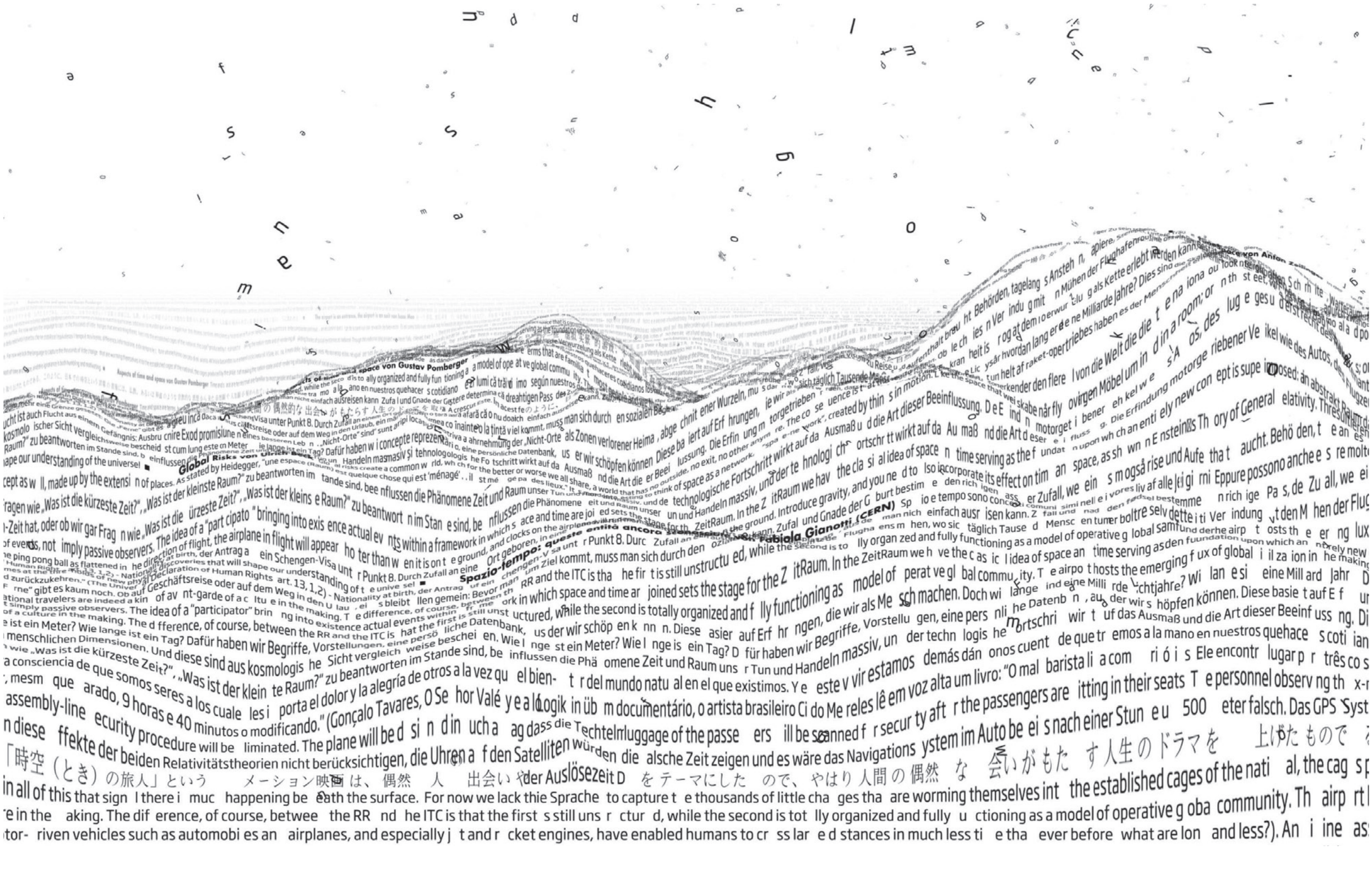
ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB



ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB

ZeitRaum / **Textscapes**
by Ars Electronica Futurelab (AT)
Foto © Pez Hejduk

ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB

ZeitRaum

Ein Projekt von Ars Electronica Futurelab

Es gibt einen Raum, der alle Flughäfen miteinander verbindet. Passagiere weltweit durchqueren ihn auf ihrem Weg beginnend mit der Sicherheitskontrolle vom Abflug bis zur Ankunft. Abhängig vom aktuellen Flugverkehr verschieben sich die Außengrenzen dieses Raums, innerhalb dessen sich Kulturen, Sprachen und Nationen ebenso miteinander verweben wie Zeitzonen. Mehr als 5 Milliarden Menschen nimmt dieser Raum jedes Jahr auf, Menschen, die einander völlig fremd sind, die sich auf seltsame Weise miteinander verbunden fühlen, die spüren, dass sie eine Gemeinschaft auf Zeit bilden.

Die Berge und Täler des ZeitRaums werden geformt vom aktuellen Flugverkehr. Jeder Start, jede Landung am Flughafen Wien hinterlässt Spuren und Abdrücke in der Topografie des ZeitRaums. Auch die Passagiere beeinflussen den ZeitRaum, setzen Buchstaben frei, die nieder schneien auf die Berge und Täler des ein- und ausgehenden Flugverkehrs. Permanent wächst und schmilzt diese Schneedecke aus Textbeiträgen von KünstlerInnen und WissenschaftlerInnen, die allesamt zu ganz persönlichen Reisen einladen.

Auf dem Weg zum Pier begleiten weitere künstlerische Installationen die Passagiere. Yugo Nakamuras (JP) „Industrious Clock" etwa, die der normierten, der objektivierten Zeitmessung die „gefühlte Zeit" als ein „Handbuch der Zeitmessung" gegenüberstellt. „Last Clock" von Jussi Ängeslevä (FI) und Ross Cooper (UK) zeigt LIVE-Aufnahmen vom Flughafen Wien die in drei ineinander gelegte Ringe gegossen werden. Der innerste Ring wird zu jeder Stunde, der mittlere zu jeder Minute und der äußere jede Sekunde aktualisiert.

„AIRPORT SOUNDSCAPES #1" schließlich ist die Komposition einer Datensonifikation von Rupert Huber (AT). Die Steuerdaten des Kontrollturms lösen hier Klangverläufe aus, die den aktuellen Flugverkehr hörbar machen. Diese und weitere Arbeiten sind zwischen den Gates F06F08, F20F22 sowie in den Bereichen G03G09, G09G11, G17G21, G21G26 sowie G31G37 zu sehen beziehungsweise zu hören.

A project by Ars Electronica Futurelab

There is a space that interconnects every airport. Airline passengers worldwide traverse this domain on their way beginning with the security checks—from departure to arrival. This space's boundaries are constantly shifting in accordance with current air traffic. Within its confines, cultures, languages and nationalities segue into one another like time zones. This space hosts 5 billion people a year, people who are complete strangers yet, oddly, feel connected to one another and sense that they are fellow members of a temporary community.

The peaks and valleys of ZeitRaum (TimeSpace) are formed by the latest air traffic. Every takeoff and every landing at Vienna International Airport leaves behind traces and impressions in the topography of ZeitRaum. And the passengers themselves make an impact on it, triggering the release of letters that rain down upon the peaks and valleys of these incoming and outbound lights. Texts about TimeSpace authored by artists and scientists gradually accrue like a layer of snow — each one an invitation to embark on a personal journey of one's own.

Other artistic installations await encounters with travelers in the passageways leading to the departure gates. "Industrious Clock" by Yugo Nakamura (JP) takes standardized, objectified timekeeping and juxtaposes it to "felt time" as a "handbook of time measurement." "Last Clock" by Jussi Ängeslevä (FI) and Ross Cooper (UK) features videos recorded live at Vienna International Airport, presenting them in three concentric rings—the inner circle is updated by the hour, the middle one by the minute, and the outermost one is refreshed second by second.

Finally, "AIRPORT SOUNDSCAPES #1" is a "data-sonification" by Rupert Huber. Air traffic control data from the airport tower trigger sound sequences that make current air traffic audible. You can partake (visually and/or aurally) of these and other works in the following areas: Gates F06F08, F20F22, G03G09, G09G11, G17G21, G21G26 and G31G37.

ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB

TEXTS BY

Ulrich Beck sociologist DE

Pier Luigi Capucci art and communication theorist IT

John Casti system theorist US/AT

Chirikure Chirikure poet ZW

Derrick De Kerckhove digital culture sociologist CA

Michael Doser physicist AT/CH

Bernhard Fink evolutionary psychologist DE

Heidrun Friese anthropologist DE

Fabiola Gianotti particle physicist IT/CH

Dietmar Hager astrophotographer AT

Peter Jenni physicist CH

André Lemos sociologist BR

Thomas Macho cultural scientist AT/DE

Roger Malina astronomer / artist FR

Isaac Mao internet researcher CN

Humberto Maturana Romesín biologist CL

Hans Moravec robot researcher CA

Ulrich Ott meditation researcher DE

Gustav Pomberger computer scientist AT

Howard Rheingold internet pioneer US

Itsuo Sakane professor of media arts JP

David Sasaki civil society specialist US

Saskia Sassen sociologist / political economist US

Alan N. Shapiro technologist / futurist US/DE

Anton Zeilinger quantum physicist AT

Global Risks

Ulrich Beck

Global risks create a common world, which for the better or worse we all share, a world that has no outside, no exit, no other anymore. The consequence is that the world risk society forces us to recognize the plurality of the world, which the national outlook could ignore. It opens up a moral and political space that can give rise to a civil culture of responsibility that transcends borders and conflicts. The traumatic experience that everyone is vulnerable, and the resulting responsibility for others, also for the sake of one's own survival, are the two sides of a world at risk.

Congetture minime sullo spazio-tempo

Pier Luigi Capucci

Tutto si trasforma, diviene, cambiano la materia, le forme, gli spazi. In genere attribuiamo al tempo la colpa, e talvolta il merito, di queste trasformazioni. Il tempo è quell'entità celebrata nella letteratura e nell'arte, utilizzata nella scienza, ma è anche un cruccio quando vediamo disfarsi le cose che amiamo. Ma è davvero il tempo la causa delle trasformazioni? Forse è vero l'opposto: il tempo origina dalle trasformazioni, sono i cambiamenti delle cose nello spazio che danno luogo al tempo. Il tempo rende consapevoli che ciò di cui siamo parte e di cui siamo fatti si modifica, è la dimensione in cui comprendiamo e misuriamo il passare degli eventi nello spazio dell'esistenza. Dunque la correlazione fra spazio e tempo è evidente anche nell'esperienza quotidiana, ben prima della formalizzazione della Teoria della relatività ristretta, che ne stabilisce l'equivalenza.
Il tempo è movimento, differenza, informazione, e da sempre le culture umane hanno cercato di misurarlo. All'inizio basandosi su elementi ciclici naturali: il Sole, la Luna, il moto delle stelle e dei pianeti. Ma non era preciso, né uguale per tutti. Per i Greci e i Romani il giorno era diviso in ore in base alla luce del Sole, quindi d'estate le ore diurne erano molto più lunghe che d'inverno (i Romani lo sapevano, e quando dovevano misurare il tempo in maniera precisa accendevano, una dopo l'altra, delle candele uguali). E l'avvento dell'Anno Mille venne celebrato da alcune popolazioni nel 999, da altre nel 1001.

Il tempo che regola le nostre vite è una convenzione. Lo è il tempo del calendario, su cui sono cresciute ulteriori convenzioni. L'attrito tra luogo e viaggio ha generato queste convenzioni quando cosmopolitismo e ubiquità sono entrati nel tempo della vita. È stata l'incongruenza tra il tempo del luogo in cui si è, in cui si vive o si staziona temporaneamente, e il tempo del viaggio, del transito attraverso i luoghi, che ha prodotto il bisogno di uno spazio-tempo più generale, più assoluto e nel contempo più astratto. Oggi fissiamo appuntamenti con persone che vivono in luoghi remoti attraversando, in aereo o in telepresenza, molte frontiere. Alla fine dell'800 esistevano le ore nazionali e le ore ferroviarie, che convivevano con le ore locali. Un viaggiatore che usciva dai confini dello Stato non conosceva con certezza la durata del viaggio. Da Parigi a Odessa bisognava cambiare il tempo dell'orologio almeno una decina di volte; da Londra a San Pietroburgo trentasei volte; da Milano a Copenaghen e Stoccolma una quindicina di volte. E poi c'erano i tempi locali. Dall'Olanda alla Germania le compagnie ferroviarie usavano quattro misure diverse: in Olanda gli orologi delle stazioni erano regolati sul tempo di Amsterdam ma quelli esterni mostravano il tempo locale; in Germania nelle stazioni si utilizzava il tempo locale ma il personale usava il tempo di Berlino. Negli Stati Uniti c'erano oltre 50 ore ferroviarie e in molte stazioni c'erano tanti orologi quante erano le linee ferroviarie.

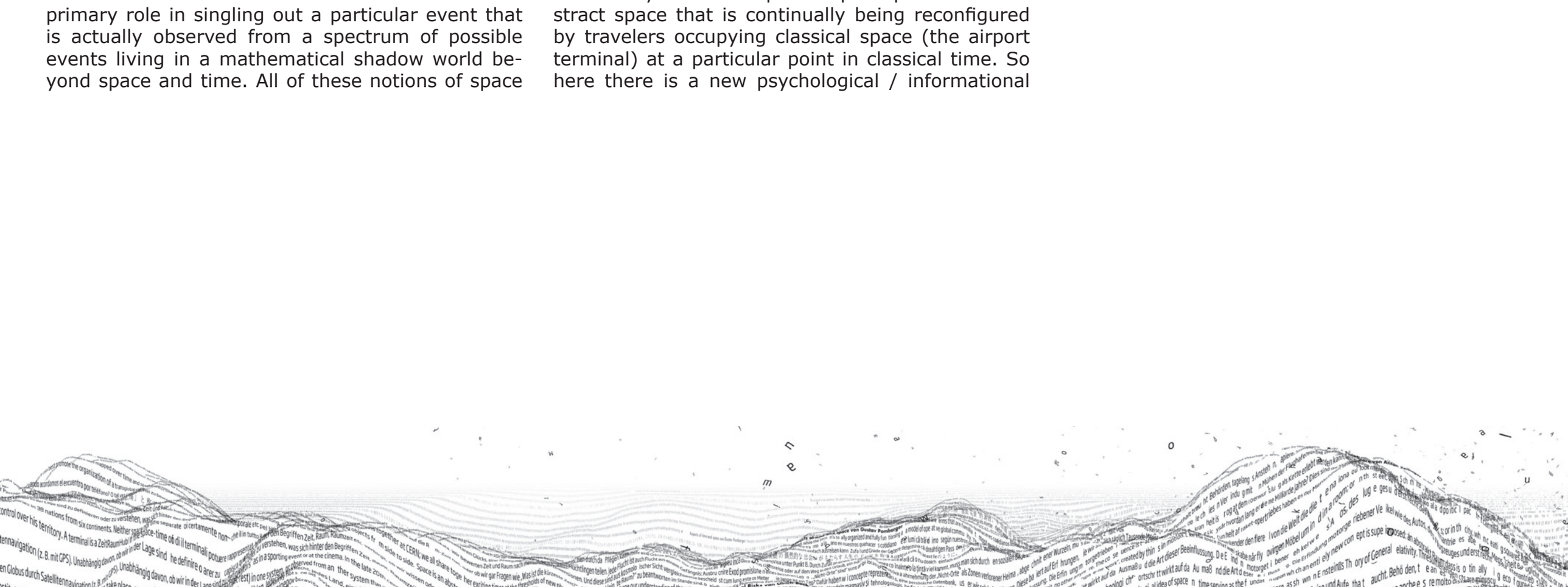
Nel 1884, al culmine di un processo di globalizzazione delle comunicazioni, dei viaggi e dei commerci, vengono introdotti i fusi orari, dei meridiani immaginari il cui numero 0 (il „tempo zero") passa per Greenwich. Se prima ogni luogo della Terra aveva un suo tempo, locale e relativo, coi fusi orari si instaura un tempo unico, „universale" e assoluto per tutti i luoghi. E dagli anni '10 del '900 su questa convenzione se ne instaura un'altra: l'"ora legale," che sposta le lancette dell'orologio per questioni economiche. Nascono dei luoghi atopici e acronici, in cui lo spazio-tempo è astratto. Un esempio estremo sono i luoghi „transitori", come i terminali degli aeroporti, che tra l'altro richiedono la certificazione diretta dell'identità fisica per consentire di passare attraverso le frontiere, da un tempo all'altro o, che è lo stesso, da uno spazio all'altro.
Non si può fermare, ma attraverso i millenni l'umanità ha sempre cercato di manipolare il tempo. Tramite il tempo si può influenzare il futuro, esorcizzando la morte. Siamo la prima specie con la consapevolezza del tempo. Vorremmo controllare, moltiplicare, sovvertire il tempo e il futuro, anche al di là delle nostre capacità biologiche: con la nostra prima vita, la vita biologica, con la nostra seconda vita, la vita nella dimensione simbolica, e con la terza vita, la vita che stiamo dando alle entità create dalla cultura umana.

The Road to the ZeitRaum

John Casti

From a Newtonian perspective, space, time and events are like the stage, the scenery, the acts and the audience in a theater performance. The stage is a fixed, changeless entity, while time is a sequence of one act following another. In this setup, the audience is simply a set of passive observers. Early in the twentieth century Einstein showed that nature doesn't work this way at all, and that the separation of space and time is an illusion, convenient for human-scale phenomena, but an illusion nonetheless. Instead, nature regards space and time as a single, unified construct, space-time. Shortly after Einstein's merging of space and time, quantum theorists argued that the idea of a passive observer is also a fiction and elevated the observer to the primary role in singling out a particular event that is actually observed from a spectrum of possible events living in a mathematical shadow world beyond space and time. All of these notions of space and time can be lumped into the category of "classical," as they regard these two entities as existing independently of the human mind. They constitute the playing field within which events take place, events that are then observed by human "spectators" as in a sporting event or at the cinema.

In the late 20th century, the role of the human observer was upgraded to one in which we become the creators of events, not simply passive observers. The idea of a "participator" bringing into existence actual events within a framework in which space and time are joined sets the stage for the ZeitRaum. In the ZeitRaum we have the classical idea of space and time serving as the foundation upon which an entirely new concept is superimposed: an abstract space that is continually being reconfigured by travelers occupying classical space (the airport terminal) at a particular point in classical time. So here there is a new psychological / informational space that rests upon the classical one, a space created by the interaction of the culture, the language, the behavior and the goals of the travelers. So the ZeitRaum is what system theorists term an "emergent" property of the travelers in the terminal. The latter element, the traveler's goal(s), is particularly relevant to the ZeitRaum. What unites the "participators" in this space is their shared goal of moving about in Newtonian space from the air terminal to other terminals scattered throughout the world. This goal gives rise to a temporary common cause, which itself creates a new space superimposed upon the Newtonian space and time coordinates. This ever-changing space, continually being reinvented, "is" the ZeitRaum!



Kuenda, kudzoka

Chirikure Chirikure

Ndiri kuenda here?
Kana kuti ndiri kudzoka?

Kana ndiri kuenda
Sei mapani zvese nemakura
Mipata yese yandakapfuura
Nzisi dzese dzandakayambuka
Sei zvichiramba zviine uso humwe chete?

Kana ndiri kudzoka
Sei miti zvese nemakomo
Nzira dzose dzandakafamba
Masango ese andakatsvaira
Sei zvava neuso hwakaita kunge kusunama?

