

The Millennium Project:



**Jerome C. Glenn, CEO
The Millennium Project**



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**BRAZIL Charrette Workshop
FUTURE WORK/TECH2050**

THE FUTURE OF EDUCATION

**Jerome C. Glenn, CEO
The Millennium Project
October 24, 2016**

FutureScopes

TECHNOLOGY vs. HUMANITY



The coming clash between
man and machine

Gerd Leonhard



TECHNOLOGY vs. HUMANITY Gerd Leonhard

CRISIS = WEIJI

WEI = RISK

JI = Crucial Moment, Tipping Point

危機

AL GORE six drivers of global change:

- 1. **Economic globalization** creating an interconnected but unequal world economy with growing divides between haves and have-nots.
- 2. **The Internet and worldwide Web** linking billions of people and their various intelligent devices.
- 3. **The changing balance of global power from a unipolar post–Cold War world to a more complex network of powers** from East and West, developed and developing countries, with markets and multinational organizations transcending the structure of modern nation-states (“More than half of the 100 largest economies on earth are now corporations”).
- 4. **Unsustainable growth in population and resource consumption** on an Earth rapidly reaching its natural limits—i.e., the breakdown of the unlimited growth paradigm.
- 5. **New emerging technologies** leaps made possible by nanotechnologies, 3-D printing (including the capability to literally print a house in under 24 hours!), and the development of powerful materials such as graphene (one of the strongest materials ever developed), coupled with increased knowledge in the life sciences.
- 6. **Climate change** producing a realignment, or misalignment, of civilization with its surrounding ecological systems, including the atmosphere.

- **Job creation has already become a major challenge for governments worldwide. In the years ahead, unemployment is likely to become a life-and-death issue for most governing authorities.** Along with rising prices and steadily depleting global energy supplies, a toxic socio-economic brew is being created. In many regions, when widespread unemployment and other economic pressures produce social volatility, unrest is just one trigger-event away.
- **Gore identifies a vacuum of political leadership at a time when compounding, interconnected problems are calling out for stronger, more ethical, and more scientifically informed public governance**

PANORAMA PLANETARIO

- Problemas ambientales planetarios sin lugar ni territorio, crisis civilizatoria, antropoceno, deshielos, mares acidificados, desequilibrios climáticos, estados extremos del tiempo, eventos meteorológicos inesperados y de intensidad impredecible, millones de pobres, migrantes climáticos y desplazados por conflictos varios...
- Todo eso avanzando rápidamente desde la década de los 70s.
- *Los Problemas no pueden ser resueltos con el mismo modelo mental que les dio lugar (A. Einstein)*

*¿Qué ciencia para un mundo más sostenible?
La producción de conocimiento y la formación de
recursos humanos bajo la lupa. La educación esta
en el banquillo de los acusados...*

Edgar Morín enuncia -a pedido de Unesco ya
en su conferencia de París en 1998-su tesis
sobre los **saberes pertinentes para el siglo
XXI**

- *Desarrollo de competencias centrales que
remitan a la sostenibilidad como
paradigma y a capacidades necesarias
para manejar el contexto, lo complejo, la
anticipación, lo desconocido, la no
previsibilidad, etc*

Os Novos Epistemes:

Complexidade , Transdisciplinaridade

Visão Integral

Ética planetária , Matrística

Quo Vadis Universidade?

**Da Academia às Redes e Comunidades de Aprendizagem, da
Globalização da Economia à Globalização da Solidariedade
(CORI-UNICAMP, 2011)**



***Queremos Uma Universidade que se forja de Valores e
Compromissos ... clubede poetas vivos e de intelectuais
orgânicos; vanguarda até, mas a Serviço!***

