

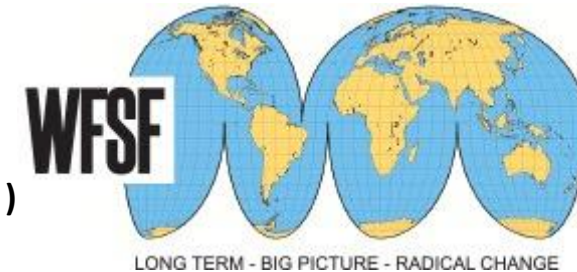
# Drivers of Change and Lifestyle in 2050:

## A Decentralized and Autonomous Futurescape

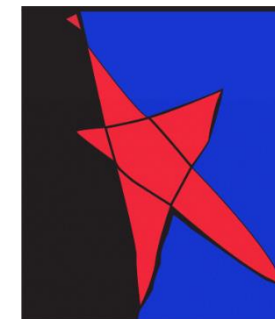
**VICTOR V. MOTTI**

**DIRECTOR, WORLD FUTURES STUDIES FEDERATION (WFSF)**

**MANAGING EDITOR, EUROPEAN JOURNAL OF FUTURES RESEARCH (EJFR)**



Hosted by the Paris Institute for Advanced Study ,  
Fondation 2100, Institute for Futures Studies  
Online, 27 April, 2021  
(Paris, France)



2100.org



# The art and science of futures studies

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The art and science of futures studies help us obtain a better understanding of the drivers of change by focusing on Long Term, Bic Picture and Radical Change:

For example,

Tech Revolutions (Biohacking plus Artificial Intelligence),

Social Upheavals (Massive Access to Free Education/Tools of Production),

Business Disruptions (End of Banking),

Major Transformations (Post Plastic Society).

# Strategic Foresight

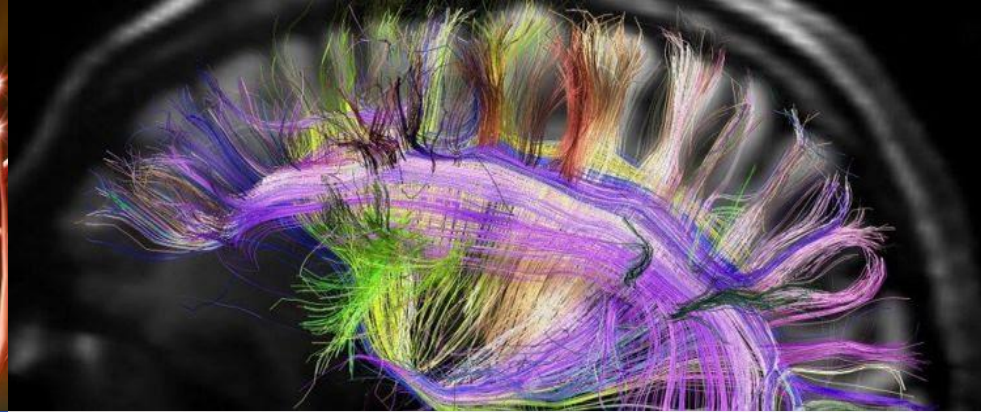
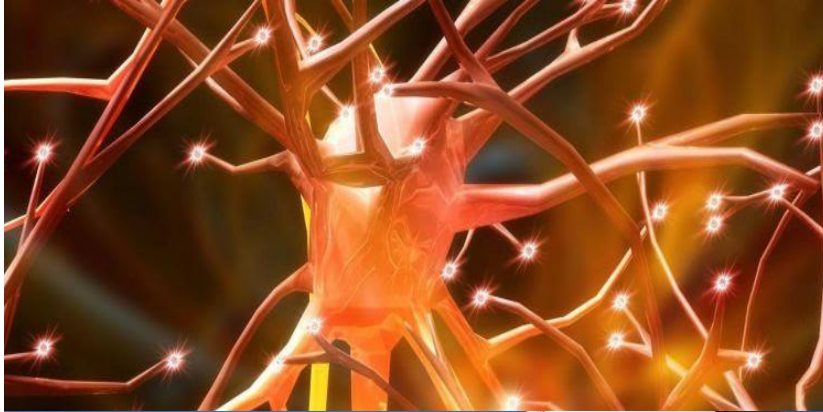
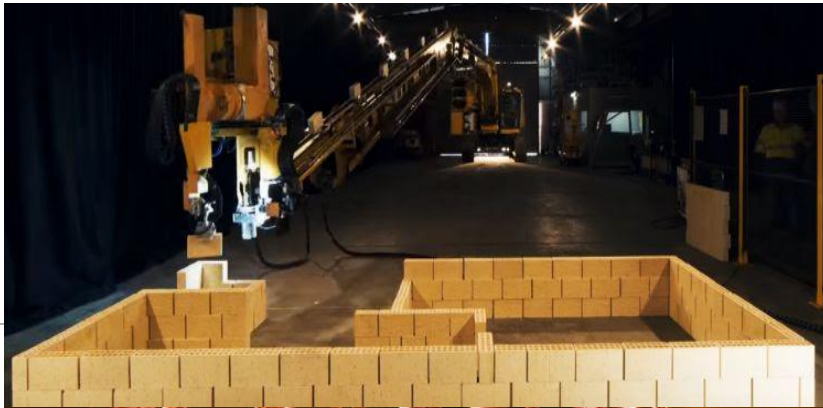
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Strategic Foresight in Richard Slaughter's (2002) definition:

[It] is the ability to create and maintain a high-quality, coherent and functional forward view and to use the insights arising in organizationally useful ways; for example: to detect adverse conditions, guide policy, shape strategy; to explore new markets, products and services. It represents a fusion of futures methods with those of strategic management.

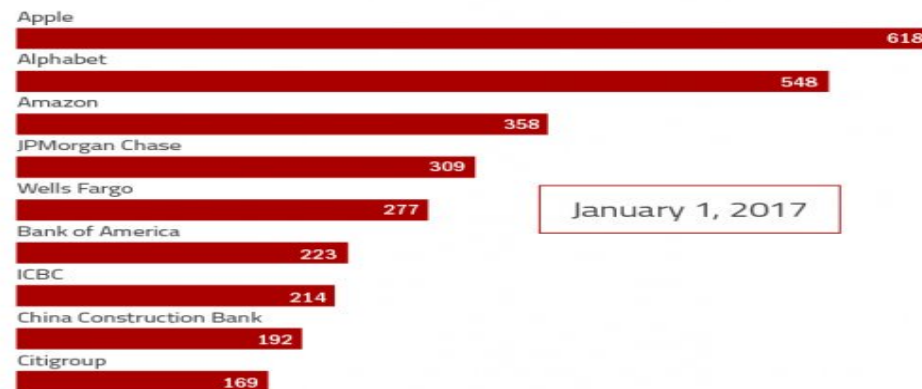
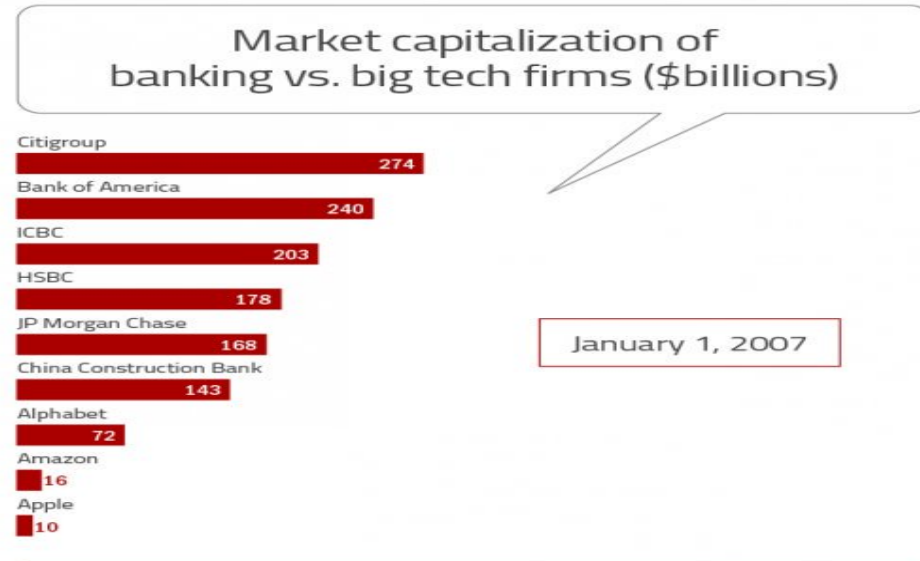
Drivers of change are factors causing change, affecting or shaping the futures.