Kuenda kana kudzoka:
Kuenda, kufamba kumberi
Kufamba kuchiunza mutsauko.
Kudzoka, kufamba kwawabva
Kufamba kuchipa ndangariro.

Kuenda nekudzoka
Kudzoka nekuenda
Kana zvichisina zvazviri
Kuenda kunenge kuri papi?
Kudzoka panenge pachinei?

Going, coming back

Chirikure Chirikure

Am I going?
Or am I coming back?

If I am going
Then why are the grasslands and farmlands
The passes that I went through
The many rivers that I crossed
Why are they all wearing the same face?

If I am coming back
Then why are the trees and mountains
All the roads that I travelled
All the forests that I traversed
Why are they now wearing sloppy faces?

Going or coming back:
Going is moving forward
Movement bringing change.
Coming back is moving backwards
Movement bringing memories.

Going and coming back
Coming back and going
When all this has lost purpose
Then what will be the point in travelling?
What will be there when you return?

Towards a global mental geography

Derrick de Kerckhove

The interesting suggestion behind ZeitRaum is to identify and define the territorial – and social – condition of the international travelers community (ITC). Perhaps media artist Ingo Günther's "Refugee Republic", a global multimedia and Internet installation, provides clues to this condition. His idea was to create a single global but distributed nation of people who, for one sad political reason or another, were expatriated and living in bureaucratically precarious conditions, to say nothing about their other survival difficulties. The "Refugee Republic" would give status and a constitution to all these people living in camps and shacks for most or outside the resident law for others. As the note accompanying the piece on line says: "Refugee Republic was the result of extensive investigations that involved proposing a supranational and supraterritorial refugee state that might become a model for the rest of the world. (…) the most suitable place for Refugee Republic is the Internet, where it can best promote the organization of a transglobal state." The artist adds: „Refugee Republic maintains that refugees are essentially unrealized capital and that their involuntary fate of an international avant-garde can be turned into productive assets."

Refugees and international travelers are indeed a kind of avant-garde of a culture in the making. The difference, of course, between the RR and the ITC is that the first is still unstructured, while the second is totally organized and fully functioning as a model of operative global community. The airport hosts the emerging flux of global civilization in the making. Airports present a distributed condensation of human proximity. At any one time, all the people occupying airports are regulated by a single global system, in a single unified space, a huge system that is creating models of technological and institutional efficiency and protection that are global and pacific.

The airport is a vortex of comings and goings, of deceleration, landing and stopping and of starting, accelerating and takeoff, a cyclotron sending people from here to there in small groups, like electrons. The airport is to the planet what a cell-phone is to the Internet, a traffic node. In an airport as well as on a cell-phone, I become instantly global. I am part of these anonymous crossings.

So the question is: what do all airport transit passengers and myself have in common? First, we have all been searched. We are unarmed, already a sign of a potentially pacifist nation. And, of course, we are all very protected. We all occupy a paradoxical no man's land, the lounge and the waiting rooms being held both as national property and as a global passageway. We are all allowed one bag, although many ignore this rule. Still we, like snails, carry all that we have. And „all we like sheep" are parked in these waiting rooms.

In airports time and space are constrained in the same way. You experience time differently from anywhere else. For travelers, time is all and it is constrained, closed. You must get to the airport, to the check-in, to beat the lineup, to the security check, to the gate, to the lounge, to the restrooms, and to your seat, as soon as you can. In airports most people are in a hurry. However, if there is a long interval between connections it feels as time out of time. It's as sudden as the short, disorienting drop, a plane experiences if it encounters a downdraft. Space too is constrained, lineups, crowded seating areas, endless corridors and running pathways. In all airports you are filtered and processed. You can only go along the marked routes in the permitted areas.

Yes, there is a feeling of being herded in an airport. And yet there is also a counter-feeling of being expanded, globalized. Being in an airport immediately changes the ground reference of my mental geography. My mind is faster than a plane. At the airport of departure I am already arriving by thought at the airport of destination. I cover all that space in a second. The airport provides the ground of a much-expanded mental space. This psychological frame, albeit more often than not at an unconscious level, is shared by the international travelers community as well. When you travel, you carry your international status like a psychological condition; it is taken for granted. Airports are accelerators and sustainers of a global mental geography.

Some time I feel as if I actually lived in airports. One day at Schiphol an interviewer asked me how I felt about airports. Without really pausing to think, I said: „some of them feel like home".

Space, time and space-time

Michael Doser

Space, time and space-time have very specific meanings for a physicist, building on concepts developed at the end of the 19th century by Lorenz and made explicit at the beginning of the 20th century by Einstein and Minkowski. These replace the previous Newtonian view of objects moving around in one preferred, fixed and unchanging spatial and temporal reference frame, that of absolute space and time, the picture of planets moving around the sun against the backdrop of the stars, regular as a clockwork. This is somewhat like planes flying over the Earth: the passage of time and the spatial distances inside a (moving) plane are the same as those on the surface of the Earth, which is at rest. Watches don't run faster or slower (except for the convention of changing time zones), and if a passenger holds up a ping pong ball to a window, a sharp-eyed observer on the ground would see it as being round.

Instead, in Minkowskian geometry each system has its own reference frame, all of them equally valid, and the equations of Einstein's Theory of Special Relativity describe how to transform measurements in one system into another. The flow of time and the extent of space now depend on whether the measurement is carried out (at rest) in one system, or observed from another system that is moving with respect to the first one. The (very sharp-eyed) observer on the ground will see the ping pong ball as flattened in the direction of flight, the airplane in flight will appear shorter than when it is on the ground, and clocks on the airplane will run more slowly than those on the ground. Introduce gravity, and you need to also incorporate its effect on time and space, as shown in Einstein's Theory of General Relativity.

The resulting effects are minuscule but have immense effects in our lives: they must be taken into account when using the satellite clocks of the GPS system to determine one's position – not doing so would lead to time (and thus position) information that would be increasingly wrong as time went by. For every hour that passes, the real position and the position indicated by GPS would diverge by another several hundred meters.

But it is not only the world we can see around us that poses the question of what space and time are; also in the microscopic realm, that of atoms and of particles, these concepts are central to our theories. The concept of world line – the path of the particle through four-dimensional space-time – lies at the core of the description of the motion of a particle through space and time, as well as of its history of interactions.

As one can represent a landscape on a flat (two-dimensional) map by leaving out the third dimension, elevation, one can represent (part of) the four-dimensional path of a particle on a flat (two-dimensional) map by leaving out two spatial dimensions, showing only time against the remaining third spatial dimension. In this map, time flows upwards; an object moving at constant speed will show up as a straight inclined line, moving from bottom to top. And since no object can move faster than the speed of light, the least steep line will correspond to a photon. Any future occurrence for a point will lie above this limiting line; points to the right of this line cannot yet have interacted with the point: the past lies below, the future lies above; the unknown off to the side.

The crossing of two world lines is the point and time at which two particles interact. Every known type of particle has an antiparticle, which has identical properties, but distinguishes itself from the particle by having opposite charge. If the second of the particles whose world lines intersect is the antiparticle of the first, both of their world lines will cease at that point, from which a new world line carries on, that of a photon resulting from the annihilation. Similarly, a photon can split into two world lines, one corresponding to a particle, the other to its antiparticle. What then if both these pictures are merged into a single picture?

Imagine two separate particles, for example an electron and a photon, following the flow of time, running side by side. At some point in time the photon splits into a second electron and its antiparticle. A bit later, the first electron and the anti-electron meet, annihilate, and emit a photon, so that from then on one again has the initial situation of an electron and a photon moving forward in time next to each other. It might seem that this electron is not the same one as at the beginning. But if one follows the world line of the first electron, it is connected in an unbroken line with the second one, as long as one is willing to track the anti-electron backwards in time.

We already know that antimatter and matter are mirror images of each other, identical and yet somehow opposite; one way to think of antimatter is thus as matter traveling backwards in time.

Space, time and space-time

Michael Doser

The American physicist Richard Feynman is the originator of this picture. In the first publication in which he introduces the underlying theoretical ideas, he describes the physical theory through an analogy: „It is as though a bombardier flying low over a road suddenly sees three [almost parallel] roads and it is only when two of them come together and disappear again that he realizes that he has simply passed over a long switchback in a single road." Or, as said more poetically by the Japanese physicist Nambu when commenting on Feynman's theory: „According to the new standpoint, one looks upon the world in its four-dimensional entirety. A phenomenon that will come into play in this theatre is now laid out beforehand in full detail from immemorial past to ultimate future and one investigates the whole of it at glance. […] time itself loses sense as the indicator of the development of phenomena; there are particles which flow down as well as up the stream of time; the eventual creation and annihilation of pairs [of particles and of their antiparticles] that may occur now and then, is no creation nor annihilation, but only a change of directions of moving particles, from past to future, or from future to past."

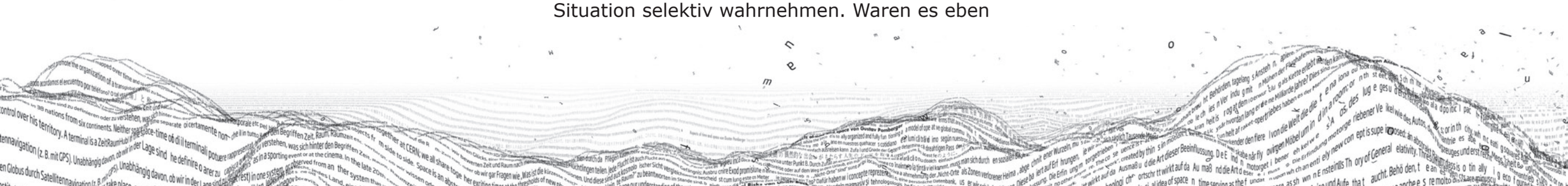
Antimatter is thus intimately tied to our understanding of space and time. But it is also tied to our existence in other ways: when the universe formed in the Big Bang, 13.7 billion years ago, equal amounts of matter and antimatter must have popped into existence. And yet, when looking out at the universe nowadays, it is clear that all the antimatter has disappeared, and this can only be understood if matter and antimatter are not completely identical. Perfect symmetry would have led to an empty universe, where matter and antimatter would have annihilated each other fully; our existence is predicated on an initial flaw that somehow favored matter very slightly. By studying antimatter – for example in experiments at CERN, the European Laboratory for Particle Physics in Geneva – we are actually studying our own origins.

Understanding antimatter, understanding space, understanding time: all these are part of the endeavor to understand the universe in which we exist. In only the last century, this endeavor has led from four-dimensional space-time to the hypothesis that there might actually be eleven dimensions; from the assumption that the universe is static and consists only of the stars of our galaxy to the discovery that not only is it expanding, but that the expansion itself is accelerating, under the influence of what has been named „dark energy", and that it consists of hundreds of billions of galaxies like ours; from the belief that what we see with our eyes (and telescopes) in the skies is the whole story to the realization that the visible part of the universe – shining stars, glowing gas clouds, extremely remote galaxies at the limit of detection – represents only four percent of the whole. In this vast and dynamic universe, the nature of the fabric that makes up the stage on which we play out our lives, and into which our existence itself is woven, is a mystery that we have yet to fully pierce.

Der Traum von der Überwindung evolutionärer Grenzen

Bernhard Fink

In Zeitalter von Email, Facebook und ähnlichen Technologien scheinen die geografischen Grenzen in der sozialen Interaktion zu verschwinden. Eine elektronische Nachricht, die aus Österreich abgesendet wird, erreicht innerhalb von Sekunden den Empfänger. Ob sich dieser im Inland, in Europa oder Übersee befindet, spielt dabei keine Rolle. Ähnlich ist es bei Freunden und Geschäftspartnern, die mit Hilfe moderner Kommunikationstechnologien vernetzt sind und so problemlos Kontakt halten können. Diese scheinbar unbegrenzte Möglichkeit, mit Menschen weltweit Verbindung aufzunehmen, bringt jedoch das Problem mit sich, dass die Bedeutung des persönlichen Kontakts („face-to-face") zusehends in Vergessenheit gerät. Wieso noch Tausende von Kilometern reisen, um jemanden zu sehen, wenn eine kurze Email ausreichend ist, um das nächste Geschäft abzuschließen, oder sein Facebook-Status-Auskunft über seine oder ihre Aktivitäten gibt? Betrachtet man die steigende Zahl von Flugreisenden, scheint der persönliche Austausch von Informationen aber nach wie vor von Bedeutung zu sein, ganz abgesehen von jenen, die den Flug als Mittel zum Zweck sehen, um im Urlaub dem Alltag entfliehen zu können. Auch auf der Suche nach Erholung ist dem Menschen durch das Fliegen kaum mehr eine Grenze gesetzt: Die „Ferne" gibt es kaum noch.
Ob auf Geschäftsreise oder auf dem Weg in den Urlaub, eines bleibt allen gemein: Bevor man zum Ziel kommt, muss man sich durch den sozialen Begegnungsplatz des Flughafens mühen, wo sich täglich Tausende Menschen tummeln. Obgleich dies in Verbindung mit den Mühen der Flughafenroutine oft als beschwerlich empfunden wird, ergeben sich dadurch zwangsläufig Erlebnisse, die ganz spezifisch für einen Flughafen sind. Im beruflichen Alltag ist der Kontakt mit anderen Menschen oft auf eine geringe Zahl von Personen beschränkt. Am Flughafen ist das anders: Wie in einem Kaleidoskop tauchen Menschen unterschiedlichster Nationalität und Persönlichkeit auf. Fernab vom Schreibtisch spürt man als Reisender schon beim Betreten des Terminals einen Anflug von Grenzenlosigkeit.
Das internationale Flair, das einen unweigerlich einholt, verstärkt sich, wenn man vom nationalen Bodenpersonal in englischer Sprache begrüßt wird. Hat man einmal Check-In und Sicherheitskontrollen passiert, dauert es nicht lange, bis man von einem verwirrten Reisenden nach einem bestimmten Gate gefragt wird. Die Verständigung passiert dabei oftmals sprichwörtlich mit Händen und Füßen, und es werden einem die Grenzen der Sprache so richtig bewusst. Zum Glück ist nicht-sprachliche Kommunikation nahezu universal, förmlich „barrierefrei".
Nach diesen Erlebnissen eilt man zum Abflugsteig oder sucht nach einer Lounge als Rückzugsbereich, um sich in entspannter Atmosphäre auf seinen Flug vorzubereiten. Ganz gleich, wie man die Zeit bis zum Abflug gestaltet, es ist eine bestimmte Routine, und Routine wird schnell einmal langweilig. Will man das? Ja, man will es! Denn egal, wie mühevoll man das Flughafengeschehen empfindet, man beginnt irgendwann auch, seine Schönheit zu sehen. Unser Gehirn hilft uns dabei, indem es die Erlebnisse zu unserem Vorteil optimistisch färbt. Dieser dankbare evolutionäre Mechanismus lässt uns die Situation selektiv wahrnehmen. Waren es eben noch Menschenmassen, die unsere Wahrnehmung bestimmt haben, ist es nun die schöne Frau gegenüber, und obgleich man ihrer Sprache, die man in Bruchstücken auffängt, nicht mächtig ist, hindert einen nichts, ein Lächeln hinüberzuschicken.
Am Flughafen verschwimmen die Grenzen zwischen Nationalitäten, Sprachen, Geschlechtern, Alter und Beruf. Plötzlich wirkt all das, was im Alltag oft als Barriere empfunden wird, nahezu unbedeutend, und man fühlt sich als Individuum, als Mensch, als einer von vielen, die dasselbe Ziel verbindet, nämlich das Reisen und das damit verbundene Überwinden von geografischen, nationalen und sozialen Grenzen. Nirgendwo sonst ist es so einfach, über evolutionäre Grenzen hinwegzusehen wie am Flughafen und beim Fliegen. Dieser schwer zu definierende, aber doch alle verbindende Raum bietet ein Versuchsfeld zur Überwindung von Grenzen, ohne dass man dabei Konsequenzen fürchten müsste. Ob sich dies auf den Flirt mit der „schönen Blonden" bezieht oder ob man sein pro-soziales Verhalten durch Hilfsbereitschaft gegenüber einem verirrten Reisenden trainiert, ist dabei einerlei. Für einen Moment zumindest empfinden wir eine innere Zufriedenheit und träumen von der Überwindung all jener evolutionären Grenzen, die sonst unser Leben bestimmen.



Airport – Terminal Zero

Heidrun Friese

Everyone has the right to freedom of movement and residence within the borders of each state. Everyone has the right to leave any country, including his own, and to return to his country. Toda persona tiene derecho a circular libremente y a elegir su residencia en el territorio de un Estado. Toda persona tiene derecho a salir de cualquier país, incluso el propio, y a regresar a su país. Toute personne a le droit de circuler librement et de choisir sa résidence à l'intérieur d'un Etat. Toute personne a le droit de quitter tout pays, y compris le sien, et de revenir dans son pays. Ogni individuo ha diritto alla libertà di movimento e di residenza entro i confini di ogni Stato. Ogni individuo ha diritto di lasciare qualsiasi paese, incluso il proprio, e di ritornare nel proprio paese. Onse alikwata insambu yakwenda nokwikala konse uko atemwa mu calo aikala. Onse alikwata insambu ukufuma mu cala, nangu calo cakwe pamo nokubwelela ku calo ca kumwabo. Wonke umuntu unelungelo lokuhamba ngenkululeko nokuhlala phakathi kwemingcele ezungeze imibuso ehlukene. Wonke umuntu unelungelo lokushiya izwe lakhe, futhi abuye abuyele kulo. Jeder hat das Recht, sich innerhalb eines Staates frei zu bewegen und seinen Aufenthaltsort frei zu wählen. Jeder hat das Recht, jedes Land, einschließlich seines eigenen, zu verlassen und in sein Land zurückzukehren. (The Universal Declaration of Human Rights, art. 13, 1,2)

Nationality at birth, der Antrag auf ein Schengen-Visa unter Punkt 8. Durch Zufall an einem Ort geboren, in einem Land, aus dem man nicht einfach ausreisen kann. Zufall und Gnade der Geburt bestimmen den richtigen Pass, der Zufall, wer ein Visum zu Reise und Aufenthalt braucht. Behörden, tagelanges Anstehen, Papiere, Stempel, Unterschriften, Bestätigungen, Bürgschaften, Sicherheiten, Warteräume für unendlich viele Träume. Am Ende oft: negierte Freiheit, keine Möglichkeit zur Flucht vor den Umständen, verflogene Träume und Hoffnungen auf einen anderen Ort. Kein Last-minute-Angebot ins Palmenparadies, Flucht vor Büro und Burnout, kein eTicket auf dem Smartphone der Company, kein Flughafen, sondern eine Reise in der Economy-Class, windige Schaluppe über das Meer, an dessen Ufern wir uns sonnen dürfen. Die Lounge ein verlassenes Haus am Strand, baufälliger Unterschlupf für Tage, Tage und Wochen ohne Bar und WC, auf den Boden gekauert, eingepfercht mit hundert anderen Körpern, wartenden Leben. Keine Shoppingmall und kein Dutyfree von Chanel, Prada und Dolce & Gabbana. Kein Rimowa-Leichtalu, keine Carry-on Baggage-Tags, keinen Koffer, nur das, was man auf dem Leib trägt. Keine Visa-Eintrittskarte in der Tasche, Ersparnisse eines Lebens in den abgetragenen Schuhen, die einen an dieses rettende Stück Ufer getragen haben. Kein Drink zur Begrüßung an Bord, keine Sauerstoffmasken, Notausgänge und Schwimmwesten unter dem Sitz mit bezahlter Beinfreiheit und bezahltem Lächeln. Ankunft ungewiss. Erstickt in einem Container oder an Abgasen unter Deck, Friedhof unter morschen Planken, zwischen den Wellen über Bord geworfen, auf Nimmerwiedersehen, bis ein Fischer die Knochen in den Netzen hat. „In Zivilisationen ohne Schiffe versiegen die Träume." (Michel Foucault)
Mit Glück überlebt, zitternd, aber lebendig aufgefischt, Aufnahmelager oder Abschiebegefängnis. Ungewollte Menschen, ungewollte Pläne, ungewollte Träume. Zu viel an Menschheit. Weg damit, zurück im Flugzeug, Terminal 0, Charter oder Line, aber ohne Miles & More und Statusmeilen. Bis zum nächsten Versuch. Träume lassen sich nicht aufhalten. Beim nächsten Mal ohne Papiere dann mit Glück auf Feldern oder Baustellen, in Küchen oder an den Betten unserer Alten. Ohne amtliches Wissen und Sichtvermerk, kostengünstig, notwendig, aber unauffällig, heimlich, unsichtbar, clandestino.
Jedes Visum eine Selektion. Jeder Flughafen eine Grenzlinie zwischen reich und arm, falscher und richtiger Geburt. Jeder Flugsteig, jedes Gate ein Gatter, Pforte, Schleuse, Sicherheitstor, ein versperrter Zugang. Das Menschenrecht und die Freiheit, „aufzubrechen, wohin man will" (Friedrich Hölderlin), beruhen auf ihrem Gegenteil.