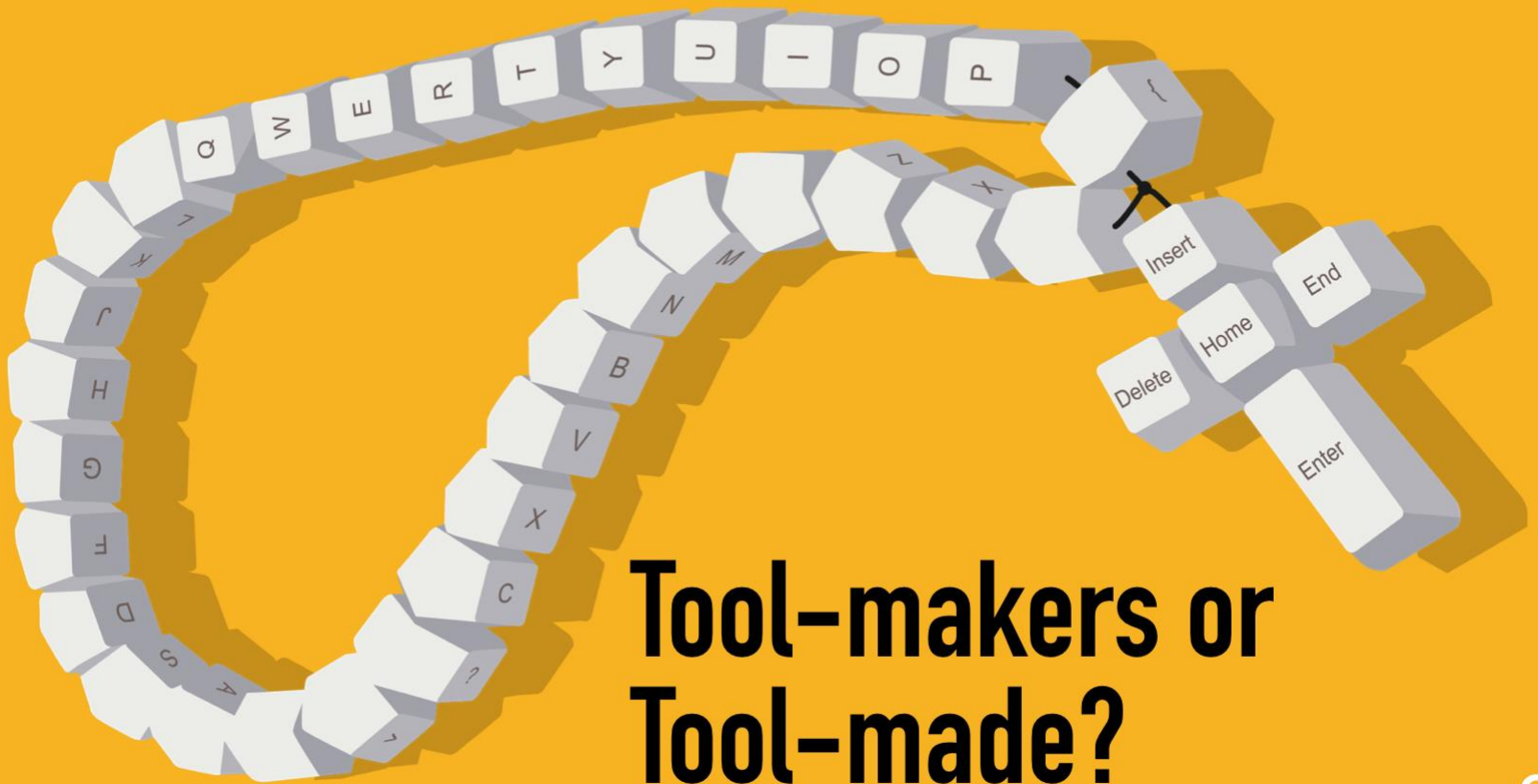
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