NEW WORK ORDER

THE HUMAN FACTOR@WORK
What is the essence of a human? What will we contribute to the connected world of work? Where do we have an advantage in our interaction with machines and the media, and in our cooperative work? Artificial intelligence (AI) is becoming ever smarter by imitating human models, but very few of us know what connections are being made in human brains and bodies while we are learning or working. For example, office workers would be astonished to hear that our brains are unable to make a purely rational decision. Why do we know so little about the processes that are typically human and the factors that influence them? How can we use the full spectrum of our skills in smart environments if we do not understand how it operates? Should we ask Alexa?

HOW DO PEOPLE, IN ALL THEIR COMPLEXITY, REALLY FUNCTION?

This study does not seek to examine a New Normal. Instead, it calls for a much smarter future world of work that focusses on human beings as individuals. We are starting out in the Anthropocene era, amid mixed realities, artificial intelligence and smart assistance systems. What if everything could speak, connect interests, take account of feelings and celebrate the individual? How differently would we learn and work?

In order to join this dialogue, we humans should be familiar with our operating language, our influencing factors and our soft skills. In the central section of this study we ask questions about ourselves as cognitive beings and marvel over our highly networked learning processes, sensory perception, and the interactions between our mental states and conditioning, and conclude that we are also predisposed to agility and smart networking.

Following up on this idea, we consider what a professional work environment should provide for people: an active support for their activities and capabilities that is so effective that it at least compensates for the commuting time to and from the workplace. And so perceptible as a multisensory “user experience” that the processes of working and learning, as well as the office itself, become a performance space. It should reflect our selves, our potential and the ways we can develop it. But it can do this only if we tell it to.

THE AUTHOR

Birgit Gebhardt | Trend expert
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Birgit Gebhardt researches the future of work culture. She summarizes her findings, which are based on interviews with experts, consulting projects and travels, in the New Work Order studies. Her consulting for clients such as Swisscom Immobilien, Xing and Lufthansa is based on 12 years as a project manager at Trendbüro, of which she was managing director before founding her own company.

THE PUBLISHER

Interior Business Association
www.ibaonline.de

The IBA is an association of the players who are shaping the new world of work. As a network, a platform, and the organizer of ORGATEC, the IBA supports the trends developing around the digital transformation, together with their implications for the design of office environments. The New Work Order studies that the IBA has published since 2012 offer one format of condensed trend analysis.

PHOTOGRAPHY:
Rebecca Hoppé

Oliver Frese
COO Koelnmesse GmbH

People need human contact. That applies not only to trade fairs but also to the world of work as a whole. The expansion of the world of work into digital space brings us new opportunities, but it also faces us with new challenges.

Hendrik Hund
President of the Interior Business Association

During the coronavirus pandemic if not before, it became evident that “new work” and “agile working methods” are more than just buzzwords. It’s time for us to seriously ask how smart technologies, spaces and their furnishings can support us as we engage in collaborative forms of work.

HOW DO WE ACTUALLY WORK?

Smart environments will soon be supporting our work performance. But as long as we do not know what factors influence human intelligence, we’ll stay stuck in machine-related standards.

Oliver Frese
COO Koelnmesse GmbH

The human factor
During the industrial era, human beings were one source of labour alongside machines. In the future, we will be sources of natural intelligence alongside AI. At least that’s still a difference.

If course we’ve organized work around human beings – always! If we hadn’t, our work wouldn’t have got done at all!” Honestly? No, not really. Ever since industrialization began, we have organized human work around machines and process management as well as along global value chains. We have given people protective clothing, tools, furniture and monitors so that they can use machines and computers for hours at a time and integrate human work into this system in the first place. That’s the main reason why work has functioned – and why human beings have somehow functioned with it.

But today, in the age of intelligent connectivity, the ubiquitous communication between people, machines and media is overriding our neatly drawn borders. It translates languages and connects knowledge; inspires business models that focus on the customer; develops cross-sector platforms for individual services; helps culture and commerce to meet in the “customer journey”; and calls on the business and scientific communities to focus on a more socially oriented and sustainable capacity for innovation.

Industrial intelligence is being linked with artificial intelligence, contents with interests, talents with activities. As a result, it seems completely natural for old standardizing structures to disintegrate and be replaced by agility and diversity, and for organizations to re-imagine themselves as learning organisms and gradually start to breathe again through their people and customers. The world of work will connect with people’s living environments, and people will reorganize their spectrum of capabilities and action to include these and all other expanded realities.

We work in physical and cognitive networks. The world of work should support this connection above all.

If we regard our (inter)personal learning, problem-solving and actions as our central talents with activities. As a result, it seems completely natural for old standardizing structures to disintegrate and be replaced by agility and diversity, and for organizations to re-imagine themselves as learning organisms and gradually start to breathe again through their people and customers. The world of work will connect with people’s living environments, and people will reorganize their spectrum of capabilities and action to include these and all other expanded realities.

The crisis of the office is a crisis of human qualities. Most offices are purely business facilities rather than human beings.

Prof. Jan Taesens
Philosopher of culture, Burg Giebichenstein University of Art and Design, Halle/Saale

The “soft factors” are the essence of human beings

If we ourselves knew more about these physiological factors, we could long have been working in ways that are much more healthy, motivated and productive. We could vary our working methods to fit specific tasks, direct natural influences in targeted ways, grant higher priority to physical activity and changes of perspective, and organize a sensory dialogue on our own. In any case, if the world of work is to regain its performance advantage in a smart and connected living environment, it will succeed only by means of these supposedly “soft” qualities and human influencing factors.

The skilled trades adapted the environment to how people worked. For example, tailors didn’t work at a table – they sat on it, as close to the light as possible. The best way to handle fabrics and folds was to hold them on their knees as they sat cross-legged. The rim of a tailor’s hat protected him from glare and directed the light toward his handwork. A place close to the big glass windows, which were expensive then, honored the tailor’s skill and enabled him to note fashions as people passed by. From their “established” workplaces in the middle of the shop, everyone shared in the contact with customers. Sitting cross-legged does become tiring, but a tailor’s workshop shows more interaction between an individual’s work and its surroundings than some office furnishings do.

De Kleermakers-werkplaats (The Tailor’s Workshop) (1622–1668), Rijksmuseum, Amsterdam

Psychology as well as behavioural and brain research now confirm how strongly “soft” factors influence our ability to think and act. From the perspective of cognitive neurology, all of our decisions are supported by our individual world of experience and memory, which may reach back to our evolutionary memory. Biologists have demonstrated that our bodies continuously communicate with the external world, which in turn influences our metabolism and hormonal balance – and thus our (work) attitude, mood and emotions.
NETWORKED INTELLIGENCE IS A PROMISE

Industrialkalisierung war ein Schritt weiter für menschliches Denken; netzwerkzentrierte Intelligenz ist eine versprechende Vision. Was bedeutet dies für uns und wie können wir auf diese Idee reagieren?

When the British computer scientist Sir Tim Berners-Lee invented the World Wide Web, he invented a network structure in which information is directed toward its recipient just as intelligently as it is in our human organism, in the world of animals, on the forest floor and in all living beings. Communication is the lifefluid that operates decentrally in every cell (almost autonomously) and simultaneously in a networked fashion (similarly to quantum computers). It always strives to maintain a balance between the vital overall structure (the stakeholders) and its connection with its environment, while expending as little energy as possible (a work that technology has not yet reached).

In theory, we could use this smart network structure and the implementation of AI to make an even greater gain for human development than we did with industrialization. It would enable us to solve supply shortages, dependencies, mass standards, the exploitation of resources and environmental problems. It would also help us arrange our activities at the individual, local and global levels in ways that are fact-based and context related.

NOW IS THE TIME FOR NETWORKED AND INNOVATIVE THINKING!

Unfortunately, the transition between the old and the new logic is still shaped so that the most progressive pioneers of networking technology are basing their new business models on economic structures already considered to have been overcome. They try to own data, and they prioritize mass dimensions, monopolies and dependencies so that they can influence the market and control the public. “That’s not really why I invented the Web,” says Berners-Lee. However, he is obliged to conclude that the numerous free services we receive in exchange for our data are making it much more difficult to realize the decentralized business model that would create a direct link between supply and demand. It’s really up to us to determine how remote-controlled or how people-focused we want our lives to be.