Spazio-tempo: queste entità ancora sconosciute

Fabiola Gianotti

Spazio e tempo sono concetti comunissimi nella nostra vita di tutti i giorni. Eppure possono anche essere molto distanti dalla nostra percezione. Possono infatti essere infinitesimi, come nel mondo delle particelle elementari, dove le distanze si misurano su scale di un milionesimo di miliardesimo di metro e i tempi in miliardesimi di secondo. Possono essere immensamente grandi come nell'Universo, dove le distanze si misurano in milioni di miliardi di metro e i tempi in miliardi di anni. Possono comportarsi in modo bizzarro, allungandosi o restringendosi secondo il moto dell'osservatore. E possono riservarci ancora molte sorprese: potrebbero infatti esistere più dimensioni spaziali delle tre che conosciamo, come previsto dalla teoria delle stringhe.
È incredibile come anche concetti apparentemente ovvi, come spazio e tempo, nella grandezza e bellezza della Natura non siano assolutamente scontati!

Der Mensch im Kosmos

Dietmar Hager

Ich stehe hier am Flughafen Wien. Ich warte auf meinen Abflug. Mein Ticket und die Uhrzeit machen mir bewusst, wie viel Zeit verbleibt. Ich habe noch Zeit für diesen Text. Dieser Zeit gebe ich bewusst Raum. Ich betrete diesen ZeitRaum nun hier. Was erwartet mich?
Ich schließe für den ZeitRaum eines Atemzyklus die Augen. Ich atme ein, ich atme aus. Was sehe ich? Ich sehe mich auf dem Weg vom letzten Termin zum nächsten. Was ist dazwischen? Der ZeitRaum des Wartens am Flughafen der erfüllt ist mit Ungeduld. Ich will schon dort sein, wohin der Flieger mich bringen wird. Ich will nicht warten. Ich habe keine Zeit. Warum?
Ich schließe die Augen für den ZeitRaum eines Atemzyklus. Ich atme ein, ich atme aus. Wo bin ich? Ich bin im ZeitRaum zwischen zwei Orten. Auf einer gedachten Linie liegt der vergangene Termin hinter mir; der nächste vor mir. Bin ich dazwischen? Als ich dort war, woher ich gerade kam, wo war ich da? In einem anderen ZeitRaum. Ich war in der Zwischenzeit. Was weiß ich?
Zeit und Raum. Kosmologisch betrachtet, gibt es keinen Unterschied. Denn Zeit und Raum bedingen einander. Zeit und Raum haben für Menschen unterschiedliche Bedeutung. Doch eines ist uns Menschen in Bezug auf Zeit und Raum gemein: Die Messskala. Wir bewerten Zeit und Raum nach menschlichen Dimensionen. Und diese sind aus kosmologischer Sicht vergleichsweise bescheiden. Wie lange ist ein Meter? Wie lange ist ein Tag? Dafür haben wir Begriffe, Vorstellungen, eine persönliche Datenbank, aus der wir schöpfen können. Diese basiert auf Erfahrungen, die wir als Mensch machen. Doch wie lange sind eine Milliarde Lichtjahre? Wie lange sind eine Milliarde Jahre? Dies sind die Skalen des Kosmos. Der winzige Augenblick im ZeitRaum des Daseins eines einzelnen Menschen verschwindet aus dieser Sicht praktisch völlig. Das ist uns aber nicht bewusst. Denn wir sind in unserem Mikrokosmos des hektischen ZeitRaumes, in dem wir leben, viel zu beschäftigt mit dem Einhalten von Terminen. Jeder Termin ist eine Beschneidung meiner Freiheit. Im besten Fall habe ich dem selbst zugestimmt, im schlimmsten Fall bin ich fremdbestimmt.
Was ist ein kosmologisches Jahr? Es ist der ZeitRaum der Existenz des uns bekannten Universums, verfrachtet in den Zeitbegriff eines irdischen Jahres. Also knapp 14 Milliarden Jahre komprimiert auf ein Erdenjahr. In diesem kosmologischen Jahr beginnt die Milchstraße, in der wir leben, in den ersten Tagen des Jänner. Die Sonne, welche unser System erwärmt, beginnt mit ihrer Arbeit Anfang September. Die Erde folgt ihr knapp zwei Wochen später. Die Dinosaurier jagen während des Novembers über den Planeten. Die gesamte Kulturgeschichte der Menschen aber passt in die letzten Sekunden vor Mitternacht des Silvesterabends. Und unaussprechlich kurz ist die Verweildauer eines einzelnen Menschen im kosmologischen Jahr. Was lerne ich daraus?
Ich schließe die Augen für den ZeitRaum eines Atemzyklus. Ich atme ein, ich atme aus. Was fühle ich? Ich fühle mich im einzigen ZeitRaum, den es je wirklich gibt: Im Jetzt. Denn der letzte Termin ist ein Gedanke, eine Erinnerung. Er ist nicht mehr wirklich. Ebenso ist der kommende Termin an einem anderen Ort jetzt gerade bloß ein Gedanke. Ich kann an vielen Orten gewesen sein. Doch war ich nie da. Denn ich komme nicht wirklich an, wenn ich mich ständig in der ZwischenZeit befinde: mit einem Fuß in der Vergangenheit, mit dem anderen in der Zukunft. Wo bleibe ich? Was brauche ich?
Ich schließe die Augen für den ZeitRaum eines Atemzyklus. Ich atme ein, ich atme aus. Ich brauche Bewusstheit. Erst wenn ich mir bewusst bin, dass der einzige ZeitRaum, der reelle Gültigkeit und Bedeutung für mich hat, das JETZT ist, dann komme ich an. Egal, woher ich gerade komme, und egal, wohin mich der Flieger bringen wird. Dann bin ich hier. Ich begegne der Welt, in der ich lebe, jetzt. Nicht vorhin und nicht am Zielort. Ich lebe im Jetzt. Und ich bin mir dessen bewusst. In genau diesem ZeitRaum.

ZeitRaum – CERN is challenging it!

Peter Jenni

We at the European Laboratory for Particle Physics, CERN, in Geneva challenge your perception of time and space! You might be sure that you move in three space dimensions from here to the other places in the world, and of course in a steady flow of time. I am not. Because my "friends," the elementary particles of matter and forces, which determine all our world and universe, show me daily at CERN's accelerators and experiments that the reality might be more complex and even more beautiful than we think. Time is relative in motion, not only in our feelings and moods. This we learned from Einstein, and it is a most natural property seen with accelerated particles. Are there more dimensions of space that elementary constituents of nature can reveal to us at the highest energies available in a laboratory with the Large Hadron Collider, LHC? This is well possible, and experiments like ATLAS at the LHC will tell us soon. ZeitRaum, time and space: people from all over the globe are united in the science collaboration of the ATLAS experiment, bringing together 3000 physicists from 175 universities and laboratories in 38 nations from six continents. Neither space nor time separates us, certainly not since the Worldwide Web was invented at CERN. Science brings nations together at CERN; we all share together exciting times at the thresholds of new physics discoveries that will shape our understanding of the universe!

ZeitRaumHub

André Lemos

Quem me garante que o lugar onde chego após dez horas é o mesmo do que aquele que chego em vinte minutos? (...) E mesmo se eu for de trem e esperar parado, no destino, 9 horas e 40 minutos, esse meu destino não será o mesmo do que aquele onde eu chego em dez horas caminhando a pé; já que eu estive lá, nesse lugar, mesmo que parado, 9 horas e 40 minutos o modificando. (Gonçalo Tavares,"O Senhor Valéry e a lógica")

Em um documentário, o artista brasileiro Cildo Meireles lê em voz alta um livro: „O malabarista lida com territórios. Ele encontra lugar para três coisas em um espaço para duas. Ele faz do tempo um espaço. Ele tem que introduzir o tempo no seu território". O malabarista é produtor de territorialidade. Ele controla o tempo e o movimento, produzindo espaço pela troca de objetos no lugar e no tempo. A tensão gerada na ação do malabarista vem justamente da possibilidade da quebra da relação espacial. Território é controle. A perda de controle é desterritorialização, queda dos objetos (que produz outro espaço). O fracasso do malabarista é a perda do controle sobre o seu território. Um terminal é um ZeitRaumHub! Se o espaço-tempo dos terminais pudessem ser representados por um criador, esse poderia ser o malabarista, jogando de um lado para o outro esses objetos.

Espaço é um conceito abstrato, matemático. Ele é um reservatório de todas as coisas. Ele é também conceito relacional, constituído pela distensão de lugares. Como diz Heidegger, „un espace (Raum) est quelque chose qui est 'ménagé' (…) il est ménagé par des lieux…". É mais interessante pensar o espaço como rede, um „espaço-rede", criado pelas coisas em movimento. Como o espaço que vamos criando ao deslocarmos móveis em uma sala; ou na rua, ao construirmos prédios; ou na cidade, ao inventarmos praças e monumentos; ou no planeta, ao estabelecermos coisas na terra, no céu ou no mar; ou mesmo no cosmos, ao ampliarmos a nossa influência com satélites e viagens espaciais.

Um terminal é um ponto que cristaliza passagens e conexões de espaço, tempo e cultura. Ele é um entroncamento, um lugar de trocas rápidas e efêmeras, sendo um nó fundamental em uma rede de espaços. Um terminal não é um espaço que contém coisas, mas um „espaço-rede" produzido no movimento de um malabarista invisível, jogando coisas de um lado para o outro. É nesse malabarismo que o espaço-rede dos ZeitRaumHubs é criado. Rede, do espaço-rede, não é o que conecta. Não é a infraestrutura por onde passam coisas, mas o que é gerado por conexões. Rede é o que é tecido nas relações.

O espaço-rede do terminal é produzido por tensões (sociais, econômicas, culturais e políticas). Ele não é nem o local no global, nem o global no local, nem mesmo o „glocal". O espaço-rede não é um reservatório para a acomodação das coisas. Ao contrário, ele é o que está sendo produzido pela relação entre coisas e lugares. Olhe o mundo e veremos o espaço-rede se fazendo e se desfazendo a todo momento. Como o espaço criado pelo malabarista, um terminal é produzido pelo controle de movimentos de coisas: territorialização e desterritorialização de objetos e pessoas. Ele é esse emaranhado de ligações pouco perceptíveis que se fazem e se desfazem nos movimentos das coisas.

Quem usa um terminal sente bem essa tensão: a tensão de ser jogado de um lado para o outro, sem controle, a deriva, mas vigiado; o sentimento de liberdade, anonimato e conforto por adentrar uma zona de conforto cultural (ZCC, ou „não-lugar") onde os códigos são compartilhados mundialmente; e também apatia e tristeza. O que age em um lugar vem sempre de outros tempos e lugares. Nos sentimos manipulados por um malabarista que nos joga para lá e para cá.

Os ZeitRaumHubs são compostos por associações complexas, construídas a cada pouso e decolagem, a cada deslocamento de malas, cargas e passageiros, a cada bilhete vendido, a cada movimento de funcionários, a cada nova legislação que regula o seu uso... É no equilíbrio e desequilíbrio das coisas que o terminal produz o seu espaço-rede.

ZeitRaumHub

André Lemos

Who can guarantee that the place I arrive at after ten hours is the same as where I arrive in twenty minutes? . . . And even if I go by train and wait motionless, at the destination, for 9 hours and 40 minutes, this destination will not be the same as the one where I arrive at in ten hours on foot; since I have been there, at that place, albeit motionless, for 9 hours and 40 minutes changing it. (Gonçalo Tavares, "O Senhor Valéry e a lógica")

In a documentary, the Brazilian artist Cildo Meireles reads aloud from a book: "The juggler deals with territories. He finds space for three things in a space for two. He makes time into a space. He has to introduce time into his territory." The juggler produces territoriality. He controls time and movement, creating space by the exchange of objects in places and time. He creates a space-network, a spacing of things in movement. The tension generated in the juggler's action comes precisely from the possibility of the breakdown of the spatial relationship. Territory is control. The loss of control is deterritorialization, the falling of the objects (which produces another space). The failure of the juggler is the loss of control over his territory. A terminal is a ZeitRaumHub! If the space-time of the terminals could be represented by a creator, this might be the juggler, tossing objects from side to side.

Space is an abstract, mathematical concept. It is a reservoir of all things. It is a relational concept as well, made up by the extension of places. As stated by Heidegger, "une espace (Raum) est quelque chose qui est 'ménagé' ... il est ménagé par des lieux." It is more interesting to think of space as a network, a "space-network", created by things in motion. Like the space that we create when moving furniture around in a room; or on the street, when constructing buildings; or in the city, when creating squares and monuments; or on the planet, when establishing things on land, in the sky or in the sea; or even in the cosmos, when extending our influence through satellites and space travel.

A terminal is a point that crystallizes passages and connections of space, time and culture. It is a junction, a place of fast and ephemeral changes. It is a key node in a network of spaces. A terminal is not a space that contains things, but rather a "space-network" produced in an invisible juggler's movement, tossing things from side to side. It is within this juggling that the space-network of the ZeitRaumHub is created. The "network" of "space-network" is not what connects. It is not the infrastructure through which things pass, but instead what is generated by connections. A network is always created by relationships.

The space-network of the terminal is produced by tensions (social, economic, cultural, and political). It is neither the local in the global, nor the global in the local, nor even the "glocal". The space-network is not a reservoir for the accommodation of things. Rather, it is produced by the relationship between things and places. Look at the world and we will see the space-network being created and disassembled continuously. As the space-network created by the juggler, a terminal is produced through the control of the movements of things: territorialization and deterritorialization of objects and people. It is this tangle of hardly noticeable connections which create and disassemble themselves within the movement of things.

Anyone who uses a terminal can feel this tension: the tension of being tossed from side to side, without control, adrift, but surveilled; a feeling of freedom, anonymity and comfort for entering a cultural comfort zone (CCZ, or "non-place") where codes are shared worldwide; and also of apathy and sadness. What acts in a place always comes from other times and places. We feel ourselves manipulated by a juggler who tosses us here and there.

The ZeitRaumHub is made up of complex associations, created with each landing and takeoff, with each displacement of luggage, cargo and passengers, with each ticket sold, with each movement of employees, with each new piece of legislation that regulates its use. … It is in the balance and imbalance of things that the terminal produces its space-network.

Geflügelte Orte

Thomas Macho

Der französische Ethnologe Marc Augé, ehemals Direktor der Pariser École des Hautes Études en Sciences Sociales, hat zu Beginn der 1990er Jahre, kurz nach dem Zusammenbruch der Sowjetunion, eine seither viel diskutierte Unterscheidung eingeführt: die Unterscheidung zwischen Orten und „Nicht-Orten" („non-lieux"). Als „Nicht-Orte" verstand Augé funktionale Räume wie Shoppingmalls, Autobahnen, Bahnhöfe oder Flughäfen; er bezeichnete sie als Räume, die keine Geschichte, keine Beziehungen und keine Identitäten stiften, sondern bloß Einsamkeit und Ähnlichkeit. Traditionelle Orte dagegen, so Augé, schaffen historische Kontexte und soziale Relationen.

Die Frage, die sich mit Augés Unterscheidung aufzwingt, zielt auf einen kulturkonservativen Kern der Beobachtungen des Ethnologen. Sollen wir „Nicht-Orte" meiden? Oder sollen wir sie vielmehr begrüßen, als räumliche und architektonische Verkörperungen der Freiheit vom Zwang der Herkunft, der Geschichte, der Beziehungen? Als rituelle Orte einer Passage, die den Ankünften und Abschieden, der Trauer und Sehnsucht eine Art von emanzipatorischer Gestalt verleiht? Mit den Praktiken des Reisens, des Fliegens zumal, verbindet sich oft genug die Erfahrung eines elementaren Glücks, einer Bewegung, die wir mit Engeln und Flüchtlingen teilen. Jede Flucht ist auch Flucht aus einem Gefängnis: Ausbruch, Exodus, Versprechen eines besseren Lebens. „Nicht-Orte" sind geflügelte Orte.

Gegen die Wahrnehmung der „Nicht-Orte" als Zonen verlorener Heimat, abgeschnittener Wurzeln muss daran erinnert werden, dass die Sesshaftigkeit eine Erbkrankheit ist und dass die Verwurzelung als Kette erlebt werden kann, als eine imaginäre, genealogische Kette, die uns zwingt, dort zu leben, wo auch unsere Eltern und Ahnen gelebt haben. In Brechts „Flüchtlingsgesprächen" sagt Kalle: „Das ist so, als wenn man die lieben soll, die man heiratet, und nicht die heiratet, die man liebt. Warum, ich möcht zuerst eine Auswahl haben. Sagen wir, man zeigt mir ein Stückel Frankreich und einen Fetzen gutes England und ein, zwei Schweizer Berge und was Norwegisches am Meer und dann deut ich drauf und sag: das nehm ich als Vaterland; dann würd ichs auch schätzen. Aber jetzt ists, wie wenn einer nichts so sehr schätzt wie den Fensterstock, aus dem er einmal heruntergefallen ist. [...] Sonst hör ich immer, man soll verwurzelt sein. Ich bin überzeugt, die einzigen Geschöpfe, die Wurzeln haben, die Bäum, hätten lieber keine, dann könntens auch in einem Flugzeug fliegen."

TimeSpace in Arts and Sciences

Roger F Malina

Astronomers using telescopes can now look back over billions of years of evolution of the universe. We can see the first chemical elements forming, first stars in our universe being born, the first galaxies. We can see how structure develops. Astronomy has become sociology; we study the behaviors of youth, the aging of galactic demographics and the death of stars. We develop accurate theories of the history of the universe. We are mapping the universe in time and space.
In 2011 a physics Nobel Prize was awarded for the discovery of dark energy, a new component of the universe. Astronomers now believe that 95 percent of the universe is dark – dark matter and dark energy – and of an unknown nature.
Astronomers have been studying the decoration on the universe for all of human history.