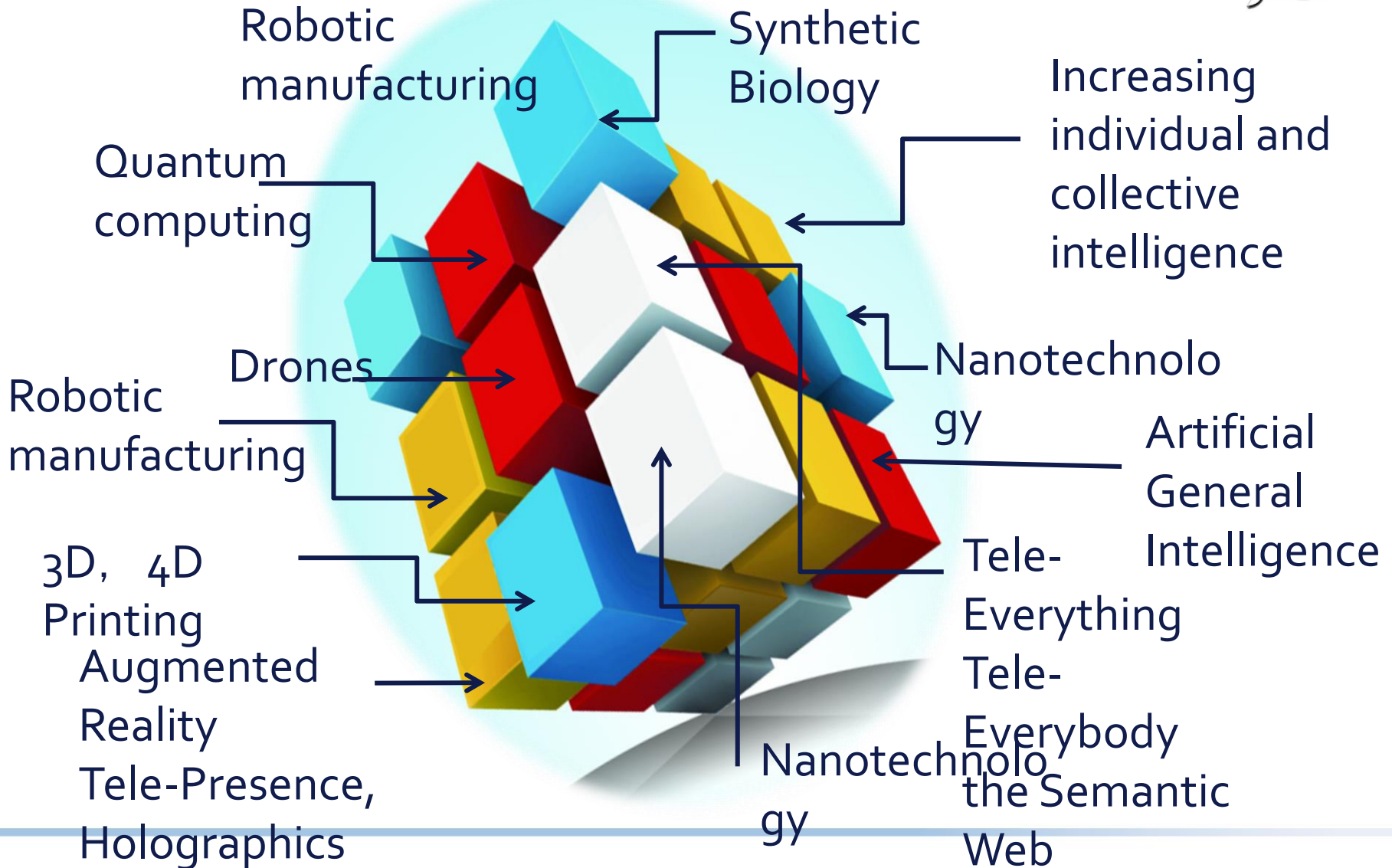
***Dear Hem: our cheese is now knowere. Find your way fast, and
take care - HAM***