Let's review some drivers of change such as data, clean energy, automation, and silver tsunami, biotech

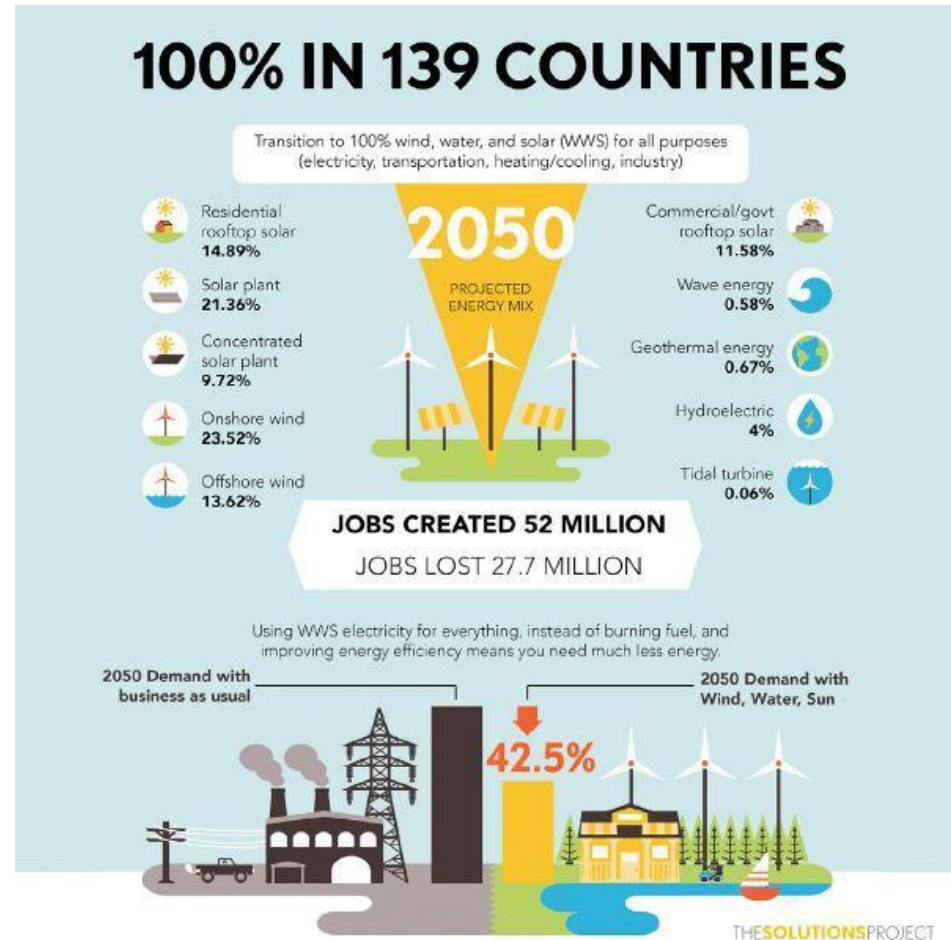




# Drivers of Change: Data



# Drivers of Change: Clean Energy



# Solar Cooker

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<https://inhabitat.com/>



<https://www.solarcookers.org/>



# Setting the sights on a carbon neutral future

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Achieving a zero-carbon future may seem to some like a wild ask, but some of the world's biggest countries and corporations are already envisioning the financial and environmental benefits of carbon neutrality. For instance, the government of China has said it will aim to achieve carbon neutrality before 2060, and General Motors, the largest U.S. automaker, has announced plans to be carbon-neutral by 2040.

With the transport sector making up [23 per cent](#) of total energy-related carbon-dioxide emissions, much of the world's efforts towards carbon neutrality will focus on rethinking these systems.

[Home](#) [UN DESA Voice](#) [April 2021](#)



# A Future Wheel for Industry 4.0



# Cyber Security Huge Workforce Gap

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*350 percent growth in open cybersecurity positions from 2013 to 2021*

<https://cybersecurityventures.com/jobs/>

The New York Times [reports](#) that a stunning statistic is reverberating in cybersecurity: Cybersecurity Ventures' prediction that there will be 3.5 million unfilled cybersecurity jobs globally by 2021, up from one million positions in 2014

