamian cultures, which I had only known from books, to teach, to meet new colleagues, and to understand the importance of the Waladu Project for our Iraqi partner universities." As part of the Waladu project, libraries (Walib) and laboratories (Walab) at all three universities have been established and will be inaugurated in 2019 to support scientific research and publications in the future. The Waladu Project will lead to new projects and collaborations in Iraq.

The project was co-founded by the European Union within the framework of the Erasmus+ Capacity Building Key Action 2 in the field of higher education. The objectives are to modernize undergraduate courses in archaeology and ancient history in Iraqi universities, providing an innovative educational experience and reinforced capacity to design teaching units; to teach and to produce innovative knowledge by the local teaching staff; and to foster international collaborations between the EU and the Iraq higher education institutions for the exchange of academic knowledge at any level by framing them in a recognized and internationally regulated network.

For more information about the project:
site.unibo.it/waladu/en
www.facebook.com/waladuproject

RESOLUTION OF A CONJECTURE ABOUT THE CONVEXITY OF ZETA FUNCTIONS

Prof. Emre Alkan of College of Science settled an important conjecture about the convexity of zeta functions dating from 2005. The proof has been published in the prestigious journal of the subject *Journal of Mathematical Analysis and Applications*, April 2019 issue.

NANOSCALE HORIZONS BEST POSTER AWARD

Biomedical Science and Engineering PhD student Houman Bahmani Jalali won the Nanoscale Horizons Prize at the 10th International Conference on Quantum Dots (QD 2018) in Toronto, Canada, with his work titled "Synthesis of Bio compatible Type-II in P/ZnO Quantum Dots."

We extend our thanks and congratulations to our faculty members who were granted national and international awards for their valuable studies and research in 2018 and 2019.

TÜBİTAK* AWARDS

Assoc. Prof. Alper Uzun	2019 TÜBİTAK Encouragement Award
Assoc. Prof. Nurhan Özlü Sıcakkan	2019 TÜBİTAK Encouragement Award
Assoc. Prof. F. Nükhet Harmancıoğlu Gür	2019 TÜBİTAK Encouragement Award
Assoc. Prof. Şener Aktürk	2019 TÜBİTAK Encouragement Award
Asst. Prof. Sedat Nizamoğlu	2018 TÜBİTAK Encouragement Award

TÜBA* AWARDS

Assoc. Prof. Nilüfer Zümrüt Aydınoğlu	2018 TÜBA Young Scientist Outstanding Achievement
Assoc. Prof. Tilbe Göksun	2018 TÜBA Young Scientist Outstanding Achievement

INTERNATIONAL AWARDS

Asst. Prof. Barış Büyükokutan	2019 ASA Comparative-Historical Sociology's Charles Tilly Best Article Award
Prof. Oğuz Tekin	2019 Archer M. Huntington Award
M.D. Seçil Vural	L'Oréal-UNESCO For Women in Science Fellowships 2019
Asst. Prof. Ceyda Açılan Ayhan	L'Oréal-UNESCO For Women in Science Fellowships 2018

NATIONAL AWARDS

Asst. Prof. Ayşe Koca Çaydaşı	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Barış Yıldız	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Çağlar Akçay	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Didem Unat	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Erdem Yörük	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Gizem Erdem Gürel	2019 BAGEP Science Academy Young Scientist Award
Asst. Prof. Hasan İnci	2019 BAGEP Science Academy Young Scientist Award
Assoc. Prof. Tamer Önder	2019 Sabri Ülker Science Award
Asst. Prof. Ceyda Açılan Ayhan	Dr. Nejat Eczacıbaşı Medical Awards (Medical Research Award)
Assoc. Prof. Sinem Çöleri Ergen	2018 ANTİKAD Academician of the Year Award
Assoc. Prof. Ertuğrul Başar	2018 Mustafa Parlar Foundation Research Encouragement Award

***TÜBİTAK**: The Scientific and Technological Research Council of Turkey **TÜBA:** Turkish Academy of Sciences

THE MOST KURIOUS OF 2018/19

KURIOUS was once again the home of popular science in 2018 and 2019. Here is a compilation of last year's highlights.

WOULD YOU LIKE TO HAVE YOUR CELLS REPROGRAMMED?