From a trend researcher’s perspective, we should not deal with the structural transformation at the superficial level. In other words, it would be better not to implement political protectionism or retroactively copy up data protection through bureaucratic measures. We should also stop trying to sell unfair “watering can” models (such as an unconditional basic income) as a lifesaver for society. The solutions we need for the structural challenges cannot be found in measures that were valid for the structures that have been replaced.

INDIVIDUALIZED INSTEAD OF STANDARD, AUTONOMOUS RATHER THAN ANONYMOUS

Instead, much more exciting possibilities are offered by social utopias that regard human beings not quantitatively as markets or machines but qualitatively, as individuals with all of their aptitudes, and call for an environment where individuals can pursue personal development. For example, only now would it be possible to implement aspects of educational reform (such as those of Maria Montessori) by means of individual feedback, adaptive surroundings and creative learning environments.

Above all, sharing (not saving!) individual data is central to enabling us to benefit at the individual level from the intelligence that surrounds us. This is the only way to support individual cognitive achievements and bridge physical limitations. It would make inclusion – and individual recognition – possible in the first place. There is a demand for more fundamental ideas on how to deal with our data DNA and for a better understanding of the necessity of interaction.

EXAMPLE

DATA PROTECTION IS REACHING ITS LIMITS

In the digital world of work, everything is permeated by data – and in many cases this process is not noticed and happens “behind the backs” of the players. However, in practice the fear of misuse blocks intelligent use of the data. Traditional data protection is reaching its limits. Even within companies it is becoming increasingly difficult to decide in advance which data should be collected, used and linked.

INVERSE TRANSPARENCY

An interdisciplinary consortium of the Technical University of Munich (TUM), the Institute for Social Science Research (IFSO) and the Ludwig-Maximilians-Universität München (LMU) is analysing the potential and the application scenario of the concept of “Inverse transparency”. Together with Software AG in Darmstadt, the consortium is testing pilot solutions for the broad application of this concept.

EMPOWERMENT OF BOTH SIDES

Software AG is making its use of employee data transparent to the employees, and it is informing them about their rights of objection regarding their privacy. The research project is also asking the employees about intelligent scopes of data collection and allowing them to review and evaluate their own work areas and work processes so that they can draw conclusions for their cooperation or direct suggestions for improvement to the organization. The openness of both sides within this shared testing ground is meant to strengthen mutual trust and form a foundation for the fair handling of data.

SOCIAL DEVELOPMENT

Mass society - Parallel society - Networked individual society

The development of industrial mass society (with marginal groups) into a networked individual society (in which inclusion would be possible for the first time). The parallel societies form the transition to the structural transformation.

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EVERYTHING SPEAKS, RECOGNIZES, MIRRORS AND ASSISTS

Today we take a factual approach to things we previously felt: blood pressure, stress and fatigue. On the basis of our personal agenda, smart timekeepers are organizing our lives. How is this changing management and performance?

Through our senses, our bodies continuously communicate with the world around them, anticipating, analysing and adapting. This generally happens without our knowledge, apparently automatically. Similarly, we can imagine smart sensors that in the future will mediate between human beings (or machines) and their immediate environment. In the area of merchandise management, vision and assistance systems are already counting, recognizing, measuring and testing. In autonomous driving, they are safeguarding proper distances. In sports medicine they support human movements, and in complex work processes they assign tasks to human beings.

SMART APPS NAVIGATE US THROUGH WORK AND LEISURE

If we now imagine this support in diverse areas as being networked and adapted to its respective context, it becomes evident that the world of work can no longer do without this digital support. And if we imagine this support in private areas as being networked and adapted to its respective context, it becomes evident that Alexa, Facebook and every Apple or smartwatch is already at the point of providing us with such services. Numerous points of contact register our activities individually, analyse and comment on our behaviour and will send augmented-reality overlays onto our glasses or contact lenses to propose routes and offers, give us instructions or warn us about dangers.

In these ways we too will use the advantages of smart assistance systems in order to make progress – in the work context as well as in our daily lives. At the personal level we will manage the blurring of the boundaries between work and leisure, link our continued professional training more strongly with our private interests, and in general take into our own assisted hands many of the processes related to our work and personal development for which our employers were previously responsible.

SMART ASSISTANCE PROVIDES US WITH INDIVIDUALIZED MANAGEMENT

Smart apps and AI-supported assistance systems will not only guide us through our daily lives but also act in the work context to take over significant aspects of individual leadership that we currently still expect from our supervisors. However, there is an increasing gap between employees’ expectation of personal, differentiated and frequent feedback on the one hand and, on the other, the company’s scheduling and legal framework. This gap makes it impossible for employed managers to satisfy the requirements of both sides. As a result, it is conceivable that – after some frictions regarding security and the revision of areas of responsibility – the apps from (probably) Google, Apple, Amazon or Facebook will also support us as we do our work at the office.

In view of the increasing flexibility of the place of work and the expectation that individuals should be able to deal with it, it seems absolutely necessary to consult egocentric assistance systems so that we can move around efficiently in these – and the virtual – worlds of work.

The fact-based mirroring of our actions helps us to realistically assess ourselves, can support our bargaining positions during negotiations, and motivates us to take on more individual responsibility and self-management.

OUTLOOK

INTELLIGENT ASSISTANCE

Pascal Bornet, who investigates the digital market in Singapore for McKinsey, believes that artificial intelligence will primarily provide people with support.

SMART ASSISTANCE SYSTEMS WILL ORGANIZE OUR DAILY LIVES

We can expect to see applications that we can use to monitor our daily work and optimize the workload. In ways that are similar to how we use a Fitbit or an Apple smartwatch, we can use AI to “measure” the pulse of our professional activities in order to make them healthier and more balanced – for example, by means of dashboards that analyse our daily activities and help us to improve them over time. In stressful situations, smart technology can also take work off our shoulders and communicate priorities or use mental training sessions to help us find a balance between professional and private life.

ARTIFICIAL INTELLIGENCE WILL INCREASE OUR PERFORMANCE CAPACITY

AI applications boost productivity by helping employees to focus on activities that generate more added value, less stress and a greater sense of fulfilment. In the future, assistance systems will act like a concierge or a wellness coach to offer us situation-related feedback in real-time as well as individualized recommendations for self-adjustment. Time-consuming tasks in our spectrum of activities can be automated. We will receive smart support as we do research and conduct our projects. At the global level, communication can be optimized and planning can be synchronized by means of automated transcription.
Leaders must master the “skill set” of the future

What capabilities and skills should be developed for a world of work in which we human beings maintain our sovereignty?

The training program of a bank in Frankfurt now offers trend research workshops in order to sensitize the participants to networked thinking and enable them to evaluate developments on a broader basis. In view of the closures of bank branches and a disruptive fintech market, employers recognize the need to teach trainees a broader spectrum of skills. The HR development unit of Energie AG Oberösterreich also wanted to find out what issues people will be focusing on in future. As part of this process, they extracted all the activities from the job descriptions in their unit. We then worked together to analyse how these activities might be changed by AI and smart communication. Which coordination tasks can be carried out directly or automatically? Where can transparency replace monitoring? Which decisions must still be made by which individuals, and to what extent must they be held responsible for these decisions? Which communications can be conducted technically via language bots, and for which ones should this be avoided?

The results of this analysis pointed to the need for a leaner process, more direct support via system information, and more dynamic, short-term, content-related and transdisciplinary cooperation among employees. All in all, these are skills that enable us to maintain our sovereignty in spite of increasing complexity. In other words, they represent the acquisition of methods and skills that enable us to actively participate in a self-organized and networked manner and have an impact on something. In short, they expand the scope for human action and make us flexible in the face of change.