Apr 3, 2021: <https://www.businessinsider.com/>

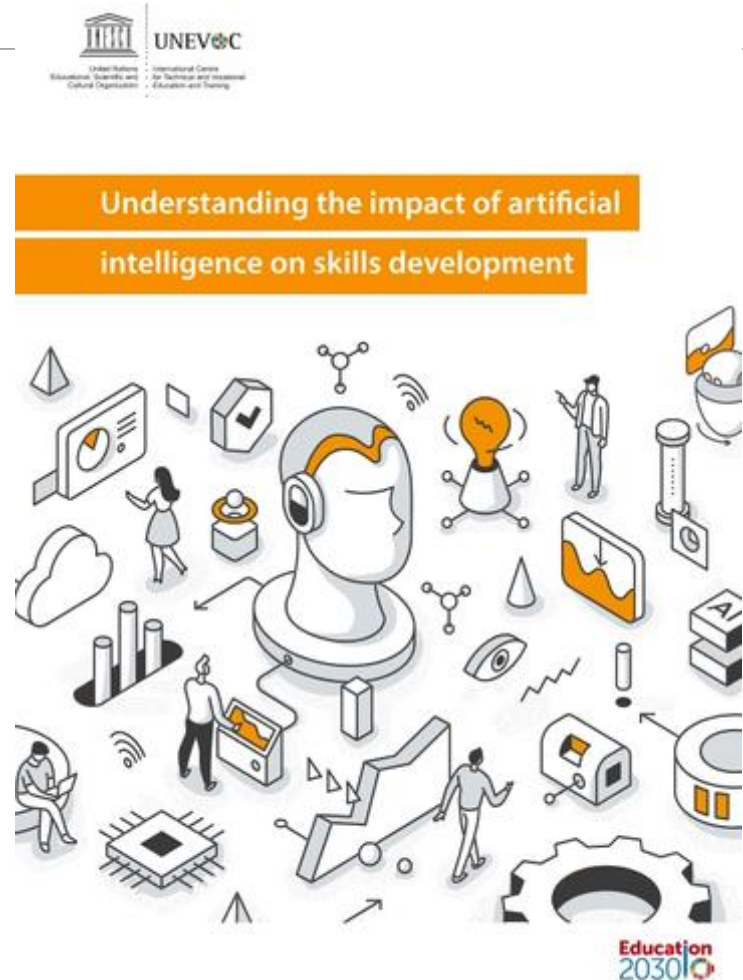
**533 million Facebook users' phone numbers and personal data have been leaked online**

# Drivers of Change: Automation

The era of artificial intelligence is young in years but advanced in impact. Intermediate skill jobs as we know them are fast disappearing as their tasks are systematically automated, and individuals are increasingly likely to encounter AI technology in their everyday lives. In fact, fifty percent of organizations worldwide report using some form of AI in their operations.

<https://unesdoc.unesco.org/ark:/48223/pf0000376162?locale=en>

Doctors/Surgeons, Police, Teachers, Journalists, Investment analysts, Fund managers and traders, Accountants, Lawyers, Drivers and mechanics, Sales representatives, Travel agents, Construction workers, Project Managers





# AI & Deep Learning



## 60+ STARTUPS USING DEEP LEARNING

### CORE AI: COMPUTER VISION



### CORE AI: OTHER



### BI, SALES & CRM



### CORE AI: VOICE INTERFACE



### ROBOTICS & AUTO



### HEALTHCARE



### SECURITY



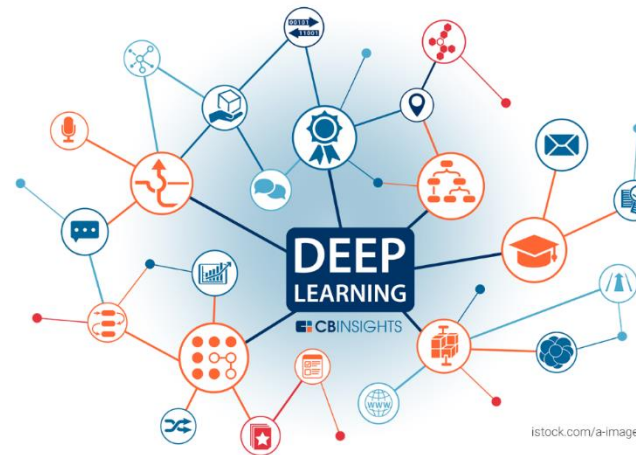
### OTHER



### E-COMMERCE



### ACQUIRED (2014-2016YTD)



istock.com/a-image

CBINSIGHTS

# Pattern Recognition and Universality Theorem

A precise statement of the universality theorem:

**Neural networks with a single hidden layer can be used to approximate ANY continuous function to ANY desired precision**