Is technology ...becoming a (the) purpose ?



Tool-makers or Tool-made?

Future Technology Synergies



Future Technology Synergies



Robotic
manufacturing

Artificial
Intelligence

Quantum
computing

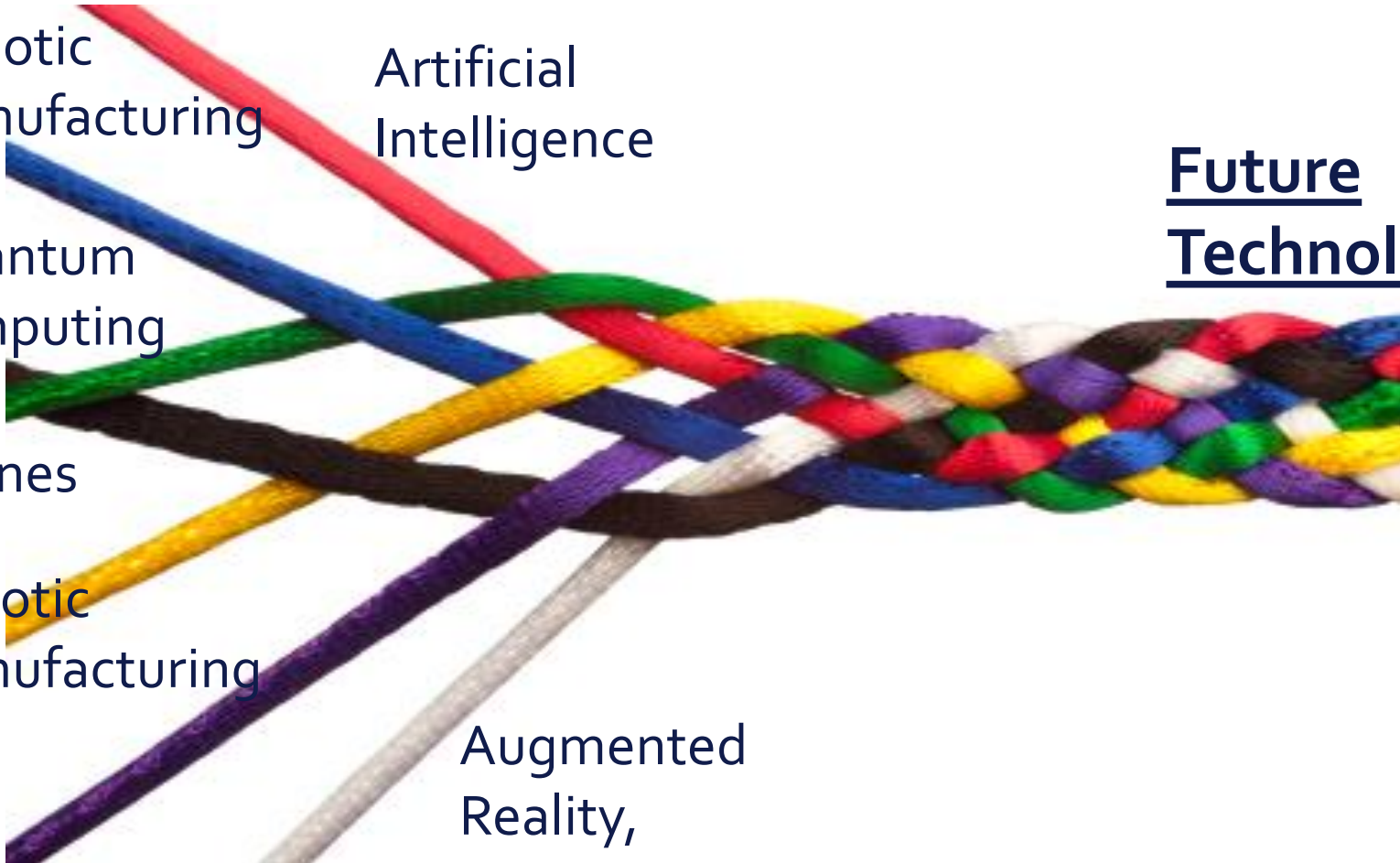
Future
Technology

Drones

Robotic
manufacturing

3D, 4D
Printing

Augmented
Reality,
Tele-Presence,
Holographics





Human Performance NANOTECHNOLOGY, BIOTECHNOLOGY, INFORMATION TECHNOLOGY AND COGNITIVE SCIENCE

The integration and synergy of the four technologies (nano-bio-info-cogno) originate from the nanoscale, where the building blocks of matter are established.

