

ANDRÉ KUIPERS INTERVIEW

“Humanity is a plague”

Thanks to satellites, we have navigation and communication systems, which enable us to get goods to their destinations more easily and quickly. Remote sensing provides us with an insight into the acreage of minerals, oil and gas, and the evolution of agriculture, deserts, jungles and environmental pollution. Thus, space travel has enabled us to progress. Astronaut André Kuipers speaks about his space missions and advocates sustainable production and energy generation.

For many astronauts, their first space mission is an eye opener in terms of realizing how fragile our planet is. It was the same for André Kuipers. In 2004, he flew with the Soyuz to the ISS space station, where he stayed for eleven days. On 21 December 2011, he again departed earth for a stay of 193 days in space, which made it the longest European space mission ever. Kuipers says it made him see the world differently: ‘At first glance, the earth is incredibly majestic, large and colorful. However, as soon as you look beyond it and see the threatening black universe, the earth seems to shrivel up. It becomes a sort of living cell surrounded by a very thin membrane, the atmosphere,’ explains Kuipers. ‘All life exists within ten kilometers of space and ten kilometers of water; that is all we have. If we blow it on our planet, we have nowhere else to go. I can still recall very clearly the first time I realized that. I flew over India and thought: there’s a billion people living down there and they think earth is infinite, but I can circumnavigate it in one and a half hours. When you fly over the Amazon, you see the coast, and before you know it, you see the next coast. You realize how limited space is on earth and how we are trapped in the same boat on a dangerous ocean: the universe.’

Becoming more sustainable

There will be 10 billion people in 2050, 12 billion in 2100 and the planet is not getting any bigger. That calls for inventiveness when it comes to various provisions. Kuipers: ‘I believe very strongly in new technology for food production and generation of energy. Humanity is a plague; over 200,000 people are born every day, which is comparable to a city like Eindhoven. Those people all want to live like we do, but if everyone lived like the average Dutch citizen, you would need 3.5 times the size of the globe, and 4.5 times the size of the globe to live like the average American. >>

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PHOTO SPEAKERS ACADEMY - WALTER VALLENBACH

PROGRESS IN PROVISIONING OF THE ISS

Space stations also need supplies and waste needs to be removed. For the ISS, various aspects in this procedure have changed in recent years, explains André Kuipers. 'In 2004, a space shuttle and Russian Progress capsules, which are unmanned cargo spacecraft, delivered provisions. The space shuttle became too expensive and no longer flies. A European cargo spacecraft has already supplied the ISS five times, besides the ATV, Japanese cargo spacecraft and two commercial space ships, SpaceX's Dragon and Orbital's Cygnus. That offers far more flexibility. When something went wrong with the Progress, everything was halted to find out the cause, whereas now you can simply continue with other cargo spacecraft. Businesses are taking over, because Europe stopped the ATV and there is more commercial space travel now.'

So things will have to change.' According to Kuipers sustainability developments need to be accelerated, because thus far, he primarily sees overcropping: 'The oceans are emptying, forests are being hacked down and have no time to recover, and there is air pollution and erosion. Naturally, logistics plays an important role in that. Why send all those pigs to Italy to be processed into meat there, and then back again? The meat industry is completely inefficient. You need ten times as much water, energy and land to produce one kilo of meat than you do to produce the same nutritional value from vegetable products, so we are going about things in completely the wrong way.'

According to Kuipers, the realization that something needs to change does indeed exist, but it is difficult to put into effect quickly. 'Everything and everyone operates within a system. Palm oil is in fifty percent of our products. Therefore, forests are cleared in Borneo to make way for palm plantations. Thus, it is a difficult process. There is certainly consideration, because previously, no one promoted green energy, electric vehicles, or organic products and now the shelves are laden with them. Partly because a profit can be made out of them. If people realized that you can still live comfortably when you live more sustainably – with electric vehicles, for example – and if businesses understood that you can make a profit with sustainable production and logistics, then we would be headed in the right direction.'