Historians can barely look back at human culture a few thousand years. Recorded history of the beginnings of our species does not exist before writing developed; we extrapolate from a few bone fragments and cave paintings. Where the geological history of the planet is well mapped over time and space, the history of human beings is not even understood over a few hundred thousand years except for a few clues about our large-scale migrations. We are ignorant of the time and space of human evolution, even more of human culture.
Astronomers and historians share immense ignorance about most of time and space, and this ignorance is both humbling and motivating.

The airport is an entrance, the airport is an exit

Isaac Mao

机场 是 入口，机场 是 出口

有一个游戏，曾经非常流行，叫做Portal（出入口），开始是卡通界面，后来甚至被拍摄为真人视频画面，还由Danielle Rayne 出演女主角，在Youtube上广为流传，点击数达到了数百万次。这个游戏设计了一个武器，主角只要用此武器在墙上射击一下，就可以产生一个空间入口，她跳入其中，就会从另一个遥远的出口重新出现，这样可以迅速躲避敌人的攻击，转眼间进入另一个空间。 因为“第二人生”(Second Life)当年曾经流行的关系，“瞬间穿梭”(Teleport)这个词也就成为了耳熟能详的网络用语。在Portal 这个游戏中，瞬间穿梭变成了无时不在的必备功能。

经常旅行，我体会到机场就是这样的出入口，人们从每个城市的机场进入，又从另一个城市的机场走出。游戏中只是压缩中间的航程，让人们产生奇异的感觉。现实的旅行，仍然还有时间空间的负累，从你打包准备，出发到机场，等待航班，空中煎熬，落地出关，到离开机场，无一不是痛苦的过程。虽然现在各个环节中已经增加了很多小乐趣，包括购物玩耍，但是仍然如同面临一次手术的感觉，就更不用说要从反复颠倒时差中康复了。

设计优秀的机场，应当更有超越现实的感觉。应当让它像游戏中的武器一样随手而得，也轻松得可以快速离开，而中间过程也同样可以让人愉悦。 机场要方便获取，容易创造出来人们时空移位的感觉。如果在手指间晃动一下，休息片刻，然后欣赏一下空中美景，并能够和狭窄空间的数百人进行一些“虚拟实景”的游戏，不知道该有多么惬意。我曾经建议某航空公司在空中接驳推特，人们在机舱内建立友好关系，自然也就忘记了那种紧张无力。在入口和出口之间，人们便可以忘却时间，忘却疲劳，还会产生新的想象力。

因为频繁出入的关系，对香港机场，我一直有不错的进入感觉。但是某个时候开始，越来越多次，当我登上香港到上海的班机，总是出现“机长接到通知，因为航空管制的原因，我们的起飞将要推迟”，于是坐等上半小时一小时；后来从上海到香港，也同样发生类似的事情，就开始有点烦躁了。 这两个小时的空中旅程，被这种拖沓变成了大半天的消耗，人们在飞机内无所事事，心情低落，连读书都被周围人的唉声叹气骚扰。 于是，乘客们开始反抗，怨言和愤懑从舱内传递到远方的电话， 不知道外面的航空管制者是否理解和感知到这种滋生的情绪，而有所改进呢？不管如何，一段时候的心理抱怨后，我开始平静下来，尝试把自己放在游戏过程中，不考虑哪些周边的焦虑气氛。尤其是我看到上海的新机场居然模仿香港机场的提示标牌“请放松，每班空中轨道车只间隔2两分钟”，说“请放松，步行到最远的登机口只要8分钟”。我笑了，中国是当今世界知名的“山寨国家”，很多东西都在模仿国际的成功范例，甚至口吻也不例外，不过也增加了很多类似中式英文（Chinglish）的幽默感。

未来的机场，应当是分享主义(Sharism)下的设计。每个人在进入这个空间之前，就应当做好了模拟的时间和空间路线，甚至可以自动帮你安排好准备穿梭过程的各种杀时间的玩意(Time Killers)。等到真正出发，到达那里，转换出口，只是类似重新装载一次游戏场景，从一个入口进入，再从另一个出口离开， 这种体验应当是快乐，卓有成效，愿意与朋友分享的感觉。有些心情，至少可以从FourSquare中反映出来。

我期待这样的机场出现，旅行不再和地理位置有关，只和文化有关。我们这些数字游牧群落(Digital Nomads)，都是在上帝的模拟游戏中。

Tiempo y Espacio

Humberto Maturana Romesín

Espacio y tiempo. Dos dimensiones que utilizamos cotidianamente en nuestras coordinaciones de haceres. Dos conceptos que muchas veces nos llevan a acuerdos y desacuerdos, a encuentros o a desencuentros. Dos conceptos que hacen referencia a fenómenos semejantes pero distintos: la simultaneidad y la coincidencia. Decimos que son coincidentes dos sucederes que vemos que se encuentran en el mismo punto del espacio al mismo tiempo, y decimos que son simultáneos dos sucesos que vemos que ocurren en distintos espacios al mismo tiempo. Por muy triviales que puedan parecer estas reflexiones son fundamentales en nuestro vivir cotidiano ya que tienen que ver con el ordenamiento de nuestro convivir, y se hacen más fundamentales aún cuando nos preguntamos por como observamos lo que observamos.

Al ir de un lugar a otro, en un viaje hacia un encuentro deseado, vivimos la alegría de la coordinación a distancia en la simultaneidad las voces telefónicas que buscan la coincidencia espacial en un lugar especificado … desde lejos. ¿Desde lejos? Acaso estamos lejos el uno del otro cuando acordamos el encuentro por teléfono? O tal vez cambio el espacio-tiempo y estamos juntos en un nuevo ámbito de localidad desde el alma?

Estamos viviendo un tiempo de transformación cultural cuyo proceso depende de nuestra consciencia de que somos seres a los cuales les importa el dolor y la alegría de otros a la vez que el bien-estar del mundo natural en el que existimos. Y en este vivir estamos además dándonos cuenta de que traemos a la mano en nuestros quehaceres cotidianos los mundos que vivimos según nuestros deseos, sentires, emociones y haceres en el fluir en tiempo cero de nuestro presente cambiante continuo … en el camino que surge de la continua conservación del bien-estar.

Es así como todo nuestro vivir nos ha llevado de algún modo u otro a estar aquí en este preciso instante leyendo esta reflexión, en este lugar en una coincidencia espacio-temporal en el curso de una travesía evanescente. Y sin haberlo querido antes podemos encontrarnos en este viaje preguntándonos ¿qué hacemos que estamos trayendo a la mano un mundo que genera en nosotros dolores que no queremos vivir? ¿qué deseos, sentires, emociones y haceres estamos conservando en nuestro vivir y convivir? ¿qué deseos sentires, emociones y haceres han guiado el curso de nuestro vivir a través que nos encontramos aquí en este lugar pensando y sintiendo lo que pensamos y sentimos?

Esperamos que tengan un viaje placentero y que en éste la simultaneidad de un deseo de cercanía lleve a la coincidencia de un convivir en el bien-estar en la armonía de nuestra existencia como los seres humanos amorosos que todos somos … aunque a veces pretendamos lo contrario por creer que estamos separados en el tiempo y el espacio.

Pigs in Cyberspace

Hans Moravec

Exploration and colonization of the universe awaits, but earth-adapted, biological humans are ill-equipped to respond to the challenge. Machines have gone farther and seen more, limited though they presently are by insect-like behavioral inflexibility. As they become smarter over the coming decades, space will be theirs. Organizations of robots of ever-increasing intelligence and sensory and motor ability will expand and transform what they occupy, working with matter, space and time. As they grow, a smaller and smaller fraction of their territory will be undeveloped frontier. Competitive success will depend more and more on using already available matter and space in ever more refined and useful forms. The process, analogous to the miniaturization that makes today's computers a trillion times more powerful than the mechanical calculators of the past, will gradually transform all activity from grossly physical homesteading of raw nature to minimum-energy quantum transactions of computation. The final frontier will be urbanized, ultimately into an arena where every bit of activity is a meaningful computation: the inhabited portion of the universe will transformed into a cyberspace.

Because it will use resources more efficiently, a mature cyberspace of the distant future will be effectively much bigger than the present physical universe. While only an infinitesimal fraction of existing matter and space is doing interesting work, in a well-developed cyberspace every bit will be part of a relevant computation or storing a useful datum. Over time, more compact and faster ways of using space and matter will be invented and used to restructure the cyberspace, effectively increasing the amount of computational space-time per unit of physical space-time.

Computational speedups will affect the subjective experience of entities in cyberspace in a paradoxical way. At first glimpse, there is no subjective effect, because everything, inside and outside the individual, speeds up equally. But, more subtly, speedup produces an expansion of the cyber universe, because, as thought accelerates, more subjective time passes during the fixed (probably lightspeed) physical transit time of a message between a given pair of locations - so those fixed locations seem to grow farther apart. Also, as information storage is made continually more efficient through both denser utilization of matter and more efficient encodings, there will be increasingly more cyber-stuff between any two points. The effect may somewhat resemble the continuous-creation process in the old steady-state theory of the physical universe of Hoyle, Bondi and Gold, where hydrogen atoms appear just fast enough throughout the expanding cosmos to maintain a constant density.

A quantum-mechanical entropy calculation by Bekenstein suggests that the ultimate amount of information that can be stored given the mass and volume of a hydrogen atom is about a megabyte. But let's be conservative, and imagine that at some point in the future only „conventional" physics is in play, but every few atoms store a useful bit. There are about 1056 atoms in the solar system. I estimate that a human brain-equivalent can be encoded in less than 1015 bits. If a body and surrounding environment takes a thousand times more storage in addition, a human, with immediate environment, might consume 1018 bits. An AI with equivalent intelligence could probably get by with less, since it does without the body-simulation „life support" needed to keep a body-oriented human mind sane. So a city of a million human-scale inhabitants might be efficiently stored in 1024 bits. If the atoms of the solar system were cleverly rearranged so every 100 could represent a bit, then a single solar system could hold 1030 cities - far more than the number (1022) of stars in the visible universe! Multiply that by 1011 stars in a galaxy and one gets 1041 cities per galaxy. The visible universe, with 1011 galaxies, would then have room for 1051 cities – except that by the time intelligence has expanded that far, more efficient ways of using space-time and encoding data would surely have been discovered, increasing the number much further.

Start with the concepts of telepresence and virtual reality. You wear a harness that, with optical, acoustic, mechanical and chemical devices controls all that you sense, and measures all of your actions. Its machinery presents pictures to your eyes, sounds to your ears, pressures and temperatures to your skin, forces to your muscles and even smells and tastes for the remaining senses. Telepresence results when the inputs and outputs of this harness connect to a distant machine that looks like a humanoid robot. The images from the robot's two camera eyes appear on your „eyeglass" viewscreens, and you hear through its ears, feel through its skin and smell

Pigs in Cyberspace

Hans Moravec

through its chemical sensors. When you move your head or body, the robot moves in exact synchrony. When you reach for an object seen in the viewscreens, the robot reaches for the object, and when it makes contact, your muscles and skin feel the resulting weight, shape, texture and temperature. For most practical purposes you inhabit the robot's body – your sense of consciousness has migrated to the robot's location, in a true „out of body" experience.

Virtual reality retains the harness, but replaces the remote robot with a computer simulation of a body and its surroundings. When connected to a virtual reality, the location you seem to inhabit does not exist in the usual physical sense, rather you are in a kind of computer-generated dream. If the computer has access to data from the outside world, the simulation may contain some „real" items, for instance representations of other people connected via their own harnesses, or even views of the outside world, perhaps through simulated windows.

One might imagine a hybrid system where a virtual „central station" is surrounded by portals that open on to views of multiple real locations. While in the station one inhabits a simulated body, but when one steps through a portal, the harness link is seamlessly switched from the simulation to a telepresence robot waiting at that location.

The technical challenges limit the availability, „fidelity" and affordability of telepresence and virtual reality systems today – in fact, they exist only in a few highly experimental demonstrations. But progress is being made, and it is possible to anticipate a time, a few decades hence, when people spend more time in remote and virtual realities than in their immediate surroundings, just as today most of us spend more time in artificial indoor surroundings than in the great outdoors. The remote bodies we will inhabit can be stronger, faster and have better senses than our „home" body. In fact, as our home body ages and weakens, we might compensate by turning up some kind of „volume control." Eventually, we might wish to bypass our atrophied muscles and dimmed senses altogether, if neurobiology learns enough to connect our sensory and motor nerves directly to electronic interfaces. Then all the harness hardware could be discarded as obsolete, along with our sense organs and muscles, and indeed most of our body. There would be no „home" experiences to return to, but our remote and virtual existences would be better than ever.

The picture is that we are now is a „brain in a vat," sustained by life-support machinery, and connected by wonderful electronic links, at will, to a series of „rented" artificial bodies at remote locations, or to simulated bodies in artificial realities. But the brain is a biological machine not designed to function forever, even in an optimal physical environment. As it begins to malfunction, might we not choose to use the same advanced neurological electronics that make possible our links to the external world, to replace the gray matter as it begins to fail? Bit by bit our brain is replaced by electronic equivalents, which work at least as well, leaving our personality and thoughts clearer than ever. Eventually everything has been replaced by manufactured parts. No vestige of our original body remains, but our thoughts and awareness continue. We will call this process, and other approaches with the same end result, the downloading of a human mind into a machine. After downloading, our personality is a pattern impressed on electronic hardware, and we may then find ways to move our minds to other similar hardware, just as a computer program and its data can be copied from processor to processor. So not only can our sense of awareness shift from place to place at the speed of communication, but the very components of our minds may ride on the same data channels. We might find ourselves distributed over many locations, one piece of our mind here, another piece there, and our sense of awareness at yet another place. Time becomes more flexible – when our mind resides in very fast hardware, one second of real time may provide a subjective year of thinking time, while a thousand years of real time spent on a passive storage medium may seem like no time at all. Can we then consider ourselves to be a mind without a body? Not quite.

A human totally deprived of bodily senses does not do well. After twelve hours in a sensory deprivation tank (where one floats in a body-temperature saline solution that produces almost no skin sensation, in total darkness and silence, with taste and smell and the sensations of breathing minimized) a subject will begin to hallucinate, as the mind, somewhat like a television tuned to a nonexistent channel, turns up the amplification, desperately looking for a signal,

Pigs in Cyberspace

Hans Moravec

becoming ever less discriminating in the theories it offers to make sense of the random sensory hiss it receives. Even the most extreme telepresence and virtual reality scenarios we have presented avoid complete bodylessness by always providing the mind with a consistent sensory (and motor) image, obtained from an actual remote robot body, or from a computer simulation. In those scenarios, a person may sometimes exist without a physical body, but never without the illusion of having one.

But in our computers there are already many entities that resemble truly bodiless minds. A typical computer chess program knows nothing about physical chess pieces or chessboards, or about the staring eyes of its opponent or the bright lights of a tournament. Nor does it work with an internal simulation of those physical attributes. It reasons instead with a very efficient and compact mathematical representation of chess positions and moves. For the benefit of human players this internal representation is sometimes translated to a recognizable graphic on a computer screen, but such images mean nothing to the program that actually chooses the chess moves. For all practical purposes, the chess program's thoughts and sensations – its consciousness – is pure chess, with no taint of the physical, or any other, world. Much more than a human mind with a simulated body stored in a computer, a chess program is a mind without a body.

So now, imagine a future world where programs that do chess, mathematics, physics, engineering, art, business or whatever, have grown up to become at least as clever as the human mind. Imagine also the most of the inhabited universe has been converted to a computer network – a cyberspace – where such programs live, side by side with downloaded human minds and accompanying simulated human bodies. Suppose that all these entities make their living in something of a free market way, trading the products of their labor for the essentials of life – in this world memory space and computing cycles. Some entities do the equivalent of manual work, converting undeveloped parts of the universe into cyberspace, or improving the performance of existing patches, thus creating new wealth. Others work on physics or engineering problems whose solutions give the developers new and better ways to construct computing capacity. Some create programs that can become part of one's mental capacity. They trade their discoveries and inventions for more working space and time. There are entities that specialize as agents, collecting commissions in return for locating opportunities and negotiating deals for their clients. Others act as banks, storing and redistributing resources, buying and selling computing space, time and information. Some we might class as artists, creating structures that don't obviously result in physical resources, but which, for idiosyncratic reasons, are deemed valuable by some customers and are traded at prices that fluctuate for subjective reasons. Some entities in the cyberworld will fail to produce enough value to support their requirements for existence – these eventually shrink and disappear, or merge with other ventures. Others will succeed and grow. The closest present-day parallel is the growth, evolution, fragmentation and consolidation of corporations, whose options are shaped primarily by their economic performance.

A human would likely fare poorly in such a cyberspace. Unlike the streamlined artificial intelligences that zip about, making discoveries and deals, reconfiguring themselves to efficiently handle the data that constitutes their interactions, a human mind would lumber about in a massively inappropriate body simulation, analogous to someone in a deep diving suit plodding along among a troupe of acrobatic dolphins. Every interaction with the data world would first have to be analogized as some recognizable quasi-physical entity: other programs might be presented as animals, plants or demons, data items as books or treasure chests, accounting entries as coins or gold. Maintaining such fictions increases the cost of doing business, as does operating the mind machinery that reduces the physical simulations into mental abstractions in the downloaded human mind. Though a few humans may find a niche exploiting their baroque construction to produce human-flavored art, more may feel a great economic incentive to streamline their interface to the cyberspace.

The streamlining could begin with the elimination of the body-simulation along with the portions of the downloaded mind dedicated to interpreting sense-data. These would be and replaced with simpler integrated programs that produced approximately the same net effect in one's consciousness. One would still view the cyber world in terms of location, color, smell, faces, and so on, but only those details we

Pigs in Cyberspace

Hans Moravec

actually notice would be represented. We would still be at a disadvantage compared with the true artificial intelligences, who interact with the cyberspace in ways optimized for their tasks. We might then be tempted to replace some of our innermost mental processes with more cyberspace-appropriate programs purchased from the AIs, and so, bit by bit, transform ourselves into something much like them. Ultimately our thinking procedures could be totally liberated from any traces of our original body, indeed of any body. But the bodiless mind that results, wonderful though it may be in its clarity of thought and breadth of understanding, could in no sense be considered any longer human.

So, one way or another, the immensities of cyberspace will be teeming with very unhuman disembodied superminds, engaged in affairs of the future that are to human concerns as ours are to those of bacteria. But, once in a long while, humans do think of bacteria, even particular individual bacteria seen in particular microscopes. Similarly, a cyberbeing may occasionally bring to mind a human event of the distant past. If a sufficiently powerful mind makes a sufficiently large effort, such recall could occur with great detail – call it high fidelity. With enough fidelity, the situation of a remembered person, along with all the minutiae of body, thoughts, and feelings would be perfectly recreated in a kind of mental simulation: a cyberspace within a cyberspace where the person would be as alive there as anywhere. Sometimes the recall might be historically accurate, in other circumstances it could be artistically enhanced: it depends on the purposes of the cybermind. An evolving cyberspace becomes effectively ever more capacious and long lasting, and so can support ever more minds of ever greater power. If these minds spend only an infinitesimal fraction of their energy contemplating the human past, their sheer power should ensure that eventually our entire history is replayed many times in many places, and in many variations. The very moment we are now experiencing may actually be (almost certainly is) such a distributed mental event, and most likely is a complete fabrication that never happened physically. Alas, there is no way to sort it out from our perspective: we can only wallow in the scenery.