Smart systems urge us to develop more human interfaces and skills

The Münchner Kreis, an association of business and science representatives, has developed a meta-paper about future-oriented skills on the basis of various studies of areas of competence. Whereas earlier studies of skills primarily connected areas of competence with digitalization, more recent studies tend to focus on the implications of digitalization for overall cooperation. The Münchner Kreis’ meta-paper deals with the process of catching up with this development, and distinguishes between personal, team, and system-related skills, which it labels “Individual”, “Team collaboration” and “Human/machine interaction” skills (see below). When measured against the comprehensively relevant “skill set”, the proportion of digital interaction levels off at the one-third mark. After all, we shouldn’t always be learning only how to adapt. Instead, we should develop greater curiosity about how we “function” as individuals – and how we cooperate with others.

Hypothesis: Promoting skills development

The personnel management company of Energie AG Oberösterreich operates on the assumption that skills development will become the central task of leadership.

Continuously adapting skills

A company, about half of the skills that are regarded as “relevant to the future” have changed significantly in the last five years. For example, in 2015 we wanted to train individuals to reduce complexity. In 2020, we are convinced that the complexity of systems must be recognized and that dealing appropriately with this complexity is an essential future-oriented skill. We need to keep up this process of continuous adjustment.

Leadership that supports autonomy

With regard to leadership, an assessment of the skills of the future has clearly shown that the central task of leadership is to challenge and encourage the employees for whom he or she is responsible. It’s also increasingly important in order to enable the use of intelligent systems that support communication.

Adapting the work environment

New requirements for people also give rise to changed coordination tasks. In the workplace. This basically means offering a venue for collaboration as well as an environment where individuals can withdraw and concentrate on solo working. In future, both kinds of activities will be carried out not only on the company premises but also in virtual space. In future, offices buildings must offer diverse spaces and a modern infrastructure for innovation processes, knowledge sharing and learning experiences – across department borders as well – because in all of these areas especially, personal contacts are crucial for top-quality output.

Human skills and areas of competence

<table>
<thead>
<tr>
<th>Individual</th>
<th>Team collaboration</th>
<th>Human/machine interaction</th>
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<tbody>
<tr>
<td>Individual responsibility</td>
<td>Communication</td>
<td>Media competence</td>
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<tr>
<td>Self-direction</td>
<td>Networking initiative</td>
<td>Digital mindset</td>
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<td>Social skills</td>
<td>Capacity for teamwork</td>
<td>Digital competence</td>
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<td>Orientational skills</td>
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<td>System competence</td>
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<td>Critical thinking</td>
<td>Active listening</td>
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<td>Focusing</td>
<td>Analytic skills</td>
<td>Information management</td>
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<tr>
<td>Decisiveness</td>
<td>Prioritizing</td>
<td>Assessment competence</td>
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<tr>
<td>Maturity</td>
<td>Negotiating skills</td>
<td>Professional expertise</td>
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<td>Learning skills</td>
<td>Emotional intelligence</td>
<td>Monitoring</td>
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<td>Self-motivation</td>
<td>Tolerance</td>
<td>Resilience</td>
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<tr>
<td>Self-awareness</td>
<td>Interpersonal competence</td>
<td>Ability to make distinctions</td>
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<tr>
<td>Mindfulness</td>
<td>Empathy</td>
<td>Cognitive transfer capacity</td>
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<td>Self-reflection</td>
<td>Ability to deal with conflict</td>
<td>Assertiveness</td>
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<td>Resilience</td>
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Johannes Michael Blättlerbinder
Managing Director, Personnel Management GmbH of Energie AG Oberösterreich

Birgit Pieringer
MBA, Team Leader Personnel and Management Development, Personnel Management Group of Energie AG Oberösterreich

HYPOTHESIS

PROMOTING SKILLS DEVELOPMENT

The personnel management company of Energie AG Oberösterreich operates on the assumption that skills development will become the central task of leadership.

CONTINUOUSLY ADAPTING SKILLS

If our company, about half of the skills that are regarded as “relevant to the future” have changed significantly in the last five years. For example, in 2015 we wanted to train individuals to reduce complexity. In 2020, we are convinced that the complexity of systems must be recognized and that dealing appropriately with this complexity is an essential future-oriented skill. We need to keep up this process of continuous adjustment.

LEADERSHIP THAT SUPPORTS AUTONOMY

With regard to leadership, an assessment of the skills of the future has clearly shown that the central task of leadership is to challenge and encourage the employees for whom he or she is responsible. It’s also essential for leaders to serve as models of clearly defined values and goals, encounter employees at eye level, delegate responsibility, back up employees and give them support. At the employee level, methodological skills, especially the skills of self-organization, collaboration and media competence, are becoming increasingly important in order to enable the use of intelligent systems that support communication.

ADAPTING THE WORK ENVIRONMENT

New requirements for people also give rise to changed coordination tasks. In the workplace. This basically means offering a venue for collaboration as well as an environment where individuals can withdraw and concentrate on solo working. In future, both kinds of activities will be carried out not only on the company premises but also in virtual space. In future, offices buildings must offer diverse spaces and a modern infrastructure for innovation processes, knowledge sharing and learning experiences – across department borders as well – because in all of these areas especially, personal contacts are crucial for top-quality output.

The goal is not only to enable individuals to operate in a networked world of work but also, and especially, to enable them to develop and design creative solutions for the challenges we face, whether it’s at the corporate or the personal level.

A meta-analysis of future-oriented skills, developed by the Münchner Kreis, 2019. Participation and structure: Birgit Gebhardt
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What does cognitive neuroscience (brain research and experimental psychology) know about people’s perceptions, preferences and behaviour? And what can be derived from this for the design and territory of the office?

What are the sensory inputs that we gather when we move through the world? How do these inform our behaviour and what can we do to design environments that support these natural processes?
We don’t just like nature for aesthetic, recreational or leisure-related reasons. We are part of it, and even if we’ve forgotten that, our bodies and minds still interact with it, for our own good.

Wooden skyscrapers, vertical gardens, a rainforest in an airport terminal: technology no longer celebrates itself but instead offers space for natural processes and phenomena. Initially the aim was to save energy and costs, but in the future that has already begun another aim is to noticeably increase people’s quality of stay.

This rethinking is taking place while metropolitan areas, traffic and communication swell in parallel with our personal levels of psychological stress. Humans can withstand all sorts of stress and still perform at high levels under pressure, but constant stress damages us physically and mentally. Since we continue to live with megacities, mobility and constant communication, it is important to know what kind of environment is good for us.

Biophilia – another word for our joy in living things – became anchored in us in the course of evolution. If you wanted to bring biophilia into the world of work and interiors, this could include the experiences that arise during a walk in a natural environment. For example, there would be mostly green plants in different growth phases (such as rolled-up and spread-out fern leaves) to underline the vitality of nature. We feel attracted by the complex aesthetics of such feathery leaf formats in multiple variations. Studies show that even images of green plants lower blood pressure and reduce stress in humans.

But nature also stimulates, for example by the change in light throughout the day. Natural daylight (including the sun’s warming rays) is best because it provides a broad spectrum of colours. The daylight colours synchronize our internal clock and create a secure feeling of time orientation, while the sun’s rays tickle your attention. A similar effect is created by shimmering surface reflections resembling water or cloud movements, such as those created artificially on the conference room ceiling of the Fraunhofer IAO.

### NATURE STIMULATES OUR SENSES AND THESE IN TURN STIMULATE US.

Changing floor coverings, ramps, views from several perspectives, varying ceiling heights, and room geometries subliminally ask us to take different positions and expose ourselves to changing sensory stimuli. These sensory stimuli are the motor for our physical and cognitive functions, which range from metabolic processes to the release of hormones and increase our receptivity to the here and now. Providing such stimuli in a targeted manner makes our work more productive and delightful.

The effects of the 14 biophilic patterns (see table) have all been proven by studies. (International references are to the original table Terrapin Bright Green).