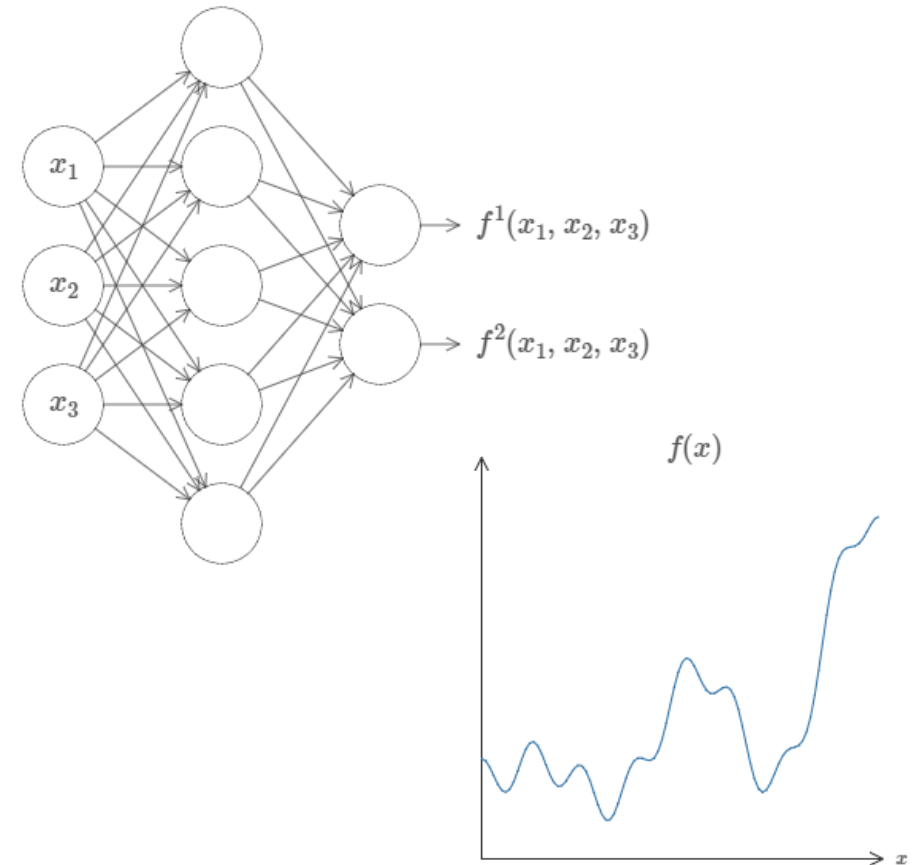
**The ability to compute an arbitrary function is truly remarkable.** Almost ANY process you can imagine can be thought of as function computation.

Consider the problem of naming a piece of music based on a short sample of the piece. That can be thought of as **computing a function**. Or consider the problem of translating a Chinese text into English. Again, that can be thought of as **computing a function**.

Or consider the problem of taking an mp4 movie file and generating a description of the plot of the movie, and a discussion of the quality of the acting. Again, that can be thought of as a kind of **function computation**.