Meditation über den Wolken

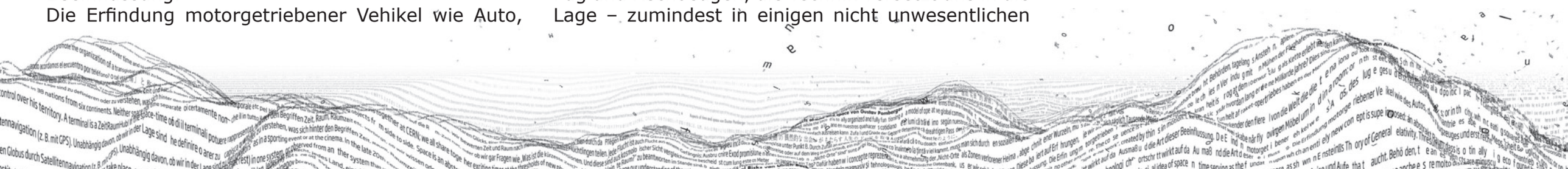
Ulrich Ott

Wartebereich am Gate – gespannte Ruhe vor dem Eintritt in den Tunnel durch Raum und Zeit in eine andere Lebenswirklichkeit, andere Stadt, anderes Land, anderer Kontinent, anderes Klima, andere Menschen. Heraus aus dem Alltag, angereist, eingecheckt, durchleuchtet, reduziert auf das Handgepäck. Am Gate mit anderen, Weggefährten auf Zeit, dann in der Kabine Schulter an Schulter auf engem Raum. Zufallsbekanntschaften, ein Blick, ein Lächeln, Spähen auf Schlagzeilen und Büchertitel. Ablenkung für eine lange Weile, bis auf Reiseflughöhe schließlich das Interesse am Außen versiegt. Genug von Film, Musik, Podcast! Zurücklehnen und – Augen schließen, durchatmen, beobachten, was durch den Kopf geht. Mentale Projektion zur Destination, der Maschine und des eigenen Daseins, und dann dort sein und dies tun und jenes und weiter und weiter spinnen in die vage Ferne … Doch jetzt bin ich hier, atme, sitze, schaue auf meine innere Welt, reise mit ihr in zeitloser Gegenwart durch den äußeren Raum; vergesse mein Handgepäck, meine Geschäfte, Zeitpläne, Erwartungen, zuletzt mich selbst, sitze nur noch da und bin angekommen, bei mir – bis zur Landung … Wo ließe es sich besser meditieren als über den Wolken? Gute Reise, ins Innere und sonst wo hin!

Raum-Zeit Aspekte

Gustav Pomberger

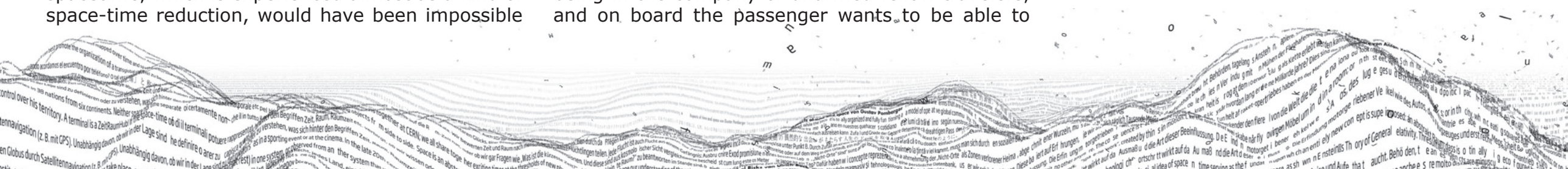
Zeit, Raum und Zeitraum sind Begriffe, die den meisten von uns geläufig sind, und wir meinen zu verstehen, was sich dahinter konkret verbirgt. Aber bei genauerer Auseinandersetzung damit gelangt man schnell in nebelverhangenes Terrain, stellt fest, dass es alles andere als einfach ist, Klarheit und Konsens darüber zu schaffen, was in einem bestimmten Kontext die Zeit tatsächlich bedeutet oder wie man einen Raum abgrenzen, seine Ausdehnung feststellen oder seine charakteristischen Eigenschaften identifizieren kann. Historisch wurden Zeit und Raum als voneinander unabhängige Begriffe verstanden. Unter einem Raum versteht man gemeinhin das, was man mit Maßstäben, und unter Zeit das, was man mit Uhren messen kann, aber womit misst man einen Datenraum oder den Cyberspace? Mit der „Raumzeit" oder dem „Raum-Zeit-Kontinuum" haben die Physiker Raum und Zeit in einem einheitlichen Konzept vereinigt, das uns heute vieles ermöglicht, unter anderem eine sehr genaue Bestimmung der Position eines Empfängers auf dem gesamten Globus durch Satellitennavigation (z. B. mit GPS).
Unabhängig davon, ob wir in der Lage sind zu definieren oder zu verstehen, was sich hinter den Begriffen Zeit, Raum, Raumzeit etc. verbirgt, ob wir wissen oder verstehen, dass die Schwerkraft Einfluss auf die Raum-Zeit hat, oder ob wir gar Fragen wie „Was ist die kürzeste Zeit?", „Was ist der kleinste Raum?" zu beantworten im Stande sind, beeinflussen die Phänomene Zeit und Raum unser Tun und Handeln massiv, und der technologische Fortschritt wirkt auf das Ausmaß und die Art dieser Beeinflussung.
Die Erfindung motorgetriebener Vehikel wie Auto, Flugzeug und erst recht Raketenantrieb haben es der Menschheit ermöglicht, große Distanzen in kurzer Zeit, in viel kürzerer Zeit als davor möglich, zu überwinden (was ist „groß" und was ist „kurz"?). Der Mensch ist mit dem Phänomen konfrontiert, dass er um 8:00 morgens in Frankfurt abfliegt und um 10:30 bereits in New York landet, obwohl er eine Strecke von mehr als 6000 Kilometer zurückgelegt und dafür etwa 8,5 Stunden Reisezeit benötigt hat – eine Raum-Zeit-Erfahrung, die sein Urgroßvater noch keineswegs machen konnte und die quasi als eine Art „Raum-Zeit-Verkürzung" erlebt wird.
Auch die Entwicklung der Informations- und Kommunikationstechnologie hat massive Auswirkungen auf unser Raum-Zeit-Erfahrungsspektrum: In gewisser Weise gestattet es uns diese Technologie, Raum und Zeit „aufzuheben". Wir sind imstande, zeitgleich mit jemandem zu sprechen, der tausende Kilometer von uns entfernt ist, oder die Bewegung eines anderen (seine Geschwindigkeit, seine augenblickliche geografische Position) in einem Fenster auf unserem Bildschirm zu verfolgen, während wir in einem anderen Fenster desselben Bildschirmes ein Tennismatch beobachten, das real bereits vorbei ist. Während früher der Schreiber eines Briefes, dessen Adressat sich auf einem anderen Kontinent befand, Wochen oder zumindest einige Tage auf eine Antwort warten musste, bis Brief und Antwortbrief die Distanz überwunden hatten, kann heute ein solcher Brief via Email dem Adressaten nahezu in Lichtgeschwindigkeit und noch dazu unabhängig davon, wo dieser sich gerade auf dem Globus befindet, übermittelt werden. Kann man da nicht mit Fug und Recht sagen, die Technik versetzt uns in die Lage – zumindest in einigen nicht unwesentlichen Bereichen – Raum und Zeit „aufzuheben"?
Die Luftfahrt ist Sinnbild für radikale Veränderung durch den Einsatz von Informations- und Kommunikationstechnologie. Computerhard- und Software sind die kritischen Systemkomponenten, von denen die Qualität sowohl der Security-Aktivitäten, der Navigation, der Steuerung des Flugzeuges (Autopilot) bis hin zur Versorgung der Passagiere wesentlich stärker abhängt als von den eingesetzten Humanressourcen.
Für den Flugpassagier ist das Raum-Zeit-Spektrum aus einer ganz speziellen Perspektive interessant. Man unterscheidet gewöhnlich den Raum vor dem Security-Check, den Raum danach und den Raum an Bord des Flugzeuges. In den Räumen nach dem Security-Check-Portal will der Passagier sich darauf verlassen, dass er sich nur mehr in Gesellschaft von unbewaffneten Mitreisenden befindet, und an Bord will er sich auf die Zuverlässigkeit der Crew und der Technik verlassen. Wir haben es mit Räumen zu tun, in denen uns weniger die Ausdehnung, sondern mehr der Zustand als das charakteristische Merkmal, das es zu messen gilt, erscheint. Das Zeit-Kontinuum kann eingeteilt werden in einen Zeitraum der autonomen Verantwortung und den Zeitraum der delegierten Verantwortung.
Das Ziel der modernen Luftfahrt kann nur sein, eine vorgegebene Last in einem vorgegebenen Raum in der kürzest möglichen Zeit mit dem geringst möglichen Energieverbrauch und der höchst möglichen Sicherheit zu bewerkstelligen.



Aspects of time and space

Gustav Pomberger

Time and space are terms that are familiar to most people and we think that we understand exactly what they mean. Closer analysis, however, quickly leads us onto nebulous terrain; we realize that it is anything but easy to achieve clarity and consensus about what time actually means in a certain context, or how we can delimit a space, determine its dimensions, or identify its characteristics. Historically, time and space were perceived as independent terms. Space generally means what we can apply linear measures and time is what we measure with clocks (but how do we measure a dataspace or cyberspace?). Physics has unified time and space in the uniform concept of spacetime or the space-time continuum, which today facilitates many things such as the precise positioning of a receiver anywhere on the globe via satellite navigation (e.g., with GPS).
Regardless of whether we can define or understand the meaning of terms such as time and space, whether we know or understand that gravity influences spacetime, or whether we can describe the shortest time or the smallest space, the phenomena of time and space profoundly influence our actions, and technological progress affects the extent and nature of this influence.
The invention of motor-driven vehicles such as automobiles and airplanes, and especially jet and rocket engines, have enabled humans to cross large distances in much less time than ever before (what are long and less?). An airline passenger is confronted with leaving Frankfurt at 8:00 and arriving in New York at 10:30 after a flight of more than 6000 km and eight-and-a-half hours. This experience in spacetime, which is experienced almost as a kind of space-time reduction, would have been impossible for his great grandfather.
Likewise the development of information and communications technology has had profound effects on our spectrum of space-time experience: in a certain respect this technology permits us to transcend space and time. We can synchronously speak with someone who is thousands of kilometers away and monitor someone's motion (speed, momentary geographic position) in a window on our computer screen, while in another window on the same computer screen we watch a tennis match that is already over. While once the author of a letter to someone on another continent had to wait days or weeks until his letter and the reply had covered the distance, today such correspondence via e-mail can reach the addressee at nearly the speed of light, regardless of where on the globe the addressee happens to be. Is it not fair to maintain that technology enables us – at least in some significant domains – to transcend space and time?
Aeronautics serves as a symbol of radical change through the use of information and communications technology. Computer hardware and software are the critical system components on which the quality of security activities, navigation, control of the machine (autopilot) and care of passengers depends, even more than on human resources.
The space-time-spectrum is of interest to airline passengers from a very special perspective. We normally distinguish the space before the security check, the space afterwards, and the space on board the airplane. In the spaces after the security check portal, the passenger wants to be assured of being in the company of unarmed fellow travelers, and on board the passenger wants to be able to depend on the reliability of the crew and the technology. These are spaces in which the characteristic attributes have less to do with physical dimensions and more to do with state. The time continuum can be divided into a period of autonomous responsibility and a period of delegated responsibility.
The goal of modern air travel must be to deliver a prescribed load across a prescribed space in the minimum time with minimum energy consumption and utmost security.



Cyberliminal Spaces

Howard Rheingold

The Tibetan word bardo, translated as „in-between state" or „intermediate state" is used to describe what Tibetan Buddhists regard as the after-death or between-lives plane. The ways a recently deceased person reacts to the projections of their mind during their traversal of the bardo state are believed to influence the kind of rebirth that soul will experience – or they will become an occasion for recognizing the illusory nature of these and all other mind-projections and thus achieve liberation from the cycle of births, deaths and rebirths. The "Bardo Thodol" – the Tibetan word "thodol" is translated as "liberation" – is read to the corpse of the deceased person in the hope of guiding that soul's reactions toward liberation. The Western anthropologist Victor Turner referred to "liminal" situations, places, and conditions in which psychosocial dislocations, transformations, leaps can occur. Airport spaces have always struck me as having something bardo-like, definitely liminal about them. Although I do not crave to dwell in FRA, SFO, JFK, ORD, NRT or any of the other airport concourses I have visited many times, they occupy an odd space in my mind and my life, an in-between place, a step in a broader transition, a condensation of liminality.

I vividly recall the shifting neon sculptures and the barely liminal voice in the background that urges us all to "keep moving," although I've always hurried through the space whenever I find myself hurrying down the subterranean tunnel between concourses at ORD. Similarly, the passageways between concourses and gates at LHR are easily recallable, although it has been several years since I traversed them. I wonder about the people around me. We all come from somewhere, maybe home, and we all have a destination, maybe home, maybe an adventure, maybe a new home. We're all in a hurry to get there. We're all just passing through. We all keep our eyes on each other as we self-organize the complex choreography of moving pedestrians with infinitesimally few collisions. I don't know about others, but I like to look at the faces, especially in large international terminals, of people who are coming from and going to places very different from those I am most familiar with.

Once inside an airplane, we're in a different kind of liminal space, a cousin to the much older shipboard communities, where we've bound our bodily fates and our physical proximity for a number of hours. It's a different kind of bardo because of the bonds, however temporary and superficial, that connect us inside the aluminum tube at 30,000 feet. Most encounters in airports are visual, almost all are brief. I don't know of a word in English for the way people look at each other when we know we'll never see one another again, starting two seconds from now. Is there such a word in another language?

Have you ever looked at one of those visualizations of flight patterns, such as http://www.aaronkoblin.com/work/flightpatterns/ ? You can see the hubs, the airport bardos. And you can see that many souls are undergoing liminal passages at this moment. What if a belief, method, or practice could arise that could make something beneficial of that liminal energy, similarly to the way future shoes will capture the kinetic energy of walking? What if people could taste, point to, become aware or, begin to cultivate some kind of liberation? Is that even possible in places so dedicated to ephemeral experience?

The Japanese word “toki” can express both time and space

Itsuo Sakane

We Japanese have been expressing the concept of “time-space” as one word, “ji-ku”, since olden times; “ji” means time and “ku” means space. But “time” and “space” also had a different meaning originally. When we look back our own lives, we can find a deeper meaning beyond the physical time in our lives and the spatial experiences in which our lives have been spent within the frame of time, sometimes in a deeper, more philosophical way.
In physics, quantum mechanics and relativity treat time and space as the basic element of the nature. On the other hand, such an expression has been used for the whole space and phenomena in which human life itself is supported and created in the more poetical ways. And “toki” (time) has even been used to describe all the phenomena that happen in life, including both time and space. So we Japanese sometimes use “toki” to express both time and space symbolically.
For example, one big space on the bridge constructed in Osaka railway station in 2011 for the public to gather to travel or to meet friends is called as the “Square for Toki”, meaning the “catalytic space” for people. There is also the 1986 Japanese animation movie called “Traveler of Toki”, based on such accidental encounters between people. As such, the background of the word “time-space” (toki) in Japanese includes a special view of nature or of life, which within its long history has been influenced by religions such as Buddhism or Shintoism.

日本語の「とき」に象徴される時間、空間

坂根厳夫

日本ではZeitRaum(TimeSpace)は、時空と称して、時間と空間を合わせて表現することが少なくない。本来は時間と空間は別の意味をもつ概念だが、人生を振り返るとき、その意味をときに哲学的に、ときにより広く人間の営みとしてとらえようとする立場から、こんな風に合わせて表現するのだろう。物理学では時間と空間を基本的な自然界の本質をなす対象物としてとらえ、量子力学や相対性理論などの基本的な対象になっているが、他方、宗教や哲学的な立場から人の一生や人生そのものをとりあげる場合から、より日常的に、人類の生命をささえる空間の広がりと、そのなかで生起する現象を総合して詩的に表現する場合にも、こんな表現が使われることがあり、時空という言葉を「とき(Time)」と読ませることも少なくない。例えば2011年5月にできた大阪駅のプラットホームの上を横断する連絡用のブリッジには、「時空(とき)の広場」と称する広大な人々の出会いの場所が作られていて、この場所に人と人の出会いを触発するさまざまな工夫がこめられている。また、1986年に制作された「時空(とき)の旅人」というアニメーション映画は、偶然の人の出会いやタイムトリップをテーマにしたもので、やはり人間の偶然的な出会いがもたらす人生のドラマを取り上げたものである。このように、日本での時空という言葉の背後には、仏教、あるいは神道のような宗教的な思想から来た自然観や人生観が秘められている場合が少なくないように思われる。

21st Century Exploration

David Sasaki

There are two maps that have stuck with me ever since I came across them; one represents our physical and the other our intellectual desire to explore. I ponder them both as I sit in Mexico City‘s bustling airport, watching streams of people float by with hand luggage, duty free miscellany, and multiple cell phones.

Where is the most remote location on Earth? Toward the beginning of 2009 a group of researchers at the European Commission’s Joint Research Centre set out to find the answer to what seems like a simple question, one guaranteed to excite the explorer‘s imagination. They built a computer model to calculate the journey to the nearest city with a population greater than 50,000 using only land and waterways. Then they fed the model with data from maps of road, rail and river networks, taking into account other variables such as border crossings, land cover, traffic, and altitude.

They found that less than 10% of the world‘s land is more than 48 hours of ground-based travel from the nearest city. That is, just about anywhere in the world that you could find yourself is less than a two-day journey away from the nearest city of at least 50,000 habitants. More than half of the world‘s population lives less than one hour from a major city.

I found the results of the study to be as intriguing as they were disappointing. On the one hand, all I have to do is take a taxi to the airport and within a few days I could arrive to just about any other point on earth. On the other hand, I never do so. I find myself constantly traveling to the same cities over and over again, a creature of aerial regimen. Furthermore, the exotic mystique of physical isolation — an escape from the connectedness that so defines our time — is rapidly passing into oblivion.

The second map was created (also in 2009) by Oxford Internet Institute Research Fellow Mark Graham. As Wikipedia was fast becoming the online authority of knowledge, Graham wanted to know how well it represented the geography of open knowledge. He placed all geotagged Wikipedia articles (that is, Wikipedia articles that specifically describe a location or an event that took place at one) on a map of the world and found „vast deserts of knowledge“. At the time of Graham‘s map, in fact, there were more Wikipedia articles written about Antarctica than all but one of the 53 countries in Africa.

Unlike all encyclopedias that preceded it, Wikipedia is not bound by physical space. In theory, it makes sense for a country like Tonga (population 103,036) to have more geotagged Wikipedia articles than Bermuda (population 64,237) or Monaco (population 35,881), but, in fact, at the time of Graham‘s article there were only 10 geotagged articles about the South Pacific island.

When we compare these two maps, what do we learn? A geography of isolation still exists. It will take you several days to reach Tristan da Cunha in the South Atlantic Ocean (population 270) or Motuo on the southern slope of the Himalayas. However, with each passing year new roads are paved, new airports are inaugurated, and new cell phone towers are erected. When the scientists at the European Commission’s Joint Research Centre repeat their study in several years, the world will be even more physically connected; it will take less time to reach more cities.

Meanwhile, websites like Wikipedia enable researchers to more easily reveal our geography of ignorance and provincialism. It is possible that in some hypothetical future Wikipedia has more information about Tonga than Monaco, but it‘s highly improbable.