### BIOPHILIC PARAMETERS AND THEIR IMPACT ON HUMAN BEINGS

<table>
<thead>
<tr>
<th>14 patterns</th>
<th>Stress reduction</th>
<th>Cognitive performance</th>
<th>Emotion, mood, preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual connection with nature</td>
<td>+ Blood pressure and heart rate</td>
<td>+ Mental engagement/attention</td>
<td>+ Attitude, satisfaction</td>
</tr>
<tr>
<td>Non-visual connection with nature</td>
<td>+ Systolic blood pressure and stress hormones</td>
<td>+ Cognitive performance</td>
<td>+ Mental health and tranquility</td>
</tr>
<tr>
<td>Non-rhythmic sensory stimuli</td>
<td>+ Heart rate, sympathetic nervous system</td>
<td>+ Attention and exploration</td>
<td></td>
</tr>
<tr>
<td>Dynamic and diffuse light</td>
<td>+ Heart rate, blood pressure</td>
<td>+ Concentration</td>
<td>Perception of temporal and spatial pressure</td>
</tr>
<tr>
<td>Dynamic and diffuse light</td>
<td>+ Circadian rhythm, visual comfort</td>
<td>+ Concentration, memory, responsiveness</td>
<td>Positive emotions, addressed preferences</td>
</tr>
<tr>
<td>Connection with natural systems</td>
<td>+ Blood pressure and heart rate</td>
<td>+ Feeling of tranquility</td>
<td></td>
</tr>
<tr>
<td>Biomorphic forms and patterns</td>
<td>+ Daotolic blood pressure</td>
<td>+ Cognitive performance</td>
<td>Comfort</td>
</tr>
<tr>
<td>Material connection with volume</td>
<td>+ Perception</td>
<td>+ Observed view preference</td>
<td></td>
</tr>
<tr>
<td>Complexity and order</td>
<td>+ Perception</td>
<td>+ Physical stress</td>
<td></td>
</tr>
<tr>
<td>Prospect</td>
<td>+ Stress</td>
<td>+ Boredom, irritation, fatigue</td>
<td>Comfort, perceived safety</td>
</tr>
<tr>
<td>Refuge</td>
<td>+ Concentration, attention, perceived safety</td>
<td>+ Strong pleasure responses</td>
<td></td>
</tr>
<tr>
<td>Mystery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk/peril</td>
<td></td>
<td>+ Strong dopamine or pleasure responses</td>
<td></td>
</tr>
</tbody>
</table>

Addresses all of our evolutionary preferences: The natural oasis at Changi Airport in Singapore is both an attraction and a place to relax. If you consider how much retail space the more than 1,000 trees and 100,000 bushes occupy, investing in green oases now even seems possible on commercial grounds. Singapore, which is increasingly turning into a garden city – partly thanks to highly networked data analyses – is a role model for mobility, security, quality of experience and sustainability.

Rain Vortex by Safdie Architects in the Jewel Complex at Changi Airport is the world’s largest indoor waterfall, fed by rainwater.

Photography: Tim Hurstley

The key biophilic patterns to which human organisms respond.

A catalogue of the natural elements and their positive impact on human beings. You can find the international research sources that demonstrate their effectiveness in the original table published by Terrapin Bright Green.

Given that sensors are now responding with high sensitivity to people, how do we react to our own senses? How do they influence us and what effect does this have?

We come into contact with the world — and the world with us — via our senses. It all begins with a feeling, a noise, a smell or a texture, which leads only a fraction of a second later to an assessment of the overall situation. To create this overall impression, all of the sensory stimuli from our environment and from inside our bodies that we consciously and unconsciously experience are integrated into information.

WE LOCATE OURSELVES WITHIN A SITUATION BY MEANS OF THE CONGRUENCE BETWEEN OUR SENSORY PERCEPTIONS, OUR ASSOCIATIONS AND OUR EMOTIONS

On the one hand, these items of information are compared with each other in order to obtain as complete a perception of the situation as possible. Inconsistencies such as the loss of synchronization of sound and image can reveal an illusion. A delay of as little as 80 milliseconds enables us to recognize that a scene is not real but artificial.

A comparison is also made via associations or memories so that a new perception is linked with stored experiences. Although the depth of experience of a human being is limited compared to the networking learned of artificial intelligence, it enables us to recognize causalities for a comparatively minimal expenditure of energy whenever doing so offers an intelligent added value for a given context.

The third comparison of external perceptions that our brain makes is a reaction to our emotional and physical mental state, to which the external situation should correspond as far as possible. In this way, our health, emotions and moods affect the spectrum of incoming impressions. The natural automation of these egocentric filters is for our own protection and benefit. Our brains intensify those environmental impressions that we will probably need to cope with in the situation we face.

OUR PERCEPTION CREATES SPACES

1. The perception space is constructed by a person’s sensory impressions in a given situation through interactions with the environment. The perception space is created by the participating sensory impressions, whose interaction can differ greatly, for example, when a blind person has to compensate for the lack of visual perception using other senses. Our brains do not simply create perception spaces out of local impressions, because temporal or activity-based impressions also create perception spaces. They reflect the world in the manner that a person perceives or can perceive it at that particular moment.

2. The conceptual space builds on the physical-sensory perception space through the addition of the components memory and perspective. It supplements the perception spaces with previous experiences, creates conceptions of the context of our actions and thus lays the foundation for continued trust in the future. To ensure that the conceptual space does not demand too much or too little of our own scope for action, it has to adjust itself to major changes in the perception of the world, as is shown by changed brain structures. Using digital navigation systems weakens the biological network that forms our sense of orientation while expanding our conceptual space.

3. The action space (also the interaction space) is created within the conceptual space. In a sense, it describes the active playing field, in which an individual can move with his or her perceptions and conceptions.

4. The effect space expands an individual’s action space by the addition of the components of the impact and the influence on other action spaces. Within the conceptual space, the effect space delineates the range of possibilities that enable us to overcome our physical limitations and increase self-effectiveness by means of smart tools and digital media, for example.

THE EMOTIONS WE FEEL SHAPE WHAT WE SEE

Vision just happens to be the most efficient way of acquiring knowledge. This is perhaps one reason why so large a part of our brains, amounting to perhaps one quarter of the total, is devoted to vision. Moreover, there are certain kinds of knowledge, such as the colour of a surface or the expression on a face, that can only be acquired through it.

Prof. Semir Zeki
Neurobiologist, founder of the Institute of Neuro-aesthetics, University College London

THE ATMOSPHERE DETERMINES THE QUALITY OF OUR EXPERIENCE

Human-centric lighting (HCL) research, which coordinates the effect of light with the interactions in our environment, has achieved a technological breakthrough with regard to light, which is the key means of creating atmospheres. Technology has succeeded in using white LEDs to recreate the natural visible light spectrum and simulate it chronologically throughout the day in building interiors (Nobel Prize in Physics 2014). From a biological standpoint, the discovery of melanopsin photoreceptors in the human retina (2002) explains how the body clock is adjusted in tune with the colour of daylight and the angle of the incident light. This enables us to light up not only for the purposes of illumination and decoration but also biodynamically to influence human perception, support our sleep/wake cycle, and accommodate our sense of well-being.

Numerous studies that report on improved comparative figures regarding sleep and basic mood also calculate how much energy our brains had to invest in order to endure or compensate for the previously inadequate lighting standards. For example, recent attempts to boost employees’ productivity by using a large share of blue light for a longer length of time than would normally be the case only resulted in temporary improvements to concentration. In fact, the number of people on sick leave even rose after a short period of time. Playing tricks on our internal operating system can backfire. Taking into account biodynamic factors that correspond to our capabilities is a more promising approach.
All of our perceptions give us a spatial and temporal concept of our existence in the environment. But the question is: How do we create this conceptual space?

WHAT DOES SPACE MEAN FOR OUR SENSES? Our perception does not create spaces like building a bridge. Instead, our conception of space and the world results from our interaction with the environment. It is the way we understand language by asking questions and receiving answers. I look at the elements of the environment and the environment answers my questions, not only because I see something but also because I feel something else. If I touch the wall, I can picture it along with my sight. In this way, we actively construct the world with all of our senses and link these impressions together to create experiences.

WHERE IS THIS PERCEPTION SPACE? Constructivists would say that it’s all in your head! However, the space of this interaction situation is a discussion space that is created by you listening and me speaking. It becomes richer the more intensively we engage in a dialogue and it is limited to the duration of the interview. This is the perception space that our brains generate. It is first constructed by our visual focus, which allows us to perceive the picture.