Stem cell therapy has been on the rise in the treatment of genetic and chronic metabolic diseases and sometimes is the only solution. The therapy, however, has one serious setback: tissue compatibility. Own cells are tailor-cut and highly compatible. Moreover, thanks to a technique improved by Assoc. Prof. Tamer Önder of the Koç University Medicine School and his team, results can be obtained much faster and a higher success rate has been achieved.

https://kurious.ku.edu.tr/en/news/would-you-like-to-have-your-cells-reprogrammed/

TECHNOLOGY ON OUR FINGERTIPS

Ever heard of the term "haptics"? If you haven't, it is widely used in the touch screens that you encounter every day. Prof. Çağatay Başdoğan of the Koç University Mechanical Engineering Department, the director of the Mechatronics and Robotics Laboratory, conducts research in this field. Thanks to his team, one day you might be able to feel the fabric and texture of a jacket that you wish to buy online, just by touching the screen.

https://kurious.ku.edu.tr/en/news/technology-on-our-fingertips/

CHERNOBYL: A SANCTUARY OF WILDLIFE

It has been 33 years since the largest nuclear accident in history, which occurred in the Chernobyl nuclear power plant. In the wake of the enormously devastating effects of the accident, an unexpected richness of wildlife has emerged. What is the reason behind the high biodiversity in the region? Have the effects of radioactivity really subsided?

https://kurious.ku.edu.tr/en/chernobyl-a-sanctuary-of-wildlife/

THE PHYSICS OF THE PERFECT PIZZA

Would you like to eat the most delicious pizza in the world? How about a little help from physics? You have two options: You can either fly to Rome and order a margherita baked in a brick oven, or you can listen to us tell you how to make the perfect pizza with the oven in your kitchen.

https://kurious.ku.edu.tr/en/news/physics-of-the-perfect-pizza/

THE FIRST POSE OF A BLACK HOLE

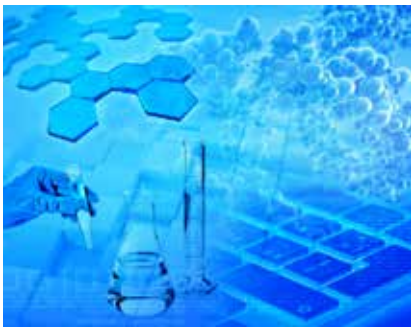
One of the long-term dreams of mankind just became a reality! Scientists have successfully captured a photograph of the supermassive black hole in the center of a galaxy 55 million light years away. The first photograph in history of a black hole shows an extremely striking resemblance to the artistic expressions and simulation images worked on previously.

https://kurious.ku.edu.tr/en/news/the-first-pose-of-a-black-hole/

WHY ARE INSECTS DISAPPEARING?

Forty percent of the world's insect species are in danger of extinction. Whether you like insects or not, their loss will have major consequences and major changes in our lives. What is really going on in the insect world? How have so many species come under threat of extinction in such a short time?

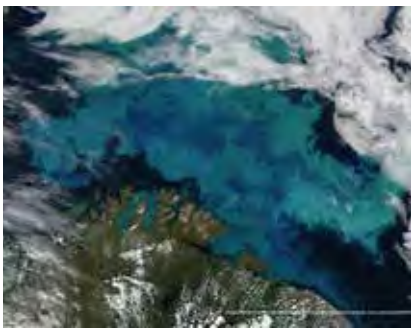
https://kurious.ku.edu.tr/en/why-are-insects-disappearing/



IF TWO NAUGHTY PROTEINS ENCOUNTER

Sıla Özdemir, who completed her doctorate in Koç University's Department of Chemistry and Biological Engineering, has conducted important research on understanding the interaction between two proteins. These studies enlighten a key point in developing a drug that might be able to cure cancer.

https://kurious.ku.edu.tr/en/news/if-two-naughty-proteins-encounter/



CHANGING OCEAN COLORS

Climate change will cause a change in the color of the oceans, which cover three fourth of the Earth. In a few centuries, we may still refer to our home as the "blue planet," but it may not be the same blue as now.

https://kurious.ku.edu.tr/en/news/changing-ocean-colours/

THE END OF URL?

Last year, the security team of Google Chrome suggested an unexpected idea in order to enhance our internet experience and make it more secure: getting rid of URLs as we know them. But how is that going to happen?

https://kurious.ku.edu.tr/en/news/the-end-of-url/

WHERE IS MONA LISA LOOKING?