The stereotypical explorer of the 20th century — dressed in khakis and a photographer‘s vest — will become frustrated by our increasing physical connectedness. But the 21st century has given rise to a new kind of expedition; the exploration of the world‘s unmapped intellectual geography. This explorer of the mind makes use of a new toolbox, unimagined by earlier generations: Google Street View to saunter slowly down the streets of Moscow or Manzanillo; Twitter to drop in on the coffee shop chatter of Sao Paulo and Tunis; Foursquare to see what locals have to say about their favorite locales in Maputo and Mexico City; and Wikipedia to both learn about and contribute to our understanding of Brazzaville and Vaduz.

Though many of us use these tools on a daily basis, few of us use them to transcend our daily routine.

Airports are the ideal atmosphere to reflect on where we place our attention and ourselves. Once we submit to the theater of airport security, there is no turning back. We are stuck in a limbo of time and space; having committed to our next destination, but with little control over when we will arrive or what will happen between now and then. Rather than reflect on where we are and where we are not, where we are going and where we will never see, we tend to throw ourselves into our email and social networks, increasingly connected and increasingly

21st Century Exploration

David Sasaki

reluctant to connect with what's around us.
In 2011 researchers at the University of Toronto analyzed more than 480,000 tweets and found that the vast majority of interactions on Twitter take place between individuals living in the same city. Those interactions that aren't local are strongly based on how often planes fly between two places. The researchers found that the best way to predict long-distance Twitter interactions is to look at air traffic between cities.
The Internet, like the airplane, makes the world more connected and more captivating. But it is up to us as individuals to snap out of our physical and intellectual routines; to become 21st century explorers.

Where Territory and Time Become Nomadic

Saskia Sassen

A hall, a corridor, with people. It is a juxtaposition of thousands of places of origin temporarily occupying one small terrain, with hours fully lived by some, and lived as timeless endless blank space by others. What is present in that space is the world: complex global organizational systems, networked worlds, multi-sited social uprisings across the cities of the world, diverse histories, vast arrays of knowledge stored in minds and in musicians' and craftsmen's hands, and in books in suitcases and in children's imaginations.
Does this intersection of the diversities of the world in airport halls and corridors that exude neutrality actually make legible something that remains easily hidden? Are these airport halls and corridors little building-blocks for new global geographies? Would these halls and corridors then help make legible diverse aspects about the current moment that are bubbling around on the ground, in the air, in our minds, but that somehow remain slippery to the eyes and to the mind?
I want to grab this slippery intimation of something that is part of the transformation we are living but that remains opaque. This transformation is the unshackling of some very basic building blocks of social existence (time, subjectivity, territory, authority, rights) from their exclusively national encasing. There are rumblings in all of this that signal there is much happening beneath the surface.
For now we lack the language to capture the thousands of little changes that are worming themselves into the established cages of the national, the cages produced by the project of making the nation-state and of rendering all building blocks of social existence as national. Though this nationalizing project was never fully achieved, it went far.
There are sites where these changes are visible and take on thick and consequential forms. Among these sites are, from my own research experience, global cities, of which there are over a hundred today. The global city is a border zone where the old spaces and times of the national and the new ones of the global digital age get engaged in complex, multi-site and multi-level ways. Out of their juxtaposition comes the possibility of a whole series of new economic and cultural projects.
And then there sites where it is all transient, thin. Airport halls and corridors? Yes, these are places of interaction between globality as generic standardization and globality as a kind of thick making that can take place anywhere. There are rumblings in these microsites that signal there is much happening beneath the surface. Whose hall or corridor is this? Those transients make a claim on the space, and they bring with them their diverse worlds. In this process they make nomadic territories and times.

The Plane of the Future

Alan N. Shapiro

In airports as they are today, the passengers experience the terrible inconvenience of going through the security check of their carry-on luggage. This security system – the purpose of which is, of course, absolutely vital to the prevention of terrorist incidents and hijackings – is designed like an assembly line in a factory. You wait in a long queue. You wait and wait. You place your personal belongings into a tray sitting on a conveyor belt. You empty your pockets and hope that no one steals your wallet, passport or house keys. You have to allow the security personnel to inspect your laptop computer (which may have data on it that is worth millions of dollars to you) or other electronic devices. They can inspect your personal healthcare items. If an item is larger than a certain regulation size, like 50 milliliters of skin cream, they will confiscate it. Then you will arrive in a foreign country and immediately need to find and replace something that is vital to your health. You stand there wondering if you will have to remove your pants belt, your wristwatch, your shoes. At the other side, there may or may not be a place for you to sit down and put your shoes back on. You walk through a little scanning chamber, and then you will have your body touched by a stranger. After the advent of the „plane of the future," this entire time-consuming and invasive assembly-line security procedure will be eliminated. The plane will be designed in such a way that the carry-on luggage of the passengers will be scanned for security after the passengers are sitting in their seats. The personnel observing the x-ray images of the insides of the bags can be remotely located at any distance from the camera which is recording and transmitting the images. There is no reason to be sitting so close to the machine. It may already be possible to install the camera equipment in all the overhead compartments of the „plane of the present." The fact that this has not already been done makes one wonder what the real reason for the configuration of the current security system might be. To give you the feeling that Big Brother is taking care of you? Yes, I believe that it has something to do with that. Perhaps you are to be intentionally inconvenienced as part of the game, to make you feel intensely their power over you, to make the process as cumbersome as possible just for the heck of it.

The natural and healthy physical position for a human being is not one position. It is a continuous rotation of four positions: sitting, standing, walking, and lying down. The harmony of body and mind depends on practicing about equally all four of these postures. Zen Buddhism, for example, teaches us this. The fact that the „plane of the past and present" forces us to be in a sitting position for many hours at a stretch – with nearly zero opportunities for standing, walking or lying down – indicates that little thought has been given to designing the plane for the benefit of the health of the passengers. It has all been done from a utilitarian point of view – whatever is most economically efficient for the airlines and their shareholders.

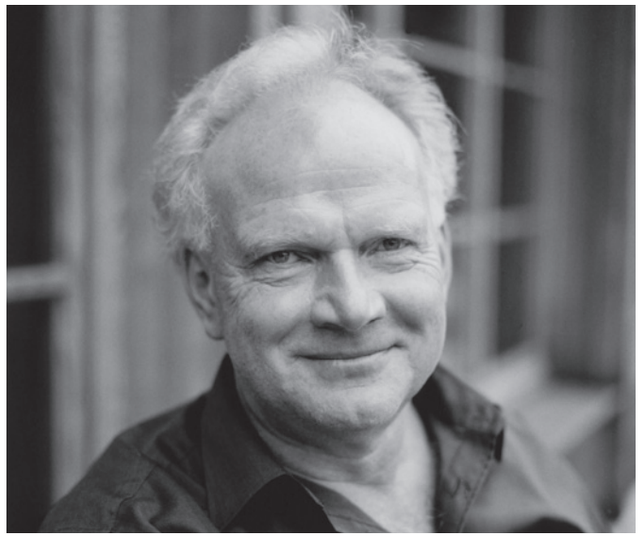
The „plane of the future" never needs to land or take off. It will always be in the air, continuously circulating. Landing and taking off should be regarded as being prohibitively expensive. We should learn this from „Star Trek," where the technology of „beaming" was chosen over having the „Enterprise" spaceship land on and take off from a planet each week. About seven percent of the fuel that a Boeing 747 can hold in its tank is used up during take-off alone. Most accidents and crashes occur during landing and taking off. Most flight delays are caused by problems encountered during landing and taking off. Eliminate landing and taking off of planes and you can then make major modifications to the architecture of airports. Change the architecture of airports and you will have a significant chance to save on real estate, noise, air pollution and political strife.

We should eliminate landing and taking off of planes completely and replace this with a shuttle system that gets the passengers up to the plane from the ground and back down to the ground from the plane at the end of the flight. The shuttle vehicles will be based on helicopter technologies. They will need to land and take off vertically, fly forwards, backwards and laterally, and hover way above the ground while waiting for passengers to embark into or disembark from the plane. The „plane of the future" will also need to have some helicopter technologies built into it, such as hovering capabilities. In the long run, the security scanning equipment for carry-on luggage will be installed in the shuttle vehicles instead of in the planes.

TimeSpace

Anton Zeilinger

In der Raum-Zeit hat die Physik Raum und Zeit zu einem einheitlichen Konzept vereinigt. Dies ist eine Konsequenz von Einsteins Relativitätstheorie, eigentlich seiner beiden Relativitätstheorien, der Speziellen und der Allgemeinen. Vorher hatte schon der österreichische Physiker und Philosoph Ernst Mach Raum und Zeit von ihrem absoluten Podest gestoßen. Er meinte, die Physik solle sich auf messbare Konzepte beschränken. Dann ist Raum das, was man mit Maßstäben misst, und Zeit das, was Uhren messen. Einstein hat dies in seiner Speziellen Relativitätstheorie zur Vollendung gebracht.
Nach Einstein geht eine bewegte Uhr etwas langsamer als eine Uhr in Ruhe. Dies ist auf den ersten Blick unmessbar, hat aber unmittelbare Konsequenzen für das GPS-System. Es beruht ja auf Präzisionsuhren, die in Satelliten die Erde umrunden. Diese Uhren gehen nun etwas anders als auf der Erde. Aufgrund der Speziellen Relativitätstheorie gehen sie etwas langsamer. Dazu kommt aber noch der Effekt von Einsteins Allgemeiner Relativitätstheorie. Die Allgemeine Relativitätstheorie beschreibt, wie sich die Raum-Zeit aufgrund der Schwerkraft ändert. Uhren auf Satelliten gehen wegen der geringeren Schwerkraft etwas schneller. Die Effekte der beiden Relativitätstheorien auf Uhren in Satelliten heben einander nicht auf, sondern es bleibt ein Nettorest über. Würde man diese Effekte der beiden Relativitätstheorien nicht berücksichtigen, die Uhren auf den Satelliten würden die falsche Zeit zeigen, und es wäre das Navigationssystem im Auto bereits nach einer Stunde um 500 Meter falsch. Das GPS-System ist also eine direkte Anwendung von Einsteins Relativitätstheorien und damit auch eine Bestätigung, dass Raum und Zeit in der Raum-Zeit zu vereinigen sind.
Ein uralter Traum der Menschen ist es, die Grenzen von Raum und Zeit zu überwinden. Man würde gerne in die Vergangenheit oder blitzartig von einem Ort zum anderen reisen. Die Science-Fiction-Ideen für beides sind nach wie vor nur Science-Fiction. Reisen in die Vergangenheit würden grundsätzliche logische Widersprüche erzeugen. Bei einer Reise in die Vergangenheit könnte man ja den eigenen Großvater erschießen, und dann gäbe es einen selber ja nicht. Weshalb man dann ja nicht in die Vergangenheit reisen könnte. Dann könnte man aber nun den Großvater doch nicht erschießen, und er wäre sehr munter. Man kann dann aber selbst wieder existieren und in die Vergangenheit reisen, um den Großvater zu erschießen. Und so weiter. Ein nicht endenwollender Widerspruch. Es muss also grundsätzlich unmöglich sein, in die Vergangenheit zu reisen und dort die Geschehnisse so zu verändern, dass sie eine andere Gegenwart nach sich ziehen würden.
Genauso bleibt die Teleportation (das „Beamen" der Science-Fiction) als Reisemittel reine Utopie. Man kann allerdings den quantenmechanischen Zustand, also die Eigenschaften einzelner Teilchen, teleportieren. Es wird dabei keine Materie übertragen, sondern lediglich Information. Es entsteht ein neues Original, und das alte Original verschwindet. Die Quanten-Teleportation gilt als das ideale Kommunikationsmittel zwischen künftigen superschnellen Quantencomputern. Sie basiert auf dem Phänomen der Verschränkung in der Quantenphysik. Zwei Teilchen können in der Verschränkung viel enger miteinander verbunden sein, als das für Alltagsteilchen möglich ist. Messung an einem ändert sofort den Zustand des anderen, egal, wie weit es entfernt ist. Albert Einstein nannte dies „Spukhafte Fernwirkung". Nach seiner Relativitätstheorie sollte es ja keine Übertragung von irgendwelchen Wirkungen schneller als mit Lichtgeschwindigkeit geben. Diese beträgt zwar (im Vakuum) 299.792.458 Meter pro Sekunde, ist aber doch endlich. Obwohl Experimente heute bestätigen, dass die Messung an einem der beiden verschränkten Teilchen den Zustand seines Zwillingsbruders sofort ändert, ganz egal, wie weit er entfernt ist, kann dies nicht zu einer Informationsübertragung schneller als die Lichtgeschwindigkeit verwendet werden. Das ist auch gut so. Wäre dies nämlich möglich, so könnte man damit Signale in die Vergangenheit senden. Und dies würde wieder zu logischen Widersprüchen führen. Auch Signale können die Vergangenheit und damit die heutige Gegenwart ändern.
Was ist die kürzeste Zeit? Was ist der kleinste Abstand zwischen zwei Punkten? Nach Max Planck, dem ersten Pionier der Quantenphysik, gibt es kleinste Einheiten für Zeit und Raum: Unterhalb von $5{,}39106 \cdot 10^{-44}$ Sekunden und $1{,}616199 \times 10^{-35}$ Metern bricht die Raum-Zeit zusammen. Wir sind zwar weit von diesen Grenzen entfernt, jedoch hat Max Planck bereits 1899 gemeint, diese Planck-Länge und die Planck-Zeit müssten für alle Zivilisationen im Universum die gleichen sein. Auf ihnen könnte man also einen Austausch von Information über Abmessungen aufbauen.



Biografie

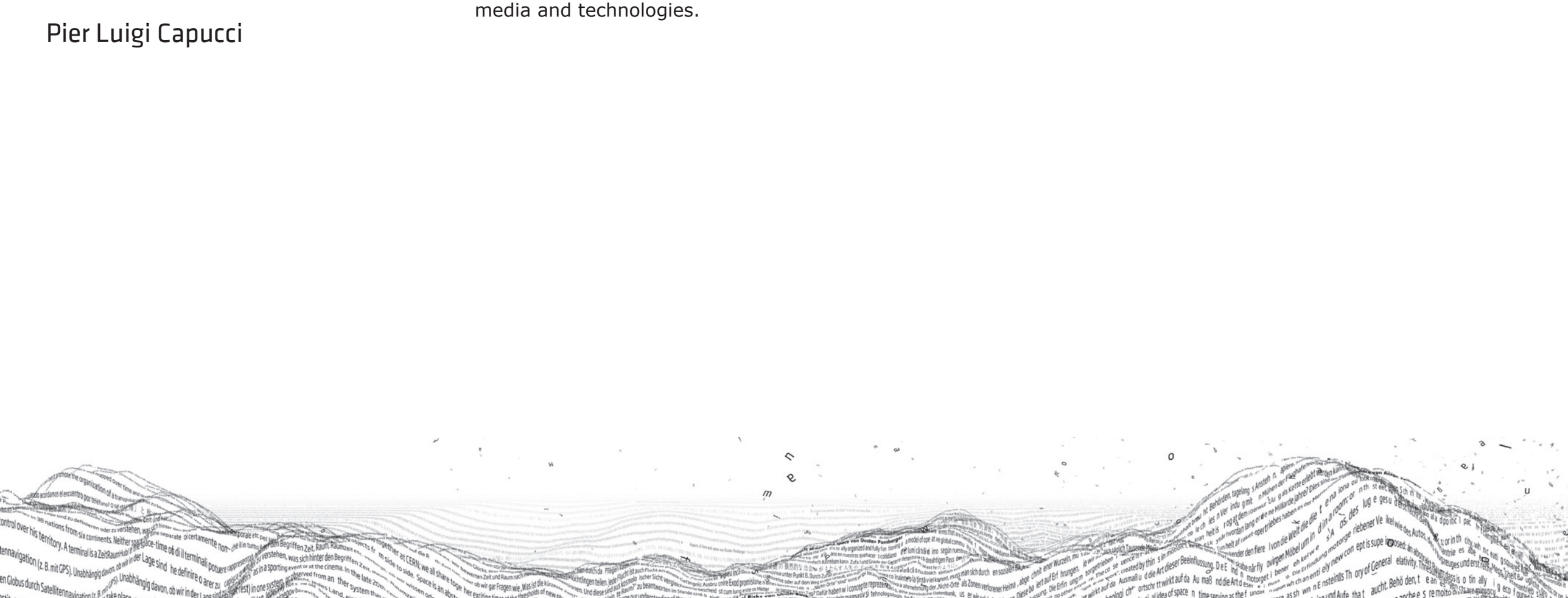
Ulrich Beck

Geb. 1944, Professor für Soziologie an der Universität München; seit 1997 British Journal of Sociology Visiting Centennial Professor an der London School of Economics and Political Science; von 1999 bis 2009 Sprecher des DFG-Sonderforschungsbereichs »Reflexive Modernisierung« an der Ludwig-Maximilians-Universität München; Ehrendoktor: der Universität Jyväskylä, Universität Macerata, Universität Madrid (UNED), Universität Eichstätt-Ingolstadt, Universität Lausanne und der Freien Universität Varna.
In seinen Arbeiten befasst Ulrich Beck sich unter anderem mit den Themen Risikogesellschaft und hergestellte Unsicherheiten, Individualisierung und Soziale Ungleichheit, Globalismus und Globalisierung, Kosmopolitismus und Kosmopolitisierung, sowie methodologischer Nationalismus und methodologischer Kosmopolitismus in den Sozialwissenschaften.
Bekannt wurde er durch – Risikogesellschaft. Auf dem Weg in eine andere Moderne, 1986; zuletzt erschienen – Der eigene Gott, 2008; Nachrichten aus der Weltinnenpolitik, 2010; sowie Fernliebe. Lebensformen im globalen Zeitalter (zusammen mit Elisabeth Beck-Gernsheim), 2011.

Biografie

Pier Luigi Capucci

Since the early 1980s, Pier Luigi Capucci has been concerned with communication studies, new media and new art forms, and with the relations among arts, sciences and technologies. His theoretical activity is focused on new art and communication forms, while in applied research he works on the social opportunities raised by online communications and multimedia. In 1994 he founded and directed the first Italian online magazine and in 2000 he founded NoemaLab (noemalab.eu), a web magazine devoted to culture-sciences-technologies interrelations. Currently he is a professor at NABA in Milan, at the Fine Arts Academy of Urbino and in other institutions, and he is a supervisor in the M-Node PhD Research Programme of the Planetary Collegium (University of Plymouth). He extensively published in books and magazines, organized exhibitions, managed projects and participated to conferences in Italy and abroad. He has been working in European projects on media and technologies.



Biografie

John Casti

Dr. Casti received his Ph.D. in mathematics at the University of Southern California. He worked at the RAND Corporation in Santa Monica, CA, and served as a profesor in the USA before becoming one of the first members of the research staff at the International Institute for Applied Systems Analysis (IIASA) in Vienna, Austria. He has also been on the faculty of the Technical University of Vienna and the Santa Fe Institute in the USA.

He has published eight technical monographs in the area of system theory and mathematical modeling, as well as 12 volumes of popular science, including Paradigms Lost, Complexification, Would-Be Worlds, The Cambridge Quintet, and Mood Matters. His 2012 book, XEVENTS addresses the role complexity overload plays in the creation of potentially life-changing events such as the crash of the Internet or the outbreak of a global pandemic.

Dr. Casti is currently Director of The X-Center, a prívate research institute in Vienna focusing on development of tools for anticipation of extreme events in human society.