HOW DOES A PERCEPTION SPACE DIFFER FROM A CONCEPTUAL SPACE? A conceptual space is the remembered space of our perception. It regulates our scope for action from the various perception spaces. If a perception dimension is lost, for instance, we have to learn to explore the world with our remaining senses. As a result, my students no longer try to memorize these impressions together to create experiences.

HOW CAN I TRUST A SPACE? By gaining an impression of it. In most cases, this is primarily a visual impression, an image that I make of a situation. But often I am unable to objectively test a situation – the “what” – and therefore only make a decision about the “how” indicated by my impression of the situation. My impressions also play a role. Take a car race: All people who sleep proudly into a dynamically styled automobile but then get into traffic, this context destroys the whole impression. The space has to generate a true sensory experience, not merely an illusionary one. I want to succeed in my intention here.

DO CERTAIN COLOURS AFFECT HOW WE WORK? No, to think that would be a mistake. There is no specific colour that will always work well for us when we work or relax. Although light and colours can be used to generate atmospheres that tend to be more stimulating or relaxing, it would be wrong to classify people into such categories. We have to create tailored solutions that take into account the respective people, intention and place.

CHARGING PLACES OF LEARNING AND WORK WITH POSITIVE EMOTIONS Because people inevitably connect especially happy or terrible events with the place in which they happened, employees might be able to “incurate” their workrooms or offices to be a beautiful and moving experience. If the dominant impression of a place is charged with positive experiences, future stressful moments could be weakened in their effect on employees.

VIEWING POSSIBLE SOLUTIONS IN A DIFFERENT LIGHT REQUIRES A NEW START A functional magnetic resonance imaging (fMRI) study conducted by the INSERM Institute and the Department of Cognitive Neuroscience at the University of Lyon in Bron, France confirms the spatial theory of learning. People often learn better when they are forced to do so in a different way or approach the topic from a different angle. The research group investigated the neural activity of 10 people who were asked to complete tasks in line with the natural change in the colour of light and not to interrupt our work so frequently. Conversely, a clear change in the colour of light might help us to leave chosen paths in order to be able to literally see things from a different light. What’s more, our biohythms make us most productive at noon, when the colour of the light is brightest. So why do we go for lunch at this time?

LIGHTING IN ACCORDANCE WITH ONE’S MOOD AND PERSONALITY Human-centric lighting can be controlled in line with the time of day in order to generate preferred lighting moods according to the respective situation. Target group-specific lighting moods already exist for retail environments. In the same way that such lighting emphasizes aspects of the product range, the mannequins, and advertisements, it could be used by employees to personalize their workplaces or increase their motivation for an intended task.

LOOKING AHEAD, SECURING ONE’S BACK The prospect-refuge theory is in a one-to-one correspondence with the orientation of our senses. While we are very good at seeing and hearing what ever is in our field of vision, we can only impressively perceive what happens behind us. To prevent this subconscious anxiety, seats should be arranged in such a way that the user’s back is protected by a visual and acoustic barrier.
New Work Order

How one experiences life, how it “feels”. “Performance” to are shifting from in particular, the FAS, No. 47, of success Reckwitz makes the world centred on the user’s location. We make a larger personal contribution and individually find the best way of doing things. Has now finally reached the world of work. These self-centred skills are meant to help people – and how creatively we use the media to extend our own conceptual space. The question is – is actually increasing. The question is how we can use these technical possibilities in a targeted manner so that we can get into actual, analogue and personal touch with people with whom we have no previous connection. We view this as a digitalization opportunity that has not yet been exploited. Reckwitz: “Für eine Kultur der emotionalen Abkühlung”, PAS, No. 47, 24 November 2019.

How could personal identification with the workplace be created in daily life? How could the set of methods for target achievement be translated at the individual level? How could each person’s conceptual space be expanded? The question of how we want to work is thrown back at us. We are at liberty to try out how these guide rails work and how they might look – and how creatively we use the media to extend our own conceptual space.

The I as the Navel of the World

We exchange images. Our knowledge of others – and with it our continuous confirmation of our trust in them – is actually increasing. The question is how we can use these technical possibilities in a targeted manner so that we can get into actual, analogue and personal touch with people with whom we have no previous connection. We view this as a digitalization opportunity that has not yet been exploited.

Jan Wetzel
Biologist, Excerpted from: Julia Schauf: “Wir müssen zu einem Wir werden” FAZ, 9 March 2020

Since the introduction of Instagram, observational learning actually means “imitation”.

Prof. Albert Bandura OC
Canadian psychologist who developed the concept of self-efficacy and social cognitive theory, Stanford University, USA

The criteria are shifting from “performance” to “experience”. [...] For the new middle class in particular, the main thing is now how one experiences life, how it “feels”.

Prof. Andreas Reckwitz

FRIENDS OF KNOWLEDGE

We already use the medium that is most effective for expanding our conceptual spaces: images. Most people are very visual in nature and orient themselves primarily on the basis of facial expressions, patterns, motifs and image impressions. Images root themselves firmly in our minds and shape our conceptual space, as we, unfortunately, also know from the images of the old world of work. That’s why we need new images, images that excite us – and precisely why we like to go exploring on Instagram and other such websites.

The motto “I won’t believe it until I see it myself” is a workable approach, because the linking of seeing and experience leads to conviction.

Boosting one’s intelligence is firstly a matter of mindset. According to Carol Dweck, a psychologist at Stanford University, USA, intellectual ability is also a question of one’s self-image. As a result, stereotypes such as the idea that girls are less gifted than boys when it comes to mathematics strongly affect how well female students perform in corresponding tests.

Prof. Carol S. Dweck, Professor of Psychology, Stanford University

The hypothesis

The metaфор “I won’t believe it until I see it myself” is a workable approach, because the linking of seeing and experience leads to conviction.

The I as the Navel of the World

Navigation systems lay the world at everyone’s feet. Optimized image worlds outside our conceptual spaces.

What can we learn from the user-centric approach?

SELFIES SHOW US WHAT THE OFFICE WORLD STILL NEEDS TO LEARN: INDIVIDUALS MUST BE GIVEN THEIR EFFECT SPACE

We used to believe what we saw. We now know better. We optimize our environments as well as ourselves and use illusion for our benefit in enactments. We are shaping our own conceptual space. What’s interesting is that we, in a sense, implicitly learn twice in mixed realities. On the one hand, we do so by trying out unimagined possibilities and saving the effects, and, on the other, by our ability to observe ourselves during this learning process and trace developments. While the first is a push that enables us to exceed limits that were previously thought impossible to reach, the other factor reinforces our understanding of the way things are and our faith in our ability to translate it. This certainty is not a bad way to train oneself to learn self-management and self-learning skills!

The壕伊 Forces of Target Achievement Included in the Offer

The guide rails for target achievement included in the offer will be laid at the users’ feet, with the possibilities will be laid at the users’ feet, with the guide rails for target achievement included in the offer. The possibilities will be laid at the users’ feet, with the guide rails for target achievement included in the offer.

What can we learn from the user-centric approach?

HYPOTHESIS

Convincing Oneself

The motto “I won’t believe it until I see it myself” is a workable approach, because the linking of seeing and experience leads to conviction.

WE PUT EVERYTHING INTO RELATION

Thanks to our mirror neurons and socialization in early childhood, we can recognize and understand people’s emotions by their facial expressions. According to the neurologist Prof. Joachim Bauer, these mechanisms networks enable us to a degree to experience ourselves the way others see us and vice versa. As a result, we innately tend to meet other people’s expectations or to imitate other individuals. Both of these approaches help us to not lose our bearings. Sometimes we are influencers, sometimes followers – imitation also means learning by implication.

OBSEVING ONESELF AS ONE LEARNS

Self-organization, self-management, self-learning skills, self-motivation, self-marketing, individual responsibility... due to the digital transformation, the individualization trend creates the world centred on the user’s location. What can we learn from the user-centric approach?