http://www.wtec.org/ConvergingTechnologies/1/NBIC_report.pdf



At this moment in the evolution of technical achievement, improvement of human performance through integration of technologies becomes possible. Examples of payoffs may include improving work efficiency and learning, enhancing individual sensory and cognitive capabilities, revolutionary changes in healthcare, improving both individual and group creativity, highly effective communication techniques including brain-to-brain interaction, perfecting human-machine interfaces including neuromorphic engineering, sustainable and “intelligent” environments including neuro-ergonomics, enhancing human capabilities for defense purposes, reaching sustainable development using NBIC tools, and ameliorating the physical and cognitive decline that is common to the aging mind



*Changing the societal "fabric" towards a new structure
(upper figure by R.E. Horn)*

The integration and synergy of the four technologies (nano-bio-info-cogno) originate from the nanoscale, where the building blocks of matter are established. This picture symbolizes the confluence of technologies that now offers the promise of improving human lives in many ways, and the realignment of traditional disciplinary boundaries that will be needed to realize this potential. New and more direct pathways towards human goals are envisioned in working habits, in economic activity, and in the humanities.

NBIC - Multidisciplinary scientific field at the crossroads of nanotechnologies (N), biotechnologies (B), information technology (I) and cognitive sciences (C).

Converging Technologies for the Improvement of Human Performance

Le projet a recueilli des informations sur les recherches interdisciplinaires, le développement des projets d'application, et les tendances dans différents pays :

- nanotechnologies,
- NBIC pour un homme à capacité augmentée,
- CKTS au service de la société (à l'échelle Humaine, Terre, Sociétale).



Figure 1 : du Nanotechnologie vers les NBIC et CKTS Convergences
Source : Roco, M. C. and W. S. Bainbridge, B. Tonn, G. Whitesides (2013)



A FRONTEIRA DO REAL

Estudos recentes indicam que o advento das realidades virtuais pode afetar a forma como fluem nossos pensamentos – e até a maneira como sonhamos **TALISSA MONTEIRO**

SLATE

HOME

NEWS

ABOUT

PEOPLE

Targeting the real life impact of virtual interactions

May 21, 2016 | Elinor Bartle



Cyberpsychologist Angelica B. Ortiz de Gortari has been visiting SLATE and will give a guest lecture on "Game Transfer Phenomena: Altered perceptions, automatic mental processes and behaviours after playing video games", 26 May, 14:00 - 15:00 in Auditorium 1, Stein Rokkans hus, Nygårdsgaten 5. All are welcome.

[My interest in the study of interactive media derives from my strong curiosity to understand the interaction between human beings and technology with the goal of maximizing the psychological and social benefits of interactive virtual technologies while reducing the risks or dangers it can present to some individuals.](#)
<http://www.gametransferphenomena.com/about.html>.

We cannot automate happiness



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A ciência mapeia o **FUTURO**

Engenharia genética em humanos para curar doenças

Medicamentos para **viver até os 120** anos

O **download da mente**, do cérebro para a máquina

A **desigualdade econômica** pode ameaçar a democracia

Como alimentar e empregar **10 bilhões de habitantes**

ENTREVISTA

Neil Tyson,
o apresentador
da série Cosmos

AGRICULTURA

Arroz e frutas com DNA
modificado crescem até
com água do mar diluída

TECNOLOGIA

Os robôs e drones
que vão chegar às
lavouras brasileiras

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AUGUST 2016

NATIONAL GEOGRAPHIC

The DNA REVOLUTION

With new
gene-editing
techniques, we
can transform
life—but
should we?