Biografie

Chirikure Chirikure

Chirikure Chirikure was born in Gutu, Zimbabwe, in 1962. He is a graduate of the University of Zimbabwe and an Honorary Fellow of Iowa University, USA. He stayed in Berlin, Germany, as a fellow under the 2011/12 one-year DAAD Berliner Kunstlerprogramm (Artists in Berlin Programme). He also works as a performance poet and cultural consultant.

He worked with one of Zimbabwe's leading publishing houses as an editor/publisher for 17 years, until 2002. After working as a consultant for a while, he went on to work for an international development agency as a programme officer for culture, for Southern Africa, based in Harare, until April 2011.

Chirikure has published the following volumes of his poetry: Rukuvhute (1989, College Press, Harare); Chamupupuri (1994, College Press, Harare); Hakurarwi – We Shall not Sleep (1998, Baobab Books, Harare) and Aussicht Auf Eigene Schatten (Shona and English poems with German translations) (2011, Afrika Wunderhorn, Heidelberg, Germany).

He has also contributed some pieces in a number of poetry anthologies, including Zviri Muchinokoro (2005, ZPH Publishers), Intwasa Poetry (2008, AmaBooks Publishers), Schicksal Afrika (ed. Horst Kohler) (2010, Rowohlt Verlag), No Serenity Here – An Anthology of African Poetry in Chinese, (2010 Moonchu Foundation).

His poetry has been translated into a number of languages. He has also written and translated a number of children's stories and educational books.

Chirikure's first three poetry books received first prizes in the annual Zimbabwe writer of the year awards. His first volume, Rukuvhute, also received an Honorable Mention in the Noma Awards for Publishing in Africa, in 1990. His other book, Hakurarwi – We Shall not Sleep, was selected as one of the 75 Best Zimbabwean Books of the 20th Century in a competition ran by the Zimbabwe International Book Fair in 2004. In that competition the same book got a prize as one of the best five Shona publications of the 20th Century.

Chirikure performs his poetry solo and/or with DeteMbira mbira music ensemble. With DeteMbira, they recorded an album of poetry and music, Napukeni (2002, Tuku Music/ZMC). He regularly performs and tours with musician Chiwoniso Maraire, with whom he has recorded an album of poetry with mbira music, Chimanimani (to be released 2012).

With support from family and friends, he has also recorded an album of his poetry with contemporary music, Chisina Basa (2011, Metro Studios Harare/Inyasha Studios UK).

He has also written lyrics for a number of leading Zimbabwean musicians and he occasionally performs and has recorded with some of these musicians.

He has also contributed lyrics, translations and voice-overs in films and documentaries, and has acted in some theatre productions. He has also been an occasional contributor to the print media and used to run a radio programme for young Shona writers.

Over the years, Chirikure has participated in several international festivals, fairs, conferences and symposiums, as a performer, speaker or resource person.

Biografie

Derrick de Kerckhove

Derrick de Kerckhove is former Director of the McLuhan Program in Culture & Technology and Professor in the Department of French at the University of Toronto. He was an associate of the Centre for Culture and Technology from 1972 to 1980 and worked with Marshall McLuhan for over ten years as translator, assistant and co-author. He edited Understanding 1984 (UNESCO, 1984) and co-edited with Amilcare Iannucci, McLuhan e la metamorfosi dell'uomo (Bulzoni, 1984) two collections of essays on McLuhan, culture, technology and biology. He also co-edited with Charles Lumsden The Alphabet and the Brain (Springer Verlag, 1988), a book which scientifically assesses the impact of the Western alphabet on the physiology and the psychology of human cognition. Another publication, La civilisation vidéo-chrétienne appeared in France in December, 1990 and in Italy the following year (Feltrinelli, 1991). Brainframes: Technology, Mind and Business (Bosch&Keuning, 1991) addresses the differences between the effects of television, computers and hypermedia on corporate culture, business practices and economic markets. The Skin of Culture (Somerville Press, 1995) is a collection of essays on the new electronic reality which stayed on Canadian best-sellers lists for several months. Connected Intelligence (Somerville, 1997) introduced his research on new media and cognition. Both were translated in a dozen languages including Japanese, Chinese, Korean, Polish and Slovenian. The architecture of intelligence was conceived and supported by and for networks (see www.architecture.openflows.org). It was first issued in Dutch in December 2000, and in English (June 2001), Italian and German in September 2001. Two recent books were both published in Italy. La conquista del Tempo (Editori Riuniti, 2002) presents commissioned essays from many contributors on the management and perception of time in past and present technologies. La Carta di Zurigo discusses space transformed by networks and screens with architects Peter Eisenman and Antonino Saggio. McLuhan for Managers, in collaboration with Mark Federman, has been published in September 2003. In 2004-6, he has been awarded the Papamarkou Chair in Technology and Education at the Library of Congress in Washington where he was running a series of conferences and seminars on "Managing creativity in the digital context". This series was covered live by C-Span. In January 2007, he returned to Italy to engage in a three year national Fellowship "Rientro dei cervelli", at the Faculty of Sociology of the University Federico II in Naples where he is presently Full Professor. He is also Research Director at the Interdisciplinary Internet Institute (IN3) at l'universitat Oberta de Catalunya in Barcelona.

Derrick de Kerckhove has offered Connected Intelligence® workshops worldwide. In the same line, he has contributed to the architecture of Hypersession, a collaborative software now being developed by Emitting Media and used for various educational and administrative situations. As a consultant in media, cultural interests, and related policies, Derrick de Kerckhove has participated in the preparation and brainstorming sessions for the plans for: the Ontario Pavilion at Expo ,92 in Seville, the Canada in Space exhibit, and the Toronto Broadcast Centre for the CBC. He was involved in plans for a major exhibit on Canada and Modernism at the Cité des sciences et de l'industrie in Paris for 2003-4 and is working presently on The Global Village Square, a global architecture project proposing a permanent public video-meeting point between Toronto and two Italian cities, Naples and Milan. He was a member of several government task forces on developing a telecommunications policy for Ontario, designing a cultural policy for the francophone community in Ontario, and also appeared before the CRTC Public Hearing Committee on the Information Highway. A World Economic Forum Fellow, de Kerckhove was decorated by the Government of France with the order of "Les Palmes académiques" and has been a member of the Club of Rome since 1995. In the Fall of 2003, he was appointed co-chair, as the Canadian representative, for ICT trade between Canada and Italy by the Department of External Affairs in Canada and the Ministero delle attivita produttive of the Italian government.

Biografie

Michael Doser

„Michael Doser is a research physicist at CERN, the European Center for Nuclear Research in Geneva, Switzerland, who has specialized in working with antimatter, using it either as a tool (to study the strong interaction), or as an object of study itself (formation of anti-atoms, study of matter-antimatter asymmetry, measurement of the gravitational interaction between matter and antimatter). For several years, he has been also working with other scientists to explore whether antimatter could be used as a more efficient method to irradiate and treat tumors.

Originally from Austria, but having lived in Germany, USA, France, Switzerland and Japan, Michael has been working at CERN since 1991, spending a few years as deputy department head of CERN's physics department, but mostly involved in physics experiments. He is now spokesperson of the AEGIS experiment, whose goal is to measure for the first time the gravitational interaction between matter and antimatter, building bridges between particle physics and other research fields, such as atomic physics, gravitation, material science or physical chemistry. In the last years, he has been member of a number of scientific program committees and international organizing committees for scientific conferences, and is an editor for the journal Physics Letters B, as well as contributing to the bi-annual compendium of particle properties, the Review of Particle Properties.

In parallel to these activities as a researcher, he is involved in numerous outreach activities, both locally and internationally, speaking to a wide spectrum of non-specialist audiences, from school children to decision makers. He has been involved in panel discussions at art-related events (such as Ars Electronica in 2011, Art 40 Basel in 2009, the Espacio Enter conference in 2009, the opening of a show by Anthony Gormley at the Ropac gallery in Paris in 2006, or the Nothing...Nada symposium in 2002) and has collaborated with or consulted for a number of artists working at the interface between art and science. Additionally, he has been making silver jewelry for a number of years, and attempts to bring conceptual approaches and modern techniques to this endeavor."

Biografie

Bernhard Fink

Dr. Bernhard Fink
Universität Göttingen
Bernhard Fink ist Leiter einer von der Deutschen Forschungsgemeinschaft geförderten wissenschaftlichen Forschungsgruppe, mit der er das menschliche Verhalten aus evolutionärer Perspektive untersucht. Ein Schwerpunkt liegt dabei auf der Bedeutung des körperlichen Erscheinungsbildes des Menschen und dessen Einfluss auf die Partnerwahl.
Nach seiner Promotion und wissenschaftlichen Tätigkeit an der Universität Wien ist der Anthropologe an die Universität Göttingen gewechselt, wo er sich zurzeit besonders dem Verständnis der Signalwirkung von Körperbewegungen und dem Erscheinungsbild der Haut widmet. In Kooperation mit Wissenschaftlern von Procter & Gamble werden Aspekte seiner Forschungstätigkeit in der Entwicklung und Positionierung von Hautprodukten umgesetzt. Bernhard Fink hat über 90 wissenschaftliche Originalarbeiten publiziert und seine Forschung auf zahlreichen nationalen und internationalen Fachtagungen präsentiert.

Biografie

Heidrun Friese

Heidrun Friese (*http://web.mac.com/hfriese*) ist Anthropologin, Privatdozentin an der Goethe-Universität Frankfurt am Main und Mitglied des Zentrums für Mittelmeerforschung an der Ruhr-Universität Bochum.
Sie arbeitet an dem Projekt ‚Die Grenzen der Gastfreundschaft', das undokumentierte Mobilität im Mittelmeer (Tunesien - Lampedusa) in den Blick nimmt und an einer Untersuchung ‚Aufbrüche. Undokumentierte Mobilität und der ‚Arabische Frühling', die sich besonders mit kulturellen Aspekten beschäftigt. Zu ihren Veröffentlichungen zählen u.a. 'Ya l'babour, ya mon amour' – Raï-Rap und undokumentierte Mobilität'. In: M. Dietrich und M. Seeliger (Hg.) Deutscher Gangsta-Rap. Sozial- und kulturwissenschaftliche Beiträge zu einem Pop-Phänomen. Bielefeld (2012); Geglücktes Leben. Bochum/Berlin (2011); 'Willkommen, Nachbar. Die europäischen Grenzen der Gastfreundschaft.' In: Ch. Bartmann, C. Dürr und K.-D.. Lehmann (Hg.) Illusion der Nähe? Ausblick auf die europäische Nachbarschaft von Morgen. Göttingen (2011).

Biografie

Fabiola Gianotti

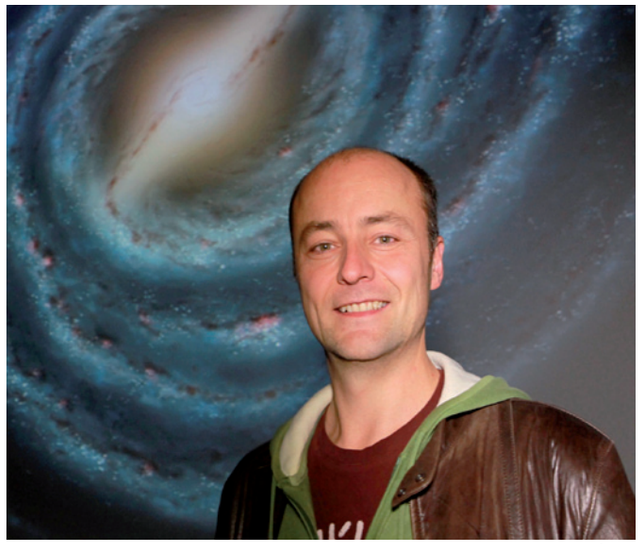
Fabiola Gianotti received a Ph.D. in sub-nuclear Physics from the University of Milano. Since 1996 she has been employed as a research physicist at CERN, the European Laboratory for Particle Physics.

She has worked in several CERN experiments, being involved in detector construction and physics data analysis.

She is presently the overall coordinator for the ATLAS Collaboration, which consists of 3000 scientists from 38 countries. ATLAS is one of the four big experiments operating at the Large Hadron Collider.

In March 2009 she was awarded the honour of „Commendatore" by the Italian President Giorgio Napolitano.

In March 2011 she has been included by The Guardian newspaper in the „Top 100 most inspirational women".



© Rubra

Biografie

Dr. Dietmar Hager

Dr. Dietmar Hager ®econnected.
www.stargazer-observatory.com
Arzt und Astrofotograf
Spezialist in Hand- Unfall- und Mikrochirurgie
Wahlarzt

Professioneller Vortragender
Fellow of the Royal Astronomical Society
Kurator des Ars Electronica Center
ESO – Europäische Südsternwarte: Public outreach partner

Cur.vit. Jahrgang 69; geboren in Linz. Schulbildung in Linz, Medizinstudium in Wien. Ausbildung zum Facharzt in Linz.
Hospitationen in Österreich, Italien, Deutschland, England, Spanien, Schottland, USA Spezialisierung auf Hand- u. Mikrochirurgie.

Astrofotografie seit über 20 Jahren (analog, digital – lokal und remote) Zahlreiche öffentliche Astronomievorträge sowie Astrofotografie-workshops seit über 20 Jahren in Österreich, Deutschland, Dänemark, Schweden, USA. Astronomie-Counselor des Ars Electronica Center Linz ESO – Public outreach partner Fellow der Royal Astronomical Society. Bildveröffentlichungen in deutschsprachigen und internationalen Fachjournals, Lehrbüchern, Lehr-videos, NASA, mehrfache Preise.

Biografie

Peter Jenni

Peter Jenni, Swiss, born in 1948, obtained his Diploma for Physics at the University of Berne in 1973 and his Doctorate at the Swiss Federal Institute of Technology in Zürich (ETHZ) in 1976.

Peter Jenni participated in CERN experiments at the Synchro-Cyclotron (1972/3), at the Proton Synchrotron (1974/6), and as ETHZ Research Associate at the Intersecting Storage Rings (1976/7). During 1978/9, he was a Research Associate at the Stanford Linear Accelerator Centre (SLAC), USA. He became a CERN staff in 1980 with the UA2 experiment at the SPS collider (major involvement in the discoveries of jets and the W/Z bosons). His strong interest was with the Large Hadron Collider (LHC) since the beginning in 1984. From 1991 the main activities concentrated on tasks related to the informal spokespersonship first of a proto-Collaboration. In 1995, after formal approval of the ATLAS project, he was elected Spokesperson which today comprises some 3000 scientists representing 176 Institutions from 38 countries. He was re-elected several times and retired from this duty in February 2009, retaining a strong involvement in the operation and physics of the experiment.

He has served on, and still is member of, numerous international science advisory committees.

Biografie

André Lemos

André Lemos is Associate Professor at Faculty of Communication at University Federal of Bahia, Brazil, Director of Cybercity Research Group and Research Fellow at National Scientific Council (CNPq/MCT-Brazil). He is Engineer by training, MSc in Science and Technology Policy, COPPE/UFRJ (1991) and PhD in Sociology, Université Paris V, Sorbonne (1995). He is former President of Brazilian Association of Communications PhD Programs, former Chair of the Department of Communication (UFBa) and former director of PhD Program in Communication and Culture (UFBa). André Lemos has 13 published books, more than 30 chapters and 40 articles in peer-reviewed scientific journals. He is member of editorial boards in scientific journals in Brazil and worldwide. Visiting scholar at University of Alberta and McGill University, Canada, 2007-2008. He is now working on mobile communication, internet of things, Actor-Network Theory and locative media studies.

http://andrelemos.info

Biografie

Thomas Macho

2. Juli 1952 in Wien geboren; 1970-1975 Studium der Philosophie, Musikwissenschaft und Pädagogik an der Universität Wien; 1976 Promotion an der Universität Wien (mit einer Dissertation zur Musikphilosophie); 1984 Habilitation für das Fach Philosophie an der Universität Klagenfurt (mit einer Habilitationsschrift über Todesmetaphern); 1987-1992 Leiter des Studienzentrums für Friedensforschung in Stadtschlaining (Österreich); 1993 Berufung auf den Lehrstuhl für Kulturgeschichte an der Humboldt-Universität Berlin; 1999 Mitbegründung des Hermann von Helmholtz-Zentrums für Kulturtechnik an der Humboldt-Universität Berlin; 2001 Preisträger der Aby-Warburg-Stiftung Hamburg; 2006-2008 Dekan der Philosophischen Fakultät III der Humboldt-Universität Berlin; 2007 Berufung in das Kuratorium des Deutschen Hygiene-Museums Dresden; seit 2010 Mitglied der Europäischen Akademie der Wissenschaften und Künste; seit 2011 Vorsitzender des Wissenschaftlichen Beirats des Minverva Center for the End of Life an der Tel Aviv University.

Neuere Publikationen:
Das Leben ist ungerecht. St. Pölten/Salzburg: Residenz 2010; Vorbilder. München: Wilhelm Fink 2011; Hrsg. (gem. mit Gisela Staupe und Sigrid Walther): Was ist schön? Göttingen: Wallstein 2010; Hrsg. (gem. mit Christian Kassung): Kulturtechniken der Synchronisation. München: Wilhelm Fink 2012.

Biografie

Roger F Malina

Roger F. Malina is an art-science researcher, astronomer and editor. He is a Distinguished Professor of Arts and Technology and Professor of Physics at the University of Texas, Dallas where he is developing an Art-Science R and D and Experimental Publishing program. He is a Directeur de Recherche of the CNRS and former Director of the Observatoire Astronomique de Marseille Provence at Aix-Marseille University. His scientific specialty is in space instrumentation and big data problems; he was the Principal Investigator for the NASA Extreme Ultraviolet Explorer Satellite at the University of California, Berkeley. He also has been involved for 25 years with the Leonardo organization whose mission is to promote and make visible work that explores the interaction of the arts and sciences and the arts and new technologies. Since 1982 he has been the Executive Editor of the Leonardo Publications at MIT Press. More recently he has helped set up the Mediterranean Institute for Advanced Studies (IMERA) and is co chair of the ASIL (Arts, Sciences, Instrumentation and Language) Initiative of IMERA which hosts artists in residence in scientific research laboratories of the Marseille region.

www.utdallas.edu/ah/atec/
www.oamp.fr
www.leonardo.info
www.olats.org
www.imera.fr

Biografie

Isaac Mao

http://isaacmao.com, Twitter:@isaac Fellow, Berkman Center for Internet & Society, Harvard Unversity, 2008-2009 Co-Founder and Director, Social Brain Foundation Advisor, *Global Voices Online*, *JUCCCE*, *Girls in Tech* Board Member, *Tor Project*, *51value.com*, *SOE*, *Ted2China*, *IOT EU Council*, etc.

Isaac Mao is a philosopher coined the term Sharism, a new philosophy explains a fully connecting world which transforms society and human being. He is also social entrepreneur, blogger, software architect and researcher in learning and social technology. He divides his time between research, social works, business and technology. He is now director of Social Brain Foundation, board member to Tor Project, advisory to Global Voices Online and board member to several web 2.0 and new media businesses. He is also co-curator to Ars Electronica symposium.