Jan Wetzel
Biologist, Excerpted from: Julia Schauf: “Wir müssen zu einem Wir werden” FAZ, 9 March 2020

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OBSEVING ONESELF AS ONE LEARNS

Every YouTube tutorial combines the features of seeing and understanding. The learning process would be even more successful if one were to perform the task oneself and be filmed in doing so. Seeing oneself as capable of learning not only reinforces one’s memory. It also shows us that one was able to master the task. The confidence we gain in this way (plus the instructions) will probably motivate us to continue to practice the task.

A FOLLOWER’S DREAM ATMOSPHERE

Could I be accompanied by my favourite lighting effects, and, on the other, by our ability to observe ourselves during this learning process and trace developments. While the first is a push that enables us to exceed limits that were previously thought impossible to reach, the other factor reinforces our understanding of the way things are and our faith in our ability to translate it. This certainty is not a bad way to train oneself to learn self-management and self-learning skills!
SPACE BECOMES A STAGE AND EMPOWERS THE PERFORMERS

Physical reality or imaginary spaces? Selective perception or fooled senses?
When our experiences are enriched by additional dimensions, does this also expand our learning spectrum?

Experiences in mixed realities as well as in the spatial continuum between archaic physicality and incredible sensations force us to re-explore the conception and significance of space. There is no such thing as “the single space”. It never existed, because every individual has always experienced it differently. The existence of such a “single space” will be even less feasible in the future, due to superimposed information.

We begin to understand a space by interacting with it, which causes the space to take shape. The perception space then becomes a conceptual space, from which arises our action space, out of which we in turn create our effect space. With regard to perception psychology, the architectural space is the backdrop before which we act. This backdrop can stimulate or support us. However, it can also leave us cold. The latter would be a lost opportunity – not only for the “experience society”, but also for the world of work.

FROM THE CONCEPTUAL SPACE TO THE SENSATION SPACE

The only limit left is in our imagination. In the real world, any shape can now be built or printed and clever storytelling allows us to generate any type of emotional involvement. Here too, digital simulations augment and overlap the spatial structures, use the built environment as three-dimensional image carriers, and will play smart cities like stages.

The dialogue of surfaces has begun. The physical environment is expanding its boundaries and range of offers through spectacular impressions, augmented realities, smart sensors and social feedback.

A force of nature that is seemingly caught in the Wave aquarium

The LCD screen that is wrapped around a façade in Seoul, South Korea, simulates a wave breaking in the building.

There is no clear-cut line dividing interiors from exteriors. In every exterior that we move through, we obtain support and orientation from the interior spaces that we create for ourselves and in which we recreate the cave that used to house us.

Dr. Wolfram Ette, literary scholar, paraphrasing the religious philosopher Klaus Heinrich: In “Bau meister, Moderne Seelenräume”, 2/2019, 116th Volume

The pendulum swings in both directions. On the one hand, we are thrilled by new insights and worlds of experience, while, on the other, we look for support in certainties. Space is our enabler, mediator and transformer. Although our skills, activities and methods are changing, and vary depending on the task, we should also be able to shape the framework if we know the contents, the action and the effect that it is supposed to generate.

Workrooms that are supposed to support us in the purpose of our work must be designed as part of our user experience. Offices’ advantages are clear. A dive into the environment with all five senses can only take place on location. In this way, the Instagram generation, which is motivated by visual attractions, can also find its toolkit and work platform for curated self-awareness in the office.

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At some point in the 2020s we will get breakthrough augmented-reality glasses that will redefine our relationship with technology.

Marc Zuckerberg
Founder and CEO of Facebook

If a façade is complex and interesting, it affects people in a positive way – negatively if it is simple and monotonous.

Prof. Colin G. Ellard
Neuroscientist at the University of Waterloo in Canada and Director of the Urban Realities Laboratory

For us, architecture influences human cognition, experience and behaviour by allowing, facilitating, requiring, impeding or preventing various perceptions, thoughts, emotions and acts.

Prof. Daniel R. Montello
Professor at the Department of Geography and the Department of Psychological & Brain Sciences, University of California in Santa Barbara

GOING BACK TO THE CHILD EXPLORER MODE

Children practice creativity and collaboration in games such as Minecraft Earth, where kids of all ages and different interests construct their own buildings, walk through other players’ structures, modify constructions, learn know-how, and are proudly part of a community that can create worlds. We similarly use digital twins to simulate planned buildings. As is the case with the plans for the Siemensstadt in Berlin, we can walk through the virtual terrain and depict changes and their consequences for any discipline.

Children learn how to bake on YouTube and send pictures of their cakes to their grandparents. Video tutorials also help us to make repairs ourselves, while augmented reality overlays may allow us to dispense with workmen in the future. But how do children shape their physical environment? They continue to build caves out of chairs and blankets, hide within them, and feel cozy there in the same way as we attach additional value to our homes, furnish them in a way that appeals to the senses, and are now even pursuing the feel-good trend in the office.

NO MATTER WHETHER IT’S ACTUALLY BUILT OR IMAGINED, THE SPACE ALWAYS SERVES AS THE FRAMEWORK

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NEW POSSIBILITIES

- Facts
- Relation to context
- Remote presence
- Simulation
- Contemporaneity
- Shapability

RENEWED APPRECIATION

- Emotions
- Reference to oneself
- Authenticity
- Originality
- Naturalness
- Privacy
THE OPTIMAL EFFECT SPACE

If work is supposed to encourage us to unfold our potential in a more natural way, where would the potentials for an optimal spatial effect on this development be located?

First off, it should be an environment that more strongly accommodates our biological, sensory and emotional needs. As we determined using the example of the ceiling, our previous working environment has in no way harmonized with our biorythms. As a result, the focus on health and well-being by no means a nice-to-have trend, but a key factor that particularly pays off in stressful times of crisis. Moreover, our conscious sensory axis can be controlled by means of design, architecture and aesthetics. On the one hand, we ourselves are beings who interact with spatial form and allow ourselves to be influenced by our surroundings. On the other, we are shapers who can appropriate the world for ourselves.

OUR STRIVING TO APPROPRIATE AND MARK AREAS IS A RITUAL FOR MAKING A PLACE USEFUL FOR OUR OWN PURPOSES

The fact that we are predisposed to social as well as territorial behaviour (which Colin Elkin refers to on page 13) points to additional cognitive-emotional interactions that we look for in spaces. This provides us with three pointers for office design.

First, we need a place for our conception of work (see “conceptual space”). As visually predisposed beings, people remember an event’s context more easily by means of the location where it transpired. When we have very emotional experiences, our brains even store them the place inseparably with the memory. This means that new working methods also require us to have new images for our minds. Because our interaction space in particular is currently expanding on the playful and virtual level, might we be able to take the images from these new worlds?

¿The challenge for us: to understand space as a context. The context provides the framework through which people understand the significance of architectural structures.

Prof. Daniel R. Montalvo
Professor of the Department of Geography and the Department of Psychological & Brain Sciences University of California in Santa Barbara

THE SURROUNDINGS ACCORDING TO INTENTION

The graphic shows a variety of characteristics that range from physical-cultural spaces to fully immersive spaces. That’s because not every job requires the full range or the same range of digital equipment. What matters is an atmospheric distinction, which also provides psychological support for the intention behind the work. Possibilities for individual adaptation would also be desirable in each case.

CULTURE SPACES

- Ceremonies
  - Rituals
NO TECH

- Quiet refuge

CREATIVE SPACES

- Workshop spaces

TECHNOLOGICAL SPACES

- Supportive labs

FULLY IMMERSIVE SPACES

- Virtual Reality experiences

FROM WORKROOMS TO INTERACTION SPACES

It is important that the increase in methods and opportunities for interactions also lead to an increase in associations and rituals that fit with a company’s culture and its team spirit. This definitely does not mean embellishment but rather a visual comprehension of a situation, which is also a form of appropriation.

EXAMPLE

HUMAN-CENTRIC DESIGN

At Adobe, Lacey Arslan’s job title was “Workplace Experience Designer”. Her holistic understanding of design could not been better described.