Naturally, we need a big breakthrough in countries like China. There is so much pollution there that they are now also starting to wake up. If those countries implemented the appropriate technology, it would be a major breakthrough. As a high-tech country, the Netherlands can benefit from this by exporting the appropriate technology.'

Eating algae and insects

Kuipers is optimistic about alternative eating habits and new forms of food production and generation of energy. 'As far as food is concerned, we need to move towards algae, insects and synthetic meat. Those products are improving all the time. Food production needs to happen in a way that allows nature to recover again. In respect of logistics too, it is important to do things as efficiently as possible, to generate as few additional costs as possible in respect of products, so that your revenue model remains optimal and the environment benefits too. Many improvements are possible. Cars that run on hydrogen, although you would need to generate it in a way that is green. Of course, solar panels are also an important development. And the potential sourcing of helium3 from the moon – even though that is only science fiction at this stage – because that could serve as completely clean fuel for nuclear fusion. Now, we have not yet mastered nuclear fusion, but I assume it is a matter of time. That could provide a very feasible solution for the energy issue.'

DROPPING BELOW THE HORIZON

The cargo spacecraft that supply the ISS also have another function: to keep the space station on course at 400 kilometers above the atmosphere, so that it does not drop down. Kuipers explains how that works: 'Gravity pulls everything back to the closest mass, in this case, the earth. Because of its speed, the ISS keeps dipping below the horizon. The ISS is slowed by a very small amount of air resistance caused by the large solar panels. Thus, the speed reduces and the space station drops by about 100 meters every day. That means you sometimes need to give it a little push upwards, we use those cargo spacecrafts for that. Occasionally, the engines are switched on, so that the ISS goes a little higher again.'

There is something else that also plays a role in resisting the force of gravity during launching: 'The trick is not to go straight up, but to arc. You take off, turn with the curvature of the earth, and get an extra push from the speed generated by the earth's own rotation. Subsequently, you build up a speed of 8 kilometers per second with the rocket. And because of that propulsion, you dip – because the earth is pulling you – but you dip so fast that you keep dropping below the horizon. That is the art to that kind of space travel, you continually drop below the horizon. Above an altitude of 200 kilometers, there is no air to slow you anymore, so you maintain a steady speed of 8 kilometers per second. That way, you keep dropping, all the way around the earth. And as you dip, you glide.'

A frontrunner in robotization

The far-reaching robotization that will increasingly influence production, supply chains and our lives in the future has already been underway in space travel for some time. 'We send robots and space ships into the universe. There are fantastic robots driving around on Mars. Crewed space travel is restricted to a course around the earth to conduct research that robots are not yet able to do. Everything that can be automated is automated. We have robotic arms that perform tasks outside the space station, so that astronauts do not have to go outside. We also have robots on board that carry out repetitive and dangerous tasks on behalf of astronauts. The use of space robotics is only set to increase.'

The oceans have been conquered, the mountains, the Arctic, the deserts – and we want to conquer other frontiers too. We have a biological urge for self-preservation, otherwise we would have been long gone. At a certain point, people will spread out further across the universe. What you see now are the first steps.'

Staying on the moon

A similar kind of urge to explore explains space tourism, which is experiencing a modest rise. For a sum of approximately 100,000 dollars, you can travel to an altitude of 100 kilometers and experience weightlessness. Kuipers: 'It is a form of air travel and above all, a spectacular attraction, because you cannot reach that altitude and experience five minutes of weightlessness in a regular aircraft. It is the start of space tourism. Via the Russians, you can now spend a week at the space station for 50 million dollars, space permitting. Seven people have done this, one of whom has already done it twice. In the future, people will go to hotels in an earth orbit or hotels on the moon. Tourism is a huge economic factor. That is what happened with sea and air travel and the same will happen with space travel. All technology is experimental to start with, then military, then commercial – think of mail and freight transport – and subsequently, you transport people. It is a slow process, but the same will happen with space travel.' Let's hope that by that time, rocket fuel is completely green. ▽

“At a certain point, people will spread out further across the universe”

It is a fact that everything sent into space is already outdated by the time it is launched, just like when you buy a new laptop or iPhone. 'The ISS was developed in the eighties, but you cannot have teething problems in space, so the technology has to be tested. You cannot send software up there that is going to malfunction subsequently; you cannot afford to take that risk. The Russians have outdated technology, but it is very reliable and functional. New is not always better.'