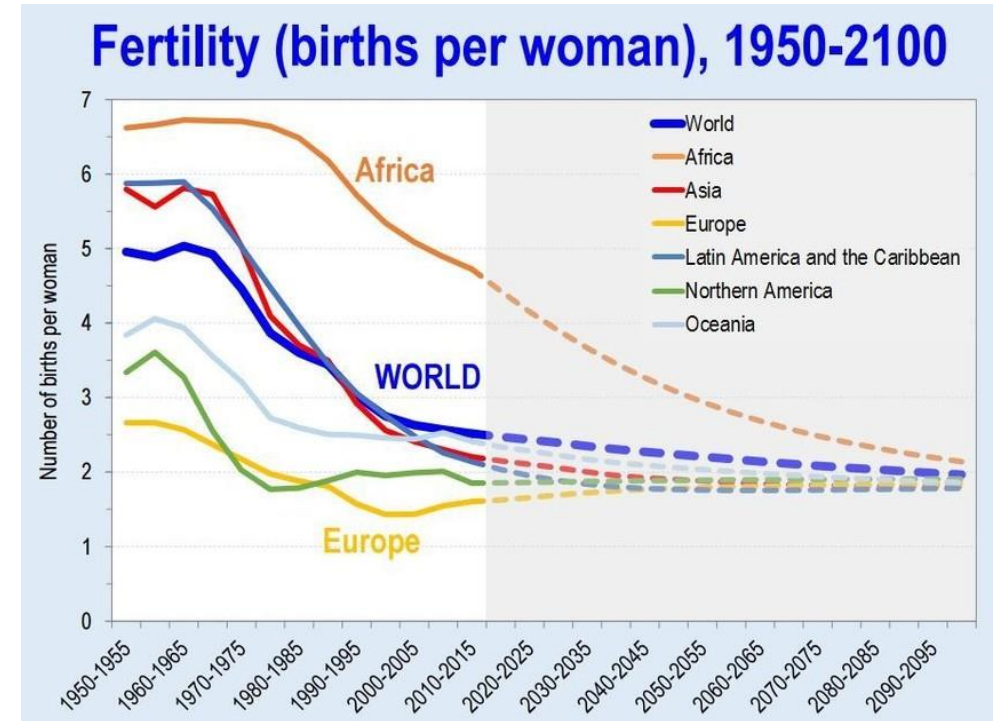
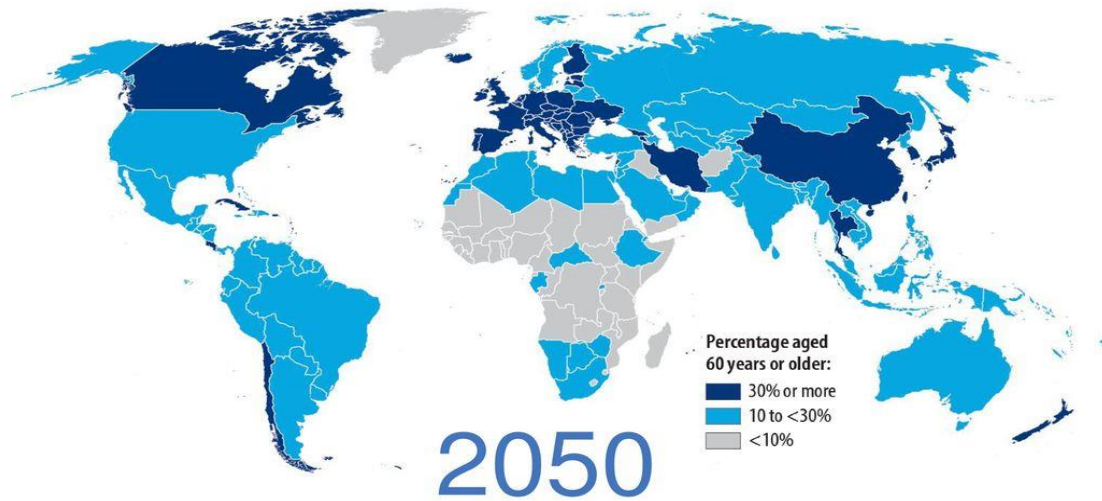
Universality means that, in principle, **neural networks can do all these things and many more.**

[Michael Nielsen](http://neuralnetworksanddeeplearning.com/) / Jan 2016: <http://neuralnetworksanddeeplearning.com/>



# Drivers of Change : Silver Tsunami

Populations are getting older



UNITED NATIONS  
DEPARTMENT OF ECONOMIC  
AND SOCIAL AFFAIRS

# Customized Babies, Therapeutic cloning and Spare Organs

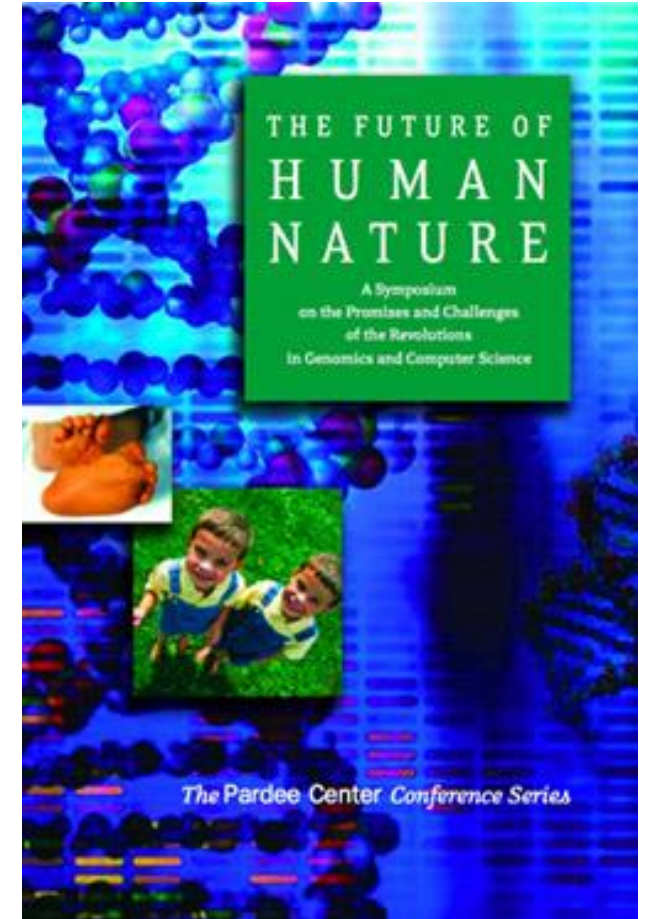
Preimplantation genetic diagnosis (**PGD**) is a procedure used prior to implantation to help identify genetic defects within embryos created through in vitro fertilization to prevent certain diseases or disorders from being passed on to the child.