A HOLISTIC IDEA OF WELLBEING

Besides Adobe’s Wellness Center, Center covering a whole floor with various offerings for fitness, training and therapies (including the Somadome sensory room, see page 12), Adobe has ergonomics workstations, an onsite dietician, access to meditation apps, and healthy lunch, beverage and snack options. The holistic thinking about wellbeing also embraces the quality of architecture and design. So, whenever possible, the built environment is made of healthy, natural materials (we specify low or no VOC paint products and try to avoid synthetic materials) and for our ancillary furniture we choose local sources and have a preference for handcrafted, Zero-VOC products. (see page 12). Adobe has a holistic understanding of design could not been better described.

Does the flight altitude of one’s thoughts correlate with the height of the ceiling? Together with Ruiz Julieth Zhu, the psychologist Joan Meyers-Levy established that rooms with high ceilings tended to encourage people to engage in abstract thinking. Instead of focusing on specific details, the test subjects found it easier to relate facts and objects with one another. The scientists think this broader view of looking at things is associated with the great height of the rooms.

Office design will become increasingly diverse. We help that offices will get a more individualized profile in the years ahead.

Hendrik Hund

Secondly, conversely we can anchor our thoughts to specific locations. Cicero connected his thoughts with the Forum Romanum (see page 15), which he walked through in his mind and where he placed his arguments. This shows that architecture can also be used for our conceptualizations, so that we can order our thoughts. Our inner search for structure also speaks for the retention of a readable architecture (and against “scramble forms”).

Thirdly, the actual core element of our territorial predisposition is that we want to appropriate, own and occupy spaces. This is often a dilemma in view of flexible room occupancy and a clean desk policy. However, when employees recognize that their area of activity is not limited to a screen workstation, but that the entire office building is at their disposal, they might be reconciled to their situation by the newly gained diversity and spaciousness.

Lacey Arslan
Multidisciplinary designer, and Workplace Experience Designer (2013–19) at Adobe, San Jose USA

Lacey’s role was to ensure that Adobe’s brand and culture were reflected at its Headquarters and in every office around the world.

I’ve had the most interesting and inspiring conversations with fellow employees over coffee, over lunch. People love to share what they are passionate about, including their work environment. That anecdotal feedback, as well as research from Adobe’s internal workplace intelligence team, has been the impetus of innovative new spaces.

I believe, and I’ve seen, that when employees gain a sense of ownership of their office space through a creative contribution they also gain personal pride, feel more at home, and become a part of something bigger which transcends into more positive work and work relationships.

The OPTIMAL EFFECT SPACE

THE SURROUNDINGS ACCORDING TO INTENTION

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First off, it should be an environment that more strongly accommodates our biological, sensory and emotional needs. As we determined using the example of the ceiling, our previous working environment has in no way harmonized with our biorythms. As a result, the focus on health and well-being by no means a nice-to-have trend, but a key factor that particularly pays off in stressful times of crisis. Moreover, our conscious sensory axis can be controlled by means of design, architecture and aesthetics. On the one hand, we ourselves are beings who interact with spatial form and allow ourselves to be influenced by our surroundings. On the other, we are shapers who can appropriate the world for ourselves.

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The graphic shows a variety of characteristics that range from physical-cultural spaces to fully immersive spaces. That’s because not every job requires the full range or the same range of digital equipment. What matters is an atmospheric distinction, which also provides psychological support for the intention behind the work. Possibilities for individual adaptation would also be desirable in each case.
If we choose our environment in line with our aims and agendas, and if working from home becomes well-established for undisturbed working, will the office become a "corporate culture community" space?

If employees prefer to spend more time working at home, the office is either not providing the excitement of human cooperation or not conveying it. It's true that until now offices have not taken full advantage of the sensory/emotional or the cognitive/didactic potential of a contemporary learning environment. That is a fatal deficit during an era of change, if employees prefer to spend more time working at home, the office is either not providing the excitement of human cooperation or not conveying it. If the trend toward working from home enables many people to work undisturbed and receive updates, but it's counterproductive in terms of emotional cohesion and fruitful transdisciplinary cooperation. Sharing a coffee break in front of a computer screen will never be as good as meeting at a café. Similarly, the work steps for which close cooperation within a team are required should be carried out in one place, together with everyone involved and with all of one's senses activated.

The cultural centre as a model: Various types of spatially curated meeting can be seen in this building in Århus, Denmark. The areas along the ramp and the windows, as well as in the galleries, are mainly used for working. Art and performances, workshops, gaming zones, restaurant areas and spaces for movement, as well as a library with a reading room, inspire the users.

*“Dokk1”, Schmidt Hammer Lassen Architects*

The village as a model: The International School in Ikast-Brande, Denmark was expanded by adding halls for sports and contemplation, offices for work, rooms for learning, shops and community areas. The diverse uses of the building can be seen in its cubature and felt through the choice of materials. *“The Heart”* is a vibrant meeting place for schoolchildren, teachers and community members.

*“The Heart”, C. F. Møller Architects*

No other form of dialogue is as motivating and as fruitful as physical cooperation in one place. That's because it's the only form of dialogue that stimulates all the senses, enables the participants to become completely attuned to one another, and creates the cohesion that is crucial to making progress.

actively enjoying working at the office doesn't seem so far-fetched when the tendency is towards spending just a few days a week there. The trend toward working from home enables many people to work undisturbed and receive updates, but it's counterproductive in terms of emotional cohesion and fruitful transdisciplinary cooperation. Sharing a coffee break in front of a computer screen will never be as good as meeting at a café. Similarly, the work steps for which close cooperation within a team are required should be carried out in one place, together with everyone involved and with all of one's senses activated.

We need a whole cultural centre to show what an office of the future could be

If we choose our environment in line with our aims and agendas, and if working from home becomes well-established for undisturbed working, will the office become a "corporate culture community" space?

If employees prefer to spend more time working at home, the office is either not providing the excitement of human cooperation or not conveying it. It's true that until now offices have not taken full advantage of the sensory/emotional or the cognitive/didactic potential of a contemporary learning environment. That is a fatal deficit during an era of change, when people need, more than ever before, to be taken by the hand and have their curiosity aroused about what lies ahead – and about their own potential. Where could we look in order to find out how people's zest for creative encounters – both interactive and content-oriented – could be stimulated? I would go looking for the right motivations and examples in a village community and in a cultural centre.

Why a cultural centre? Because it's a place where very diverse people meet in order to find out more about the things that connect them. Because a cultural centre presents opportunities that are curated in terms of their themes and didactic value, invites people to participate in many different kinds of interaction and learning, and has something for everyone. And because we when we are inspired in this way we seek out our tasks on our own, meet kindred spirits there, initiate conversations about a topic, an observation or an attempt to try things out, and thus learn from one another. Creative workshops and performances, stages and presentations enrich our days. The reading room of the centre's library also offers space where individuals can quietly retreat and focus intensely on the work at hand. Time in the centre is structured by pauses for dining, playing games together, making music, moving around or relaxing outdoors.

The cultural centre provides the motifs that offer us new images and patterns of behavour for new learning and working worlds – and it uses adroit didactic methods to mediate between individual egos and a sense of community.

Why? Because in a village everyone knows that their own goal can only be reached in cooperation with the others, and that they all contribute their know-how to the community. Because a village encourages people to develop their talents and specializations within a larger context. And because it deals sustainably with natural resources and the seasons, masters crises through resilience, and cooperatively creates and defends something lasting.

AND WE NEED AN ENTIRE VILLAGE TO SHOW WHAT AN OFFICE OF THE FUTURE COULD BE

Why? Because in a village everyone knows that their own goal can only be reached in cooperation with the others, and that they all contribute their know-how to the community. Because a village encourages people to develop their talents and specializations within a larger context. And because it deals sustainably with natural resources and the seasons, masters crises through resilience, and cooperatively creates and defends something lasting.
Corporate real estate management is still oriented according to data on employee numbers, occupancy, frequency of use and energy consumption. Quantity instead of quality. When will the end users’ interests count?

The key priorities for office buildings are flexibility and efficiency. The clients want these qualities, as do the users. However, these qualities mean rather different things for the clients and their business customers on the one hand and for the people who will work in the building on the other. In terms of the building itself, the aim is to build in ways that are as standardized and compact as possible so that the investment is worthwhile. Today the introduction of open spaces and desk sharing offers maximum flexibility and efficiency.