Researchers demonstrated that the "Mona Lisa Effect," considered one of the most famous paintings, is nothing but a misnomer. However, we have been discussing for years with which eye she is watching us.

https://kurious.ku.edu.tr/en/news/where-is-mona-lisa-looking-at/

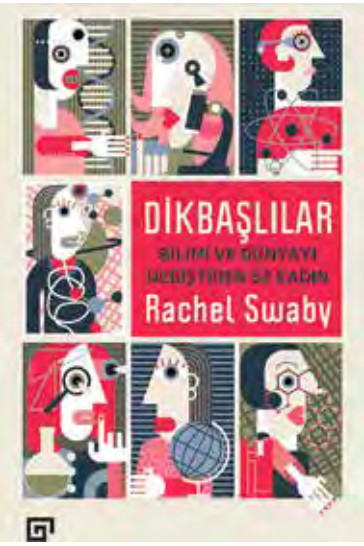
DOES YOUR ORAL HEALTH DETERMINE YOUR ALZHEIMER'S DISEASE RISK?

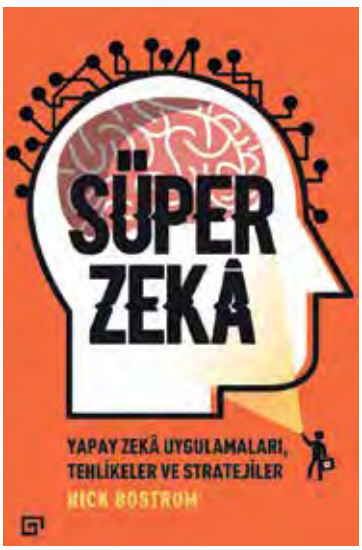
Does the thought of Alzheimer's disease scare you? If your answer is yes, we urge you to take good care of your oral health. Because a new study demonstrates even stronger evidence for a correlation between oral health and Alzheimer's disease.

https://kurious.ku.edu.tr/en/your-oral-health-might-be-determining-your-alzheimers-risk/

KUP

FUTURE FROM A SCIENTIFIC PERSPECTIVE





Koç University Press (KUP), undertaking a pioneering position as Koç University's aim to be a "center of excellence" requires, continues to publish on themes presenting the most recent knowledge in line with the scientific advancements in the world. *Dikbaşlılar: Bilimi ve Dünyayı Değiştiren 52 Kadın (Heads Held High: 52 Women Who Changed Science and the World)*, penned by journalist Rachel Swaby, conveys stories from 52 female scientists on discrimination they have faced and their dedication to science, including names such as Virginia Apgar, Barbara McClintock, Chien-Shiung Wu, and Sophie Kowalevski. *Süper Zekâ: Yapay Zekâ Uygulamaları, Tehlikeler ve Stratejiler (Superintelligence: The Applications, Dangers, and Strategies of Artificial Intelligence)*, written by Nick Bostrom, professor of philosophy at Oxford University, examines the nature of human intelligence, putting forward the contents and limits of natural and artificial intelligence in a detailed fashion. *Yaratılıştaki Çatlak: Gen Düzenlemenin Evrime Hükmeden İnanılmaz Gücü (The Crack in Creation: The Incredible Power of Gene Regulation to Dominate Evolution)* investigates the technology of CRISPR-Cas9 Genome Editing as a milestone in the field of biology, narrated by its creator, Jennifer A. Doudna.

For more information on KUP books:

Web: press.ku.edu.tr/en

Instagram: kocuniversitesiyayinlari

Facebook: @kuyayinlari

Twitter: @kuyayinlari

KUP BOOK STORE ON ISTIKLAL AVENUE

Koç University Press (KUP), which has been filling in an important gap in the scientific literature of the academic and intellectual world since 2010, has opened its first book store in Beyoğlu. On the first floor of Merkez Han, Istiklal Avenue, KUP books are available with a 20% discount. More than 200 books on arts and culture, philosophy and history along with collection books belonging to Sadberk Hanım Museum and Pera Museum, as well as books from VEKAM, ANAMED, GABAM, and AKMED await readers in the store. Open Tuesday through Saturday, from 12:00 to 20:00 (closed Sundays and Mondays), the book store also hosts interviews and events.

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