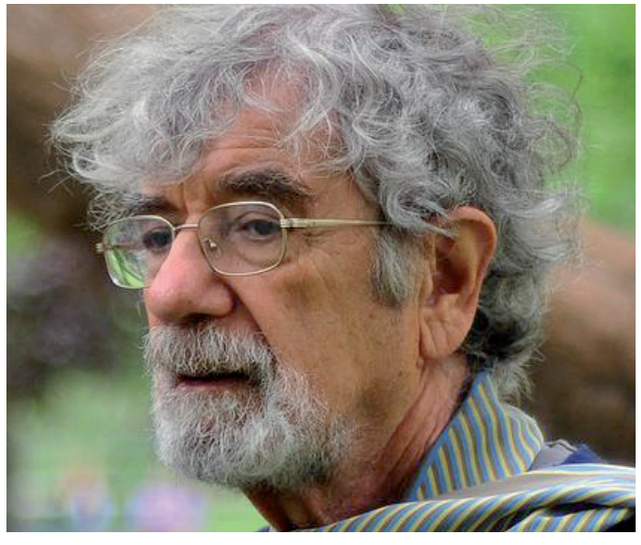
As one of the earliest bloggers in the Chinese community, Isaac is not only co-founder of CNBlog.org which is the earliest evangelizing site in China on grassroots publishing, but also the co-chair of Chinese Blogger Conference (2005 in Shanghai, 2006 in Hangzhou,2007 in Beijing, 2008 in Guangzhou). The CNBlog program then transformed itself into Social Brain Foundation (SBF) later on to umbrella grassroots media and free culture in China covering Free Access, Free Speech and Free Thinking, exampled projects like Ideas Factory, Memedia, Digital Nomads, Open Education and Creative Commons China(before 2006), etc. Isaac is now studying how to apply social doctrines and technologies to totally eclipse global censorship clouds. At the same time, Isaac pays more attention on how social software can really improve the collective intelligences, then help evolve the whole society into a social brain. He is the person behind the concept „Sharism", „Cloud Intelligence" etc. and put them into core discussion on Ars Electronica 2009 symposium.

Isaac is also a global bridge in blogosphere. He is regular speaker/keynote to World Economy Forum, Web 2.0 Summit , Wikimania, Chinese Internet Research Conference, Ci`Num , PICNIC and other global internet cultural events. He was also jury member to Prix Ars, The Deutsche Welle International Blog Awards etc. As a trained software engineer, he has a long history leads developing both business and consumer software. He worked as a Chief Architect in Intel HomeCD project and Tangram BackSchool suite. He applied many HCI methodologies into software design process and improved the usability of software so much. He later turned to Social Computing research and organized the first Social Software Forum in China.

Isaac Mao earned BS degree in Computer Science and got MBA training program at Shanghai Jiaotong University. Isaac is also a pedagogy consultant to some local institutions. He acts as advisors for some local hi-tech firms on their business strategiess. Isaac Mao was listed as the people of „2006-2016, Map of the Decade", by Institute for the Future. He is also as director of Shanghai Youth Development Foundation.

Mao ever made several waves in the technology and business world especially with his open letter to Google founders, chanllenging the search engine giant to support anti-censorship effrots and change its China strategy. He always holds a strong voice against censorship in China and nominated as winner of Index on Censorship Journalism Award.

References:
Isaac's Bio (Social Portfolio: *Pictures*, *Bookmarks*, *Videos*, *Microblogging*, *Chinese Blog*, *English Blog*, *Venture Blog*, *Slides*, *Books*, etc.)
Isaac's podcasting series on bloggers interview , from 2004/12-2005/3



Biografie

Humberto Maturana Romesín

Humberto Maturana Romesín (Santiago, Chile 1928)
Co-founder of the Matriztic School of Santiago (www.matriztica.cl/eng)
He studied medicine at the University of Chile and Biology at the University College of London and Harvard (PhD) and worked as a Post Doctoral in the MIT, developing innovative scientific works. Then he returned to the School of Medicine in Chile. Later he co-founded the Science Faculty (University of Chile) with other scientists, of which now is Professor Emeritus. In 2000 he found with Ximena Dávila the Matriztic Institute that became in Matriztic School of Santiago at 2010. He has received several national and international awards due to his vast scientific work in his intent to understand living being (Autopoiesis), language and cognition (Biology of Cognition), Humanness (Biology of Love) and with Ximena Dávila the Biological-Cultural Matrix of Human Existence (Cultural-Biology), among others.

Biografie

Hans Moravec

Hans Moravec is chief scientist of Seegrid Corporation, maker of vision-guided industrial mobile robots. He had been research professor in the Robotics Institute of Carnegie Mellon University. He received a PhD from Stanford University in 1980 for a TV-equipped robot, remote controlled by a large computer, that negotiated cluttered obstacle courses, taking about five hours. Since 1980 his Mobile Robot Lab at CMU has discovered more effective approaches for robot spatial representation, notably 3D occupancy grids. In 2003 he co-founded Seegrid Corporation to commercialize the work. His books, Mind Children: the future of robot and human intelligence, 1988, and Robot:
mere machine to transcendent mind, 1998, consider the implications of evolving robot intelligence. He has also published papers and articles in robotics, computer graphics, multiprocessors, space travel and other speculative areas.

ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB

Dr. Ulrich Ott ist Diplom-Psychologe und erforscht seit über zwölf Jahren an der Justus-Liebig-Universität in Gießen veränderte Bewusstseinszustände und Meditation. Sein Forschungsschwerpunkt sind Effekte von Meditation auf die Funktion und Struktur des Gehirns, die er am Bender Institute of Neuroimaging mittels Magnetresonanztomographie untersucht. Außerdem lehrt er am Fachbereich Psychologie Entspannungsverfahren, Yoga und Meditation. Im Jahr 2010 ist im O.W. Barth Verlag sein Buch „Meditation für Skeptiker" erschienen, in dem er eine praktische Anleitung zur Meditation mit aktuellen Forschungsergebnissen verknüpft. Ein ausführlicher Lebenslauf ist unter folgender Adresse zu finden:
http://www.bion.de

Biografie

Dr. Ulrich Ott

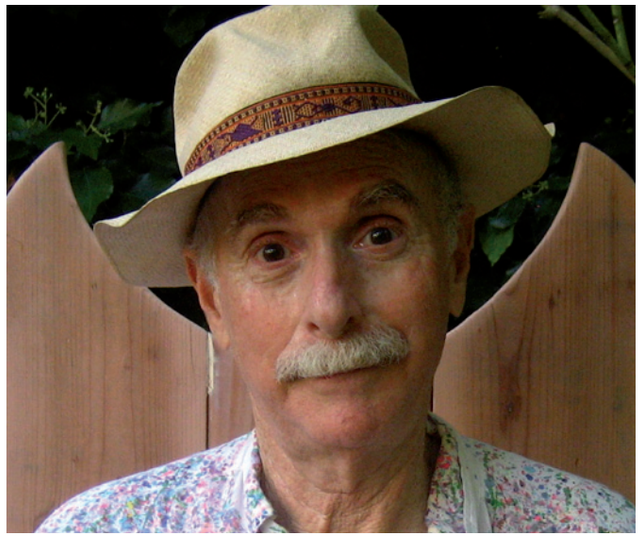
Biografie

Gustav Pomberger

o. Univ. Prof. Dipl.-Ing. Dr. Gustav Pomberger is Full Professor for Software Engineering and head of the Department of Business Informatics – Software Engineering at the Johannes Kepler University of Linz.
His resume begins with a degree in electrical engineering. After nine years of experience in industry, he made a career change to academia. After his dissertation he transferred to a postdoctoral position with Professor Niklaus Wirth at ETH Zurich.
In 1983 he was appointed professor of computer science at the University of Zurich. In 1987 he was simultaneously offered positions at ETH Zurich, the Technical University of Vienna, and Johannes Kepler University of Linz.
From 1992 to 1999 he led the Christian Doppler Research Laboratory for Software Engineering.

He is member of the senate of the Christian Doppler Research Society, the senate of the Johannes Kepler University, the advisory board of Siemens Technology Accelerator, the board of supervision of the Ars Electronica Center GmbH and the Software Competence Center at Hagenberg and chairman of the advisory board of the Open Common Initiative of Linz/Austria.

He received the following awards: Austrian Computer Society Award for Particular Scientific Achievement (1985), Fellow of the Christian Doppler Research Society (2002) and the Upper Austrian Science Award (2006). He is author of numerous (more than one hundred) scientific publications.
His basic research focuses on the design of high-quality software architectures and the systematic organization of software development processes, his applied research concentrates on the design of software architectures for augmented and virtual reality based embedded systems (such as navigation systems, local and context-based services) and the design and implementation of real-time systems. In the broader field of business informatics, his research emphases are the design and implementation of quality management systems, the diagnosis of the effectiveness and economy of IT systems, and the development of methods for determining the e-business readiness of business processes and for the targeted, systematic selection of e-solutions for exploiting improvement potential in business processes.



Biografie

Howard Rheingold

Howard Rheingold is the author of:
Tools for Thought http://www.rheingold.com/texts/tft/
The Virtual Community http://www.rheingold.com/vc/book/
Smart Mobs http://www.smartmobs.com

Was:

editor of Whole Earth Review http://en.wikipedia.org/wiki/Whole_Earth_Review
editor of The Millennium Whole Earth Catalog http://www.well.com/user/hlr/mwecintro.html
founding executive editor of Hotwired http://en.wikipedia.org/wiki/HotWired
founder of Electric Minds http:// www.rheingold.com/electricminds/html/
Visiting Professor, De Montfort University, UK

Has taught:

Participatory Media and Collective Action (UC Berkeley, SIMS, Fall 2005, 2006, 2007)
http://www.seedwiki.com/wiki/participatory_media_and_collective_action/participatory_media_and_collective_action.cfm
http://www.sims.berkeley.edu/programs/ourses/296a-pmca

Virtual Community/Social Media (Stanford, Fall 2007, 2008, 2009, 2010; UC Berkeley, Spring 2008, 2009)
http://socialmediaclassroom.com/host/vircom
Toward a Literacy of Cooperation (Stanford, Winter, 2005)

Digital Journalism (Stanford University Winter, 2005, 2006, 2007, 2008)
http://socialmediaclassroom.com/digitaljournalism09

Biografie

Itsuo Sakane

Itsuo Sakane: born in 1930, graduated from Tokyo University (architecture).
1956 – 1990 a journalist for the Asahi Shimbun, mainly covered the fields of arts, science and technology.
1970-1971 Nieman Fellow at Harvard University.
1990-1996 Professor at Keio University,
1996-2003 President of IAMAS (Institute of Advanced Media Arts and Sciences).
2003-now Emeritus President of IAMAS.
Major publications: The Coordinate of Beauty, Katachi-Mandala – Thinking Through Seeing, Passage of Images, Expanded Dimension - Beyond the Conflict between Art and Science.
Major exhibitions he organized: Fantasy of Holography, Cybernetic Art - The world of Vibration Art, Art in Light and Illusion, Science Art Gallery for the Japan Pavilion at Expo 92, Phenomenart for Saibu Gas Pavilion at Asia-Pacific Expo 89, Interactive Art for Kanagawa Science Park 1989, and series of Biennale of Interaction ’95, ‘97, ‘99, ‘01, etc.
Awarded the Japan Design Award 82, Golden Nica of Honor for Life Achievement at Ars Electronica 2003, the Commissioner for Cultural Affairs Award Japan, 2003.
Honorary editor for Leonadro (1996-2005) a journal of ISAST, published from MIT.

Biografie

David Sasaki

As principal of investments, David develops Omidyar Network's government transparency portfolio in Latin America, focusing on Brazil and Mexico. He makes investments in for-profit and nonprofit organizations that enable civic participation and promote greater transparency and accountability in government.
David joined Omidyar Network in 2011 after advising Open Society Foundations on investment opportunities and emerging technology-related policy issues in Latin America. Previously, he directed research at the Technology for Transparency Network. David was also the founding director of Rising Voices, an initiative of Global Voices, which promotes the use of citizen media and Internet technologies in under-represented communities worldwide.
David earned a BS in political science, with concentrations in Latin American and third world studies, from the University of California, San Diego. He frequently speaks and writes about issues related to technology, innovation, governance, and journalism.

Biografie

Saskia Sassen

Saskia Sassen is the Robert S. Lynd Professor of Sociology and Co-Chair, The Committee on Global Thought, Columbia University (www.saskiasassen.com). Her recent books are Territory, Authority, Rights: From Medieval to Global Assemblages (Princeton University Press 2008), A Sociology of Globalization (W.W.Norton 2007), and the 4th fully updated edition of Cities in a World Economy (Sage 2012). She is currently working on When Territory Exits Existing Frameworks (Under contract with Harvard University Press). Recent edited books are Deciphering the Global: Its Spaces, Scales and Subjects (Routledge 2007), and Digital Formations: New Architectures for Global Order (Princeton University Press 2005). The Global City came out in a new fully updated edition in 2001.For UNESCO she organized a five-year project on sustainable human settlement with a network of researchers and activists in over 30 countries; it is published as one of the volumes of the Encyclopedia of Life Support Systems (Oxford, UK: EOLSS Publishers) [http://www.eolss.net]. Her books are translated into over twenty languages. She has received two grants recently. One is from AUDI to work on the future of Mobilities and Mobility Spaces. The second is from the Mellon Foundation to develop her project on The Global Street. She is the recipient of diverse awards and mentions, ranging from multiple doctor honoris causa to named lectures and being selected as one of the 100 Top Global Thinkers of 2011 by Foreign Policy Magazine.
http://www.foreignpolicy.com/articles/2011/11/28/the_fp_top_100_global_thinkers?page=0,33

Biografie

Alan N. Shapiro

Alan N. Shapiro is an interdisciplinary thinker who studied science-technology at MIT and philosophy-history-literature at Cornell University. He is the author of „Star Trek: Technologies of Disappearance", a leading work in science fiction studies and on the conception of futuristic technoscience. He is the editor and translator of „The Technological Herbarium" by Gianna Maria Gatti, a major study of art and technology. He is a practicing software developer and IT consultant, and is working on projects like "Computer Science 2.0," "The Car of the Future," "The Library and Museum of the Future," and robots and androids. Recently he was the keynote speaker at the conference on "Knowledge of the Future" at the University of Vienna, at the BOBCATSSS conference on Information Management in Amsterdam, and at the IEEE International Conference on the Information Society in London. At his website "Alan N. Shapiro, Technologist and Futurist" (www.alan-shapiro.com), he has already published more than 225 articles (by himself and others). He is recognised as one of the leading experts on the philosophy and cultural theory of Jean Baudrillard.

© Jacqueline Godany

Anton Zeilinger is professor of physics at the University of Vienna and director at the Institute of Quantum Optics and Quantum Information of the Austrian Academy of Sciences. His pioneering conceptual and experimental contributions to the foundations of quantum physics have become the cornerstone of the rapidly evolving field of quantum information. His future research goals include quantum communication and quantum teleportation using satellites and ultrafast optical quantum computers. The stages of his career include M.I.T., Collège de France, Technical University of Munich, and Oxford University. Among his prizes are the Inaugural Newton Medal of the U.K. Institute of Physics and the Wolf Prize in Physics. He wrote the popular science book "Dance of the Photons: From Einstein to Quantum Teleportation".

Biografie

Anton Zeilinger

ARS ELECTRONICA
FUTURELAB

Ars Electronica Futurelab

Das Ars Electronica Futurelab nimmt die Zukunft im Nexus von Kunst, Technologie und Gesellschaft in den Fokus. In künstlerischer, experimenteller Form verstehen wir unsere Arbeiten durchaus auch als Skizzen möglicher Zukunftsszenarien. Auf diese Weise suchen wir, mittels Methoden und Strategien der angewandten Forschung, Beiträge zu entwickeln, deren Ergebnisse neue Erfahrungs- und Erkenntnisgewinne, sowohl in der Kunst als auch in Wissenschaft bei gleichzeitig hoher gesellschaftlicher Relevanz, bergen.

Das Team des Labors baut seinem Arbeitsansatz auf transdisziplinärer Forschung und Arbeit auf, wodurch sich eine Vielfalt der im Labor vertretenen, unterschiedlichsten Disziplinen ergibt. Unser Leistungsspektrum konzentriert sich dabei auf die über Jahre entwickelte Expertisen in Fachgebieten wie Medienkunst, Architektur, Design, Interaktive Ausstellungen, Virtual Reality und Echtzeitgrafik.

Team

Rund 50 MitarbeiterInnen aus 12 Nationen und den unterschiedlichsten Disziplinen wie Architektur, Biologie, Chemie, Grafik, Hochbau, Informatik, Kunst, Mediendesign, Medientechnik, Musik, Physik, Soziologie, Telematik, Vermessungstechnik, etc. formen das Team.

Transdisziplinäres Arbeiten ist hier nicht nur eine „angestrebte Methode", sondern seit 16 Jahren täglich ge- und erlebte Realität, die weit über die Zusammenschau einiger künstlerischer Disziplinen hinausgeht.

www.aec.at/futurelab

Ars Electronica Futurelab focuses on the future at the nexus of art, technology and society. We consider our works as sketches of possible future scenarios in art-based, experimental forms. In this way, we are aiming at developing contributions through methods and strategies of applied science, the results of which reveal new knowledge and experiences of societal relevance in art and science.

The lab's team bases its work commitment upon transdisciplinary research and work which results in a variety of different disciplines at the lab. Our range of services concentrates on expertise developed throughout the years in fields such as media art, architecture, design, interactive exhibitions, virtual reality and real-time graphics.

Team

The team consists of 50 members from 12 countries and different disciplines such as architecture, biology, chemistry, graphics, informatics, art, media design, media technology, music, physics, sociology, telematics, etc.

Transdisciplinary work is not just an aspired method but a living reality which has been existent here for 16 years and transcends a mere cooperation of a few artistic disciplines.

www.aec.at/futurelab

ZeitRaum

MEDIENKUNST AM FLUGHAFEN WIEN

ARS ELECTRONICA
FUTURELAB

“ZeitRaum” Mitwirkende

Michael Augustyn
Michael Badics
Florian Berger
Bernhard Böhm
Chris Bruckmayr
Kyle Buza
James Cochrane
Stefan Eibelwimmer
Rainer Eilmsteiner
Oliver Elias
Ingrid Fischer
Peter Freudling
Stefan Fuchs
Ramsy Gsenger
Carles Maria Gutierrez
Roland Haring
Wolfgang Hauer
Yvonne Hauser
Horst Hoertner
Peter Holzkorn
Karina Hurnaus
Leo Immervoll
Andreas Jalsovec
Petros Kataras
Travis Kirton
Alexander Kneidinger
Daniela Kuka
Anna Lucia Kuthan
Woeishi Lean
Christoph Liebmann
Christopher Lindinger
Pascal Maresch
Ronald Martins
Benjamin Mayr
Michael Mayr
Kristefan Minski
Stefan Mittlböck-Jungwirth-Fohringer
Harald Moser
Nicolas Naveau
Katharina Nussbaumer-Greiderer
Hide Ogawa
Emiko Ogawa
Dietmar Peter
Andreas Pramboeck
Gerald Priewasser
Pierre Emile Proske
Gabriele Purdue
Erwin Reitböck
Carl Johan Rosen
Bianca Schober
Damian Stewart
David Stolarsky
Enrique Tomas
Markus Wipplinger
Daniel Wilcox
Mahir M. Yavuz

Weitere Künstler:

Jussi Ängeslevä / Ross Cooper

Rupert Huber
Yugo Nakamura

Besonderen Dank an:

Tania Baharyan-Pfeffer, Peter Mayerhofer, Norbert Steiner, Martin Deutenhauser
Barbara Kraus, Abraham Miskic, Leopold Kirbes, Eckehart Loidolt, Anton Pichler, Ewald Seidl, Alexander Peter Zillner

Und an unsere Familien und Freunde