But in terms of efficiency, the final users expect to have an environment that supports their activities and their capabilities – and enables them to work so effectively at the office that at least their commuting time is worthwhile.

IF THE USERS’ EFFICIENCY COULD BE INCREASED BY TEN PERCENT, WOULD IT PAY OFF TO CONSTRUCT A MORE EXPENSIVE BUILDING?

This question was asked by Jöri Engel, the CEO of Swisscom Immobilen AG, at several workshops in which we considered what an office of the future should achieve and how that would change corporate real estate management. Every glitch in the system led us back to the people working there. Engel pointed out that in many cases office designs based on organizational charts turned out to be faulty. For one thing, many people don’t work together with the colleagues in their team but instead with people from other departments. Furthermore, the emphasis was on room features based purely on typical tasks and roles. This seemed to be a plausible approach in objective terms, but it was not always right for individuals, because not all knowledge workers are lawyers, bookkeepers and analysts. Person A selected room program B for task C. It all presupposes room concept A. And B presupposes B.”

WHAT TASKS MUST AN OFFICE FULFIL WHEN EMBEDDED IN A SMART CITY?

Digital services will focus more strongly on user efficiency and less on operational processes. So the question for us is: How can we design our employees’ daily work as efficiently as possible? And which – digital – solutions can help us do that?

WHAT SHOULD THE OFFICE PROVIDE MORE OF?

The “humanization” of the workplace must be possible. Person A selects room program B for task C. It all begins with the individual’s preferences, because that’s exactly when his or her performance is best.

WHAT LESSONS HAVE EMPLOYEES LEARNED FROM THE INCREASED FLEXIBILITY?

The flexible design of daily work is very responsive to the employees and their individuality. Highly functional spaces and room structures for teamwork are considered much more important than individual workplaces. We need more team/project/theater rooms where people work together on something and where the knowledge that has been gathered is depicted in the room and can be referred to later.

HOW CAN CREM STRENGTHEN EMPLOYEES’ SENSE OF BEING IN THE COMPANY?

In addition to themes related to the brand such as CI/CD, we’ve created the concept of “white spaces” in order to also strongly embed these topics in house. These “white spaces” cover about ten percent of the total area allotted to a department, and they can be designed individually and without any limits by the team working in the department. Companies have designed furniture at the weekends, and others have taken the furniture they need from the company’s indoor furniture storage in order to fulfill their wishes for individuality. The best aspect of this approach is that it increases the employees’ identification with their workplace and decreases their desire to restructure the other areas.

HOW DO YOU THINK OFFICES COULD BE MORE CLOSELY ADAPTED TO THE PEOPLE IN THEM?

I’m focusing on two challenges that are facing workplace design. For one thing, I’m looking for ways to take into account the individuality of each person – the user typology – in their requirements regarding their own workplaces, while still creating an economically acceptable standard. For another, I want to establish clarity (and provide information) about CREM’s responsibility to establish the comprehensively ergonomic workstation as the primary place of work in the office, because we don’t know the long-term consequences of working at secondary places of work. If we simply compare the daily results of the step counters and Fitbit we anticipate from during the lockdown with those of the time before, I get worried about whether we can offer the right support for people’s health and well-being at secondary places of work.
NEW KNOWLEDGE BIOTOPES

Urban spaces stimulate people through multiple senses. Many urban attractions are basically places where people meet and learn. We can draw on their diversity to form images that lead to a broader concept of knowledge work.

The astonishing thing about the structural transformation is that the solutions to the major challenges are popping up along with them, everywhere and immediately. The smart city connects production with supply, work with living at home and culture with consumption – and it communicates its offers in transdisciplinary ways, as knowledge work should be carried out. The city’s diversity and changeability holds the vibrancy that gets people moving. Cities have always been sources of inspiration and drivers of development. In the increasingly intertwined worlds of work and leisure, cities will continue to motivate us to develop a new concept of work and will point us toward the human longings that also involve natural and rural environments because of their qualities.

URBAN CULTURE WORKS WITH EXPERIENTIAL SPACES

Hybrid spaces that are good for working are emerging in the midst of the environments where we live. Meeting places that also offer products for consumption are expanding to include not only cafés but also cultural sites, natural landscapes and passenger compartments. Cultural centres, libraries, museums, science centres, laboratories, studios and workshops are opening up for a public that wants to learn and work. Once we are working without keyboards – by means of voice control and augmented reality – we will become even more mobile. Co-working was the first sign that daily work also needs variety. Consequently, the digital cloud is surrounding us like an intelligent skin, only the physical location can be an access point (above). Horizontally, it begins on the left at retreat areas where people can focus and expands rightwards toward vibrant surroundings that inspire our knowledge work. Although the locations where work feels like work differ from one individual to the next, the graphic points out the qualitative spectrum of available locations.

The diversity of urban opportunities can support the many facets of knowledge work. This “tag cloud” extends vertically between private (below) and public access points (above). Horizontally, it begins on the left at retreat areas where people can focus and expands rightwards toward vibrant surroundings that inspire our knowledge work. Although the locations where work feels like work differ from one individual to the next, the graphic points out the qualitative spectrum of available locations.

The specific place of work is being chosen on the basis of the planned activity, the people involved and the atmosphere. There are places that are formed in the very founding of society, which are something like counter-urban or heterotopias – a kind of effectively enacted utopia in which the real sites that can be found within the culture are simultaneously represented, contested, and invented. Michel Foucault, Philosopher, sociologist, psychologist, “Of Other Spaces,” 1987

As human beings, we register sensory stimuli, patterns and surroundings more or less consciously as we perform our activities. We ought to design our spatial impressions more deliberately. This means creating more spatial variety with regard to the specific activity being carried out and the way the place of work expands into its urban surroundings. Especially as people are expanding their repertoires of activities and methods and looking for new imaginative spaces where they can implement them.

INTEGRATING PARTS OF THE LIVING ENVIRONMENT INTO THE WORLD OF WORK AND EXPANDING THE PLAYING FIELD OUTWARDS

This could be the planning challenge for office designers, who must decide on behalf of each user (and his or her needs) how many options can be offered within the office itself. That’s because the users will discover individually in a wide variety of places what kind of atmosphere they need in order to concentrate or cohere creatively, which people they want to meet in person and where or when the virtual is sufficient for them.

The city wins – and the office as a learning environment wins along with it, because if the digital cloud is surrounding us like an intelligent skin, only the physical location can make us humans aware of the difference. Cities hold the promise of diverse locations for productive cooperation – learning environments that are effective in the sensory, cognitive and cultural dimensions.

THE DYSTOPIA: There is reason to fear that the trend toward working from home will be used during the post-corona-virus recession to outsource some of the workforce and downsize office facilities. We must assume that this will affect low-wage workers and areas where the work will be automated in the foreseeable future. The remaining offices would only be available to more qualified and sought-after talents. In the competition with other attractive workplaces, the office would count on decorative design instead of a more humane user performance.

THE UTOPIA: We have an opportunity to redefine the significance that work has for us as human beings. An awareness of what each individual can contribute and in what kind of environment this will succeed must fructify. Offices will regain their unique professional status by providing physical evidence of how well the workforce learns and performs in the office environment. Smart environments support human performance everywhere, but multi-sensory learning environments generate a knowledge advantage that can only be experienced here.

More flexibility for the individual. Initially the time demands of the world of work “inverted” private life, but now family and leisure environments are making demands on the world of offices. The boundaries are becoming negotiable, and rules are becoming the differentiating factors.

How Important Are People to Us?

At present, the future is not looking rosy. A structural transformation of our economy and society is not a walk in the park. How seriously are we taking our future?

Support for Human Performance

HOW IMPORTANT ARE PEOPLE TO US?
METHODOLOGY & IMPRINT

The fourth NEW WORK ORDER study was conducted by trend expert Birgit Gebhardt on behalf of the Interior Business Association (IBA) and ORGATEG, the leading international trade fair for modern working worlds.  

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