According to Kuipers, the fact that crewed space travel still exists despite robotization is because of research that can only be carried out by humans, for financing reasons, and because of our urge to explore and our survival instinct. 'The research we are conducting in space is on behalf of scientists who want to conquer the laws of gravity. That would enable better research of the vestibular, foam formation and fluid physics, or growing crystals that become far larger. That research will enable us to develop useful new technology.' In addition: 'If you do not send people into space, you get no funding, because it does not interest the public. Besides, it has to do with the urge to explore; people have always explored their environment.'

NEW OPPORTUNITIES IN LOGISTICS

Sustainability, productivity and efficiency are important topics in the logistics sector. Space travel supports these themes with satellites for wireless communication and navigation. Districon makes grateful use of this in respect of issues relating to transportation and distribution optimization, load bundling and modality options. In the near future, there will be new opportunities. Real time pick-up and delivery, more rigorous safety and security measures and improved track and trace are striking examples of this.

BUSINESSES WITH A FUTURE

Embrace the hornet in your network organization

'Whoever builds pyramids... gets mummies' reads the subtitle of Eric Koenen's book, *De Atomiumorganisatie (Wie piramides bouwt... krijgt mummies)*. The former manager thinks many hierarchy-oriented businesses can only survive if they give their knowledge workers more responsibility and connect different people within the organization better. Districon recognizes its own need for this and asked Koenen how to bring about this new kind of organization.



In many traditional organizations, employees' lust for life is systematically constrained by the structure of those organizations, coupled with the tyranny of internal rules and procedures. According to Eric Koenen, the classic pyramid organizational structure has run its course. Organizations would be better off following the example of the Atomium, a metaphor for an organic whole: with a central management core, a high level of responsibility for people in the different spheres and a very strong focus on consolidating policy, qualities and talents.

Districon is evolving into a consultancy that enables IT-driven supply chain and logistics solutions. We have knowledge workers and creatives that are difficult to motivate and manage hierarchically, while the old hands in the field sometimes prefer to coast along on their years of experience rather than new ways of working and partnership. What is your take on that?

Koenen: 'Someone who is highly intelligent does not have more brain cells, but more connections between different kinds of cells. It is precisely that combination that creates intelligence and therefore the challenge, in teams too, is to embrace and unite those differences. That is how you turn a team into an intelligent brain. It is difficult, because of course, we are not so fond of differences.'

It is important to establish a process that makes people value those differences. We often think scientifically: problem, analysis, solution. But often there is not enough time for that. It is more a case of "wind tunnel" type thinking: you have a specific idea and you develop it as you go.'

Procedure-oriented organizations impede knowledge workers. What form of organization does in fact allow knowledge workers to come into their own?

'Freedom without boundaries is hollow. It is not true that young people only want freedom; they often also want a specific level of constraint. I am working with a few large organizations that all have knowledge workers. They are moving from hierarchical leadership to unifying leadership in which they themselves indicate what they need and which constraints assist them, or rather, what they need from their managers.'

So you reverse it? You tell me how it works, then we will try to facilitate it and offer challenges in the process.

'Precisely, in a network organization, you need a more mature relationship: can we offer you sufficient freedom to do your job and how can we make the boundaries we regard as necessary, work. For example, Imtech fell over because they were completely stuck in the old mold, although it was actually an excellent business.'



ERIC KOENEN is the founder of the Doorwerthgroep. He mentors directorate teams in strategy, merger and innovation processes and coaches top managers. Previously, he held various management roles for Philips and PWC. Subsequently, he was a member of Cofely's executive board for ten years. Koenen holds several commissioner roles and writes books on leadership themes. *De Atomiumorganisatie* was published in 2011.

PHOTO PETER DAEMS

You constantly describe processes that require time in a world where time is lacking.