Advanced **Embryo Selection** (Array CGH) is a pre- implantation genetic diagnosis (PGD) technique that screens all chromosomes in a developing **embryo**, enabling scientists to select only **embryos** with a normal chromosome profile to transfer.

In genetics and developmental biology, **somatic cell nuclear transfer (SCNT)** is a laboratory technique used in embryonic stem cell research, or in regenerative medicine where it is sometimes referred to as "therapeutic cloning."

Gene-editing hack yields pinpoint precision. Nature.com April 2016

Embryology policy: Revisit the 14-day rule. Nature.com May 2016





# Driver of Change: Editing Humanity



# A global survey of experts on Society and Lifestyles in 2050

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## A Decentralized and Autonomous Landscape

The expert sample of the survey was selected from authors of the articles in the leading futures and foresight journals. This survey shows us how a decentralized and autonomous futurescape is emerging in areas such consumption of food and manufactured goods, and infrastructure: housing and mobility.



# 1,200 experts

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The expert sample of the survey was selected from authors of the relevant articles in the following foresight journals and keyword search on online journal research platforms. The research team reviewed the title and abstract of the articles, and excluded articles which focused too narrowly on technical aspects of particular areas. From the selected journals, 1,200 experts were identified.

Journal of Futures Studies (300 experts)

Technological Forecasting and Social Change (300 experts)

Futures (300 experts)

World Futures: The Journal of New Paradigm Research (100 experts)

International Journal of Foresight and Innovation Policy (100 experts)

International Journal of Forecasting (50 experts)

Risk Analysis (50 experts)

# Consumption: Food

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Dietary Habits: insects, convenient food, food with less variants, artificial meat, white meat, and vegetarian and vegan diets

Drivers: pressure due to food scarcity and the necessity to reduce the environmental impact of food consumption, voluntary choice due to health and environmental concerns.

Increased concern over climate change and sustainability could reduce the appeal and acceptability of high carbon and resource-intensive diets such as red meat

In urban areas, people could become more self-sufficient in producing through roof gardens, greenhouses, algae production, underground mushroom farming and vitro/cultured meat.



# Consumption: Manufactured Goods

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Demand shift and sharing: the increased adoption of 3R activities, driven by environmental concern. 3R: repair, reuse, and recycle, sharing, and experience-based consumption.

Production Patterns: production may become more localized and smaller scale, and more environmentally conscious in product design and material use. Some examples include dramatic transformations in manufacturing and material processing due to non-use of fossil fuels, algae-based fuels replacing crude oil, biodegradable bioplastics replacing oil-derived plastics.

More decentralized and distributed locally, which would make economies more locally oriented. Mass-produced goods from factories may become less necessary for households and community based economies. There could be a shift away from corporate employment towards family businesses, from multi-national brands towards local producers, and from large manufacturers towards local 3D printing, if the technology becomes widely available

# Infrastructure: Mobility

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advancement of mobility technology, such as automated vehicles, electric and hybrid vehicles, and high-speed transport systems. Apart from this, many experts forecasted shift in access and demand, such as a drop in mobility demand related to digital communication.

changes in transportation mode towards mobility as a service, sharing, and public transport.

due to the rise of environmental concerns, more people could shift from fossil fuel-dominated mobility to electric vehicles. With increasingly favorable regulations, electric vehicles are considered to become a significant mode of transportation.

mobility-as-a-service and sharing platforms are beginning to replace private ownership

# Infrastructure: Housing

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incorporation of renewable energy, lower environmental impacts, and adaptability to climate change in housing. Also, smart homes, i.e., automatic, connected homes.