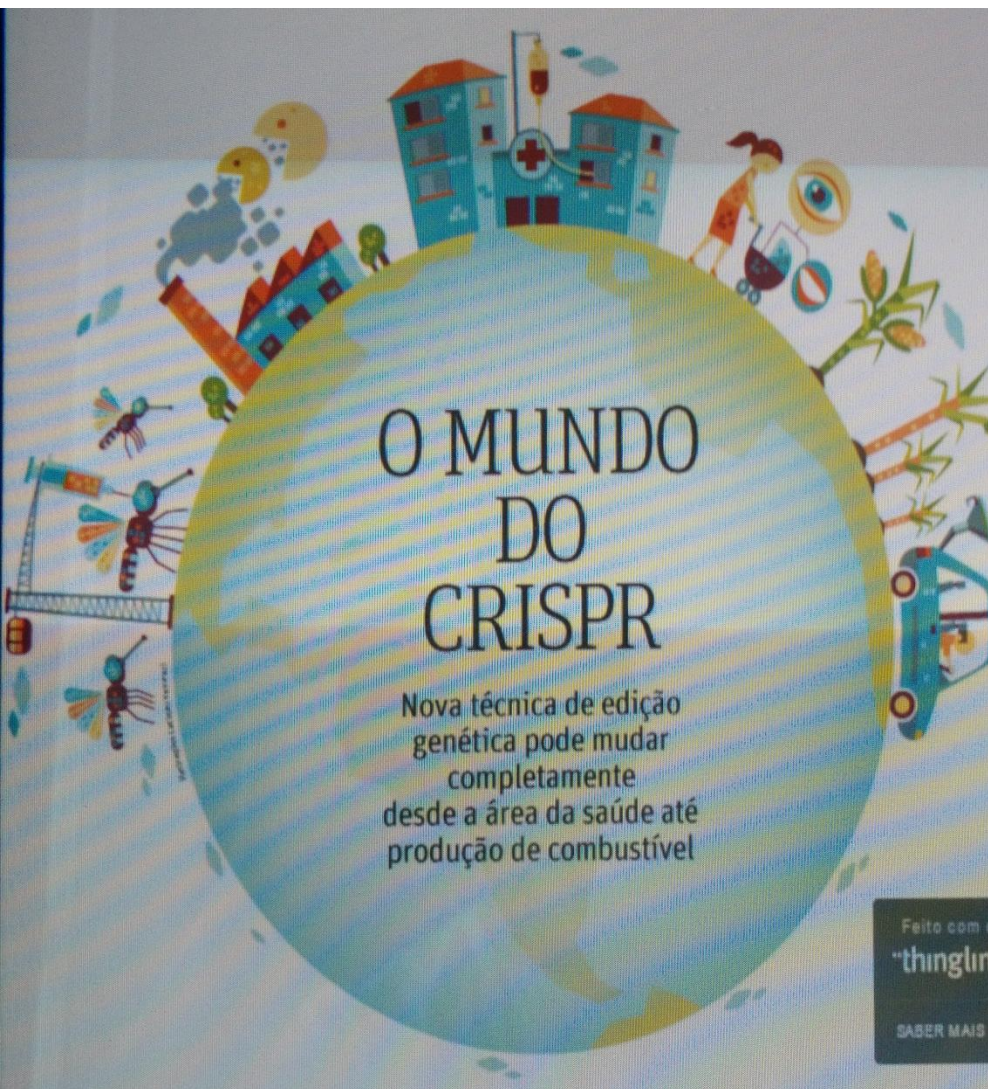
NATIONAL
GEOGRAPHIC
ED. 1608 R\$ 39,90



070989368248082016

BIOMIMETICA O Crispr não é uma invenção humana e o acrônimo significa "repetições palindrômicas curtas agrupadas e regularmente inter espaçadas". Originalmente, trata-se de um recurso utilizado por organismos unicelulares contra a invasão de vírus. A transformação desse conhecimento em técnica genética só ganhou importância no início desta década.