'I think it is a misconception that there is no time. There is not a lack of time; there is a lack of focus and considered choices. "Time is the final currency." That is what Kahneman describes in *Thinking, Fast and Slow*. Note, 95 percent of what you do is reflex and habit driven. I decelerate management teams to examine with them the way they deal with actual dilemmas in their organization, why they do what they do and say what they say, which is the first step to breaking habitual thinking.'

In your book, you also say that every team should have a hornet.

'Yes, a deviant, a nuisance. That is an evolutionary and biological necessity for a species to survive, to have that one little deviant cell. In social systems, we tend to eliminate those cells immediately, because a deviant is threatening to many, yet the deviant could be just the one to have that innovative idea. Only, an innovative idea often does not fit the old mold. If somebody has a divergent view, people immediately try to persuade that person, or you get polarization. If you want to break old habits, ask that deviant: give us an insight into your thinking. How did you arrive at that view? That is exceptionally exciting to do, because a facet of their thinking is different to the way we think.'

Where is everything headed?

'In the direction of teaming I believe; the ability to come together with completely different people in the short term and then to achieve something. Subsequently, you part ways again. New teams are established for every new project. In a network structure, that happens on the basis of mutual attraction. The young generation connects with new people far more quickly than my generation was able to do that. Furthermore, you have to be able to engage in constructive dialogue with others within a very short space of time and to articulate what needs to be articulated.'

That fits in with: what are you going to do today? Do you need anything from anyone and what are you working on?

'Exactly, the fundamental questions, but you really do need honest answers. Strength and vulnerability are the winning combination for true consolidation, and that is what it comes down to in a network structure.'

SEEKING OUT PARTNERSHIPS

Responsiveness, reduced lead times, increased diversity. Just a few of the themes that are determinative for the current challenges for supply chains. Districon sees traditional, pyramid-structured businesses grappling with problems on all fronts. Whether it involves retailers, wholesalers, producers or logistics service providers. Responding to hyper-competition, evolving relationships of authority and 'the economics of enough' demands new organizational structures. The professionals at Districon keep an open mind in this respect and work on behalf of their clients in all areas with partners such as Naco, Intervistas, LCSG, AIMMS, Qlik, SPIE, Connekt, SLF and PTV.



Rhiannon Davies,
Vice President Supply Chain
GrandVision.

CHANGES FOR OPTICS RETAILERS

Many retailers are struggling, but optics retail chain GrandVision is still growing strong. Customers still have to visit the store to have their eyes measured, although it will not be long before it becomes possible to do that from home with a smartphone. Technological developments such as 3D printing lead to changes in the supply chain. 'We are implementing an omnichannel strategy.'

PHOTO TON ZONNEVELD PHOTOGRAPHY

GrandVision is growing rapidly. 'That is mostly due to the acquisition of over two hundred stores from For Eyes in the United States and Randazzo in Italy,' says Rhiannon Davies, Vice President Supply Chain. 'We are growing both through acquisition and through organic expansion in the countries we are currently active.' GrandVision has around six thousand stores in forty-three countries. The economic crisis has not affected the retailer. 'We have not experienced the consolidation we witnessed in other retailers. The fact that a pair of glasses is not one of those typical weekly expenses for people helps in this respect. We still need our physical stores to offer customers the necessary service.'

Davies attributes the fact that other retailers are struggling mainly to the culture within those organizations. 'The world has changed dramatically. People buy different products from different places; electronics are bought online, as are many clothes. That type of competition is still smaller than we think. It is not just internet; it is also about how to approach consumers and stay competitive while everyone can now purchase products for next to nothing. A lot of the problems result from the fact that the culture in the retail industry has not changed much in the past twenty years, even though change is needed.'

iPhone eye measurement

Davies expects that, in the long run, things will likely change for GrandVision as well. That will not happen for a while, though. 'Many of our customers are older and many of our most important customers love coming to the store. They are not ready to adopt a different channel yet. People have to come to our stores to have their eyes measured. I expect that it will become possible to do that with an iPhone in the future. The technology is rapidly developing and fairly accurate. However, it will likely take another five years before people trust that technology. It will not be ten years, in any case.'