Housing is expected to change significantly due to the increased need to adapt to extreme weather conditions

due to rapid urbanization, the family and social units in cities could be transformed into smaller units that require smaller living spaces

the quality of citizen housing to incorporate local food production, (tree) shade, ecological connectivity and outdoor social amenities to reduce car dependence

technological advancements would only be available to those who could afford them

# Positive Future Contest

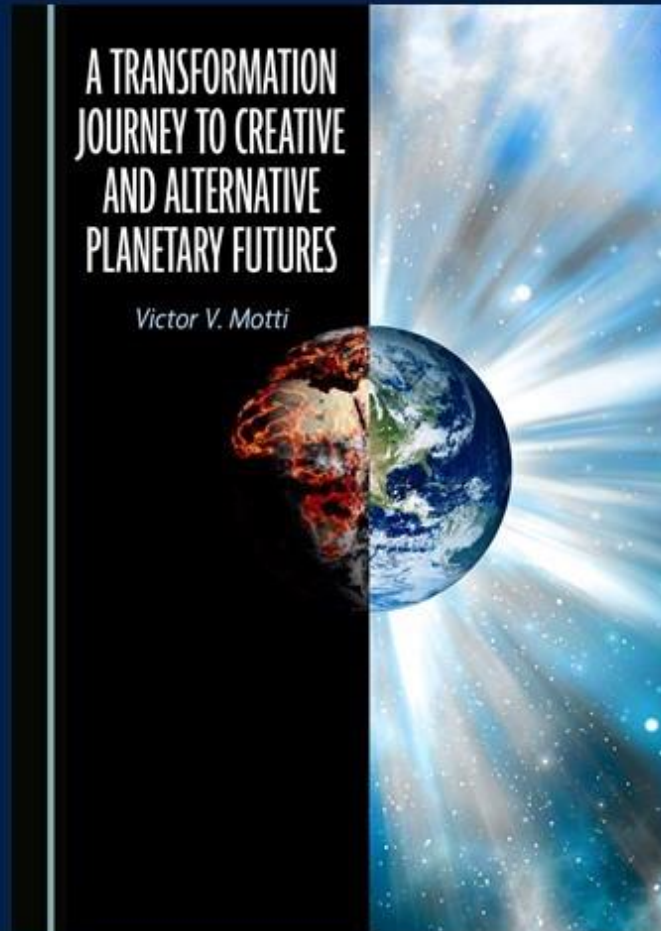
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As representations of dystopian futures are numerous, many research and prospective works are focusing on positive alternatives for the world of tomorrow.

The [Paris Institute for Advanced Study](#) and the [2100 Fondation](#) in partnership with the [Institute for Futures Studies](#) are launching the first Positive Future competition in order to encourage, on this positive basis, the elaboration and dissemination of mobilizing imaginaries that convincingly and realistically describe a liveable and desirable world.

<https://www.positive-future.org/>





"Victor V. Motti has a new book out exploring the many future pathways for humans. When you go on a Transformation Journey with Victor, you are taken on a paradigm-blasting path that is poetic and technical, soberingly realistic and deeply hopeful."

**Amy Zalman**, PhD, *Georgetown University Professor*

"Victor Motti shows how a planet-wide futures mindset can help overcome the polarized and polarizing worldviews of the present—nationalism, racism, sexism, religious extremism—and lead to an integrative wisdom"

**Cynthia G. Wagner**, *Consulting Editor, Foresight Signals*

"Victor Motti is equally conversant in Middle Eastern thought and Western science, weaving them together in a planetary informed and inspired approach to the future."

**Dr. Thomas Lombardo**, *Director of the Center for Future Consciousness*

"One appealing aspect of the book is its author's willingness to explore the concept of futures in other cultures (and languages besides English) as an active step toward making the "planetary" element of the title meaningful [...] All in all, this is a very strong and informative book."

**Timothy C. Mack**, *Managing Principal, AAI Foresight Inc.; former President, WorldFutureSociety*

"The main contribution of the book to futures studies is to continue the move beyond an exclusively North American and Euro-centric perspective and to view the future through, in this case, a more Middle-Eastern viewpoint most notably Zoroastrian. [...] The voice of the author is present in the use of the first person and in various comments on events and authors which gives the monograph a more intimate and less academic point of access."

**Bob Frame**, *University of Canterbury, New Zealand; Journal of Tourism Futures, Vol. 6 No. 1 (2020)*

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