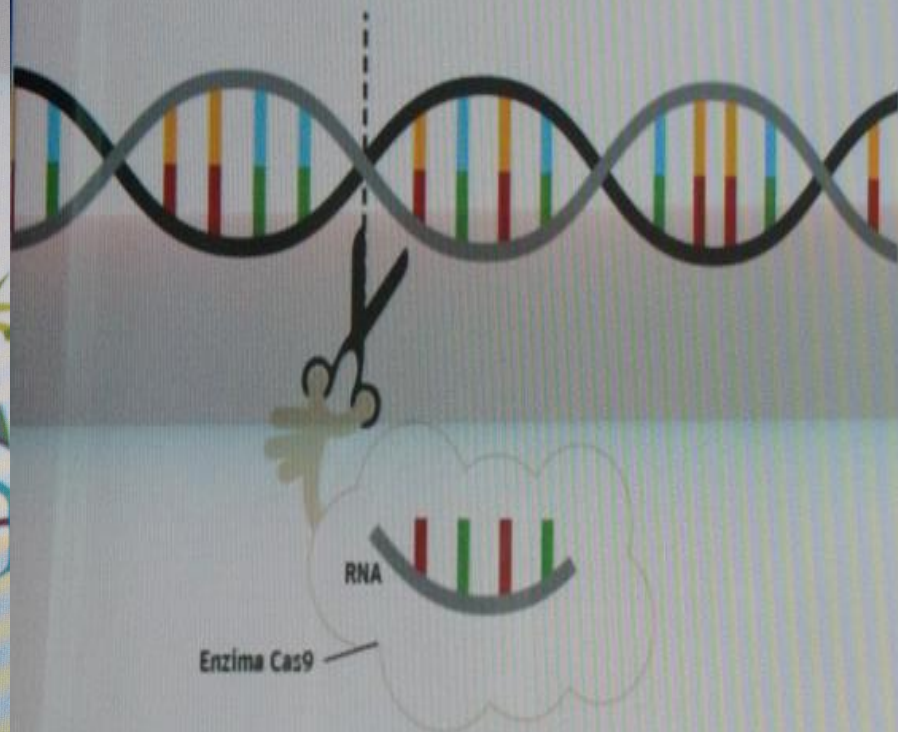
With new
gene-editing
techniques, we
can transform
life—but
should we?



O MUNDO DO CRISPR

Nova técnica de edição genética pode mudar completamente desde a área da saúde até produção de combustível

Feito com o
"thinglr"
SABER MAIS



EDIÇÃO GENÔMICA

Conheça a técnica que permite fazer mudanças precisas no DNA

MUSICIANS MAY BE THE KEY TO THE CYBERSECURITY TALENT SHORTAGE

Companies scrambling to find cybersecurity talent may want to look toward more creative candidates. Music gives you a lot of creativity and allows you to use that right side of your brain.

<https://www.fastcompany.com/3064676/the-future-of-work/musicians-may-be-the-key-to-the-cybersecurity-shortage>

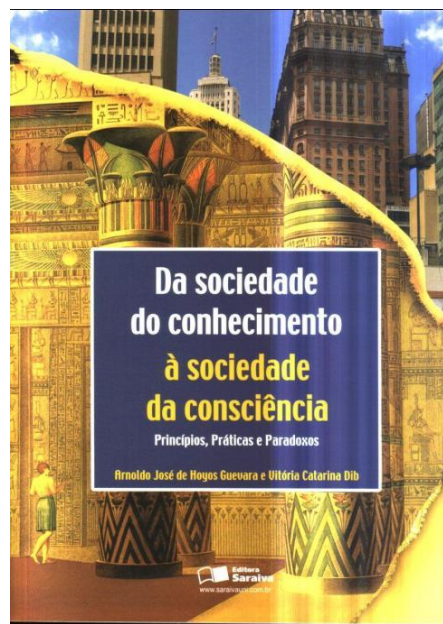


WORLD
ECONOMIC
FORUM

“The future belongs to innovative and creative people.”

Veronica Colondam

Founder and CEO, YCAB Foundation



From a Knowledge Society to a Consciousness Society

Emerging Technologies Organizations and Education

Consciousness and Sustainable Development in the Organizations

Centre for Future Studies – Brazil

www.nef.org.br

Núcleo de Estudos do Futuro



PUC . SP . Brasil

To a sustainable

world in 2050

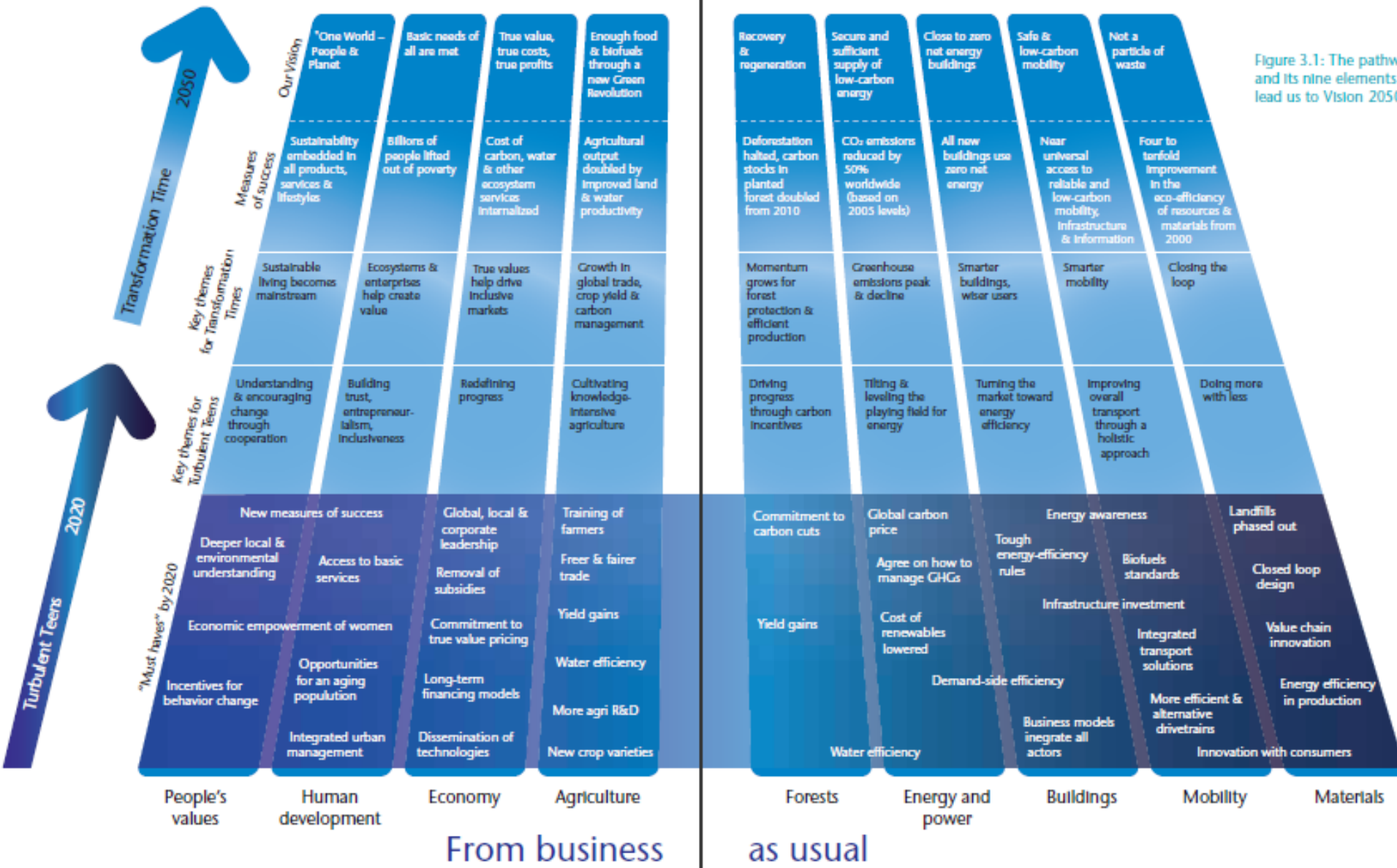