“We are working to implement a worldwide online strategy and customer journey”

That is why GrandVision is implementing an omnichannel strategy. 'We want to use the online world to attract customers to visit our stores. The customer is looking for convenience when it comes to delivery and availability of our products. We are also exploring services like scheduling appointments online, while still always retaining the link to our stores. We are working to implement a worldwide online strategy and customer journey.'

3D-printed frames, omnichannel and collaborative planning

3D-printed lenses and frames

Other changes Davies has to take into account include changes to the rules set by health insurance providers in various countries pertaining to compensation for glasses and contact lenses, and new technologies. 'A 3D-printed lens or frame can be quite interesting. We currently have a five-day delivery period. It would be quite a change if we can tell customers in the stores that their glasses will be ready in an hour. Consumers' demands are increasing, so they might want to have their glasses delivered to their homes, but they definitely want them faster and they want to be able to hold them. 3D technology is a great way to meet that demand. I do not know what will come first: the frame, the lens or the contact lens – but it is definitely on the horizon.'

GrandVision currently uses the same suppliers for all forty-three countries

GrandVision does not invest in these new technologies itself, but it is in constant communication with the manufacturers. Davies gives GrandVision's management team a product innovation update once per quarter. 'To examine whether the developments are relevant for us. We have discussed such innovations as iPhone eye measurements, Google Glass, changeable lenses, variable prescription lenses, night-driving technology and pure-light technology. With the exception of 3D printing, these innovations will not affect the supply chain. We would not need a supplier for 3D-printed lenses, except for the polymers used by the printers. That would be an enormous step in our chain.'

More collaborative planning

GrandVision tries out many new commercial or product range innovations using small pilots at the store, regional and product levels. If the results are positive, the innovation is rolled out on a larger scale. 'Launching new products, drawing up new commercial policies, setting up new distribution centers: we can do all that at the pilot level. However, with an organization as large as ours, it can take a while to launch an innovation at the global level. At the same time, every improvement of our supply chain allows us to switch faster and more easily. The fact that we have no competitors anywhere in the world at our scale is both an advantage and a limitation.'

GrandVision currently uses the same suppliers for all forty-three countries. 'For the new product range, we will be implementing efficiency in the supply chain in all categories. That step will allow us to integrate much more. We will be moving from consignment stocks to make-to-order and we will be doing much more collaborative planning.'

GrandVision has implemented collaborative planning at frame and sunglasses manufacturers Safilo and Luxotica. This is a system that provides sales information to suppliers to allow them to prepare store orders independently. GrandVision also uses automatic replenishment based on sales numbers. 'We are not really interested in vertical integration, because we want to be a flexible retailer without having to make huge investments. I see our supply chain moving towards smaller-scale immediate return tailorable technology like 3D, instead of constructing a massive factory. I can imagine that we might use the same platform for all our countries, but not combined with an integration with our suppliers. Because there are mainly dominant suppliers in the optics industry and such a great degree of fragmentation in retail, we are not yet willing to share much information.'

Drone deliveries

GrandVision plots the aforementioned customer journeys based on how 'addicted' someone is to their smartphone. 'People are becoming increasingly interested in their own medical status. We should be able to share that kind of information. There are also people who only use the internet to schedule appointments. That should be possible from any screen. Then there are the people who say: "I know what my eye defect is, I want to pick something out online and be able to see what it would look like on my face in 3D. I want to send that to my friends, so they can tell me which frame they like best. Then I want to order three different pairs of glasses and have them sent to my house so I can try them out." The customer will have their products delivered the next day by a drone.' Davies hopes that, in the long run, made-to-order lenses can be delivered to customers faster. 'Today, the delivery time is at least ten days. In the future, you have to be able to order from your own living room. The problem we face is that there is a fitting moment and a purchase moment for a pair of glasses. We could send you three pairs, but – from a costs perspective – we cannot send you three pairs of edged and mounted lenses and frames as well.' Davies feels that the return flows and processing times that go with these developments will become a challenge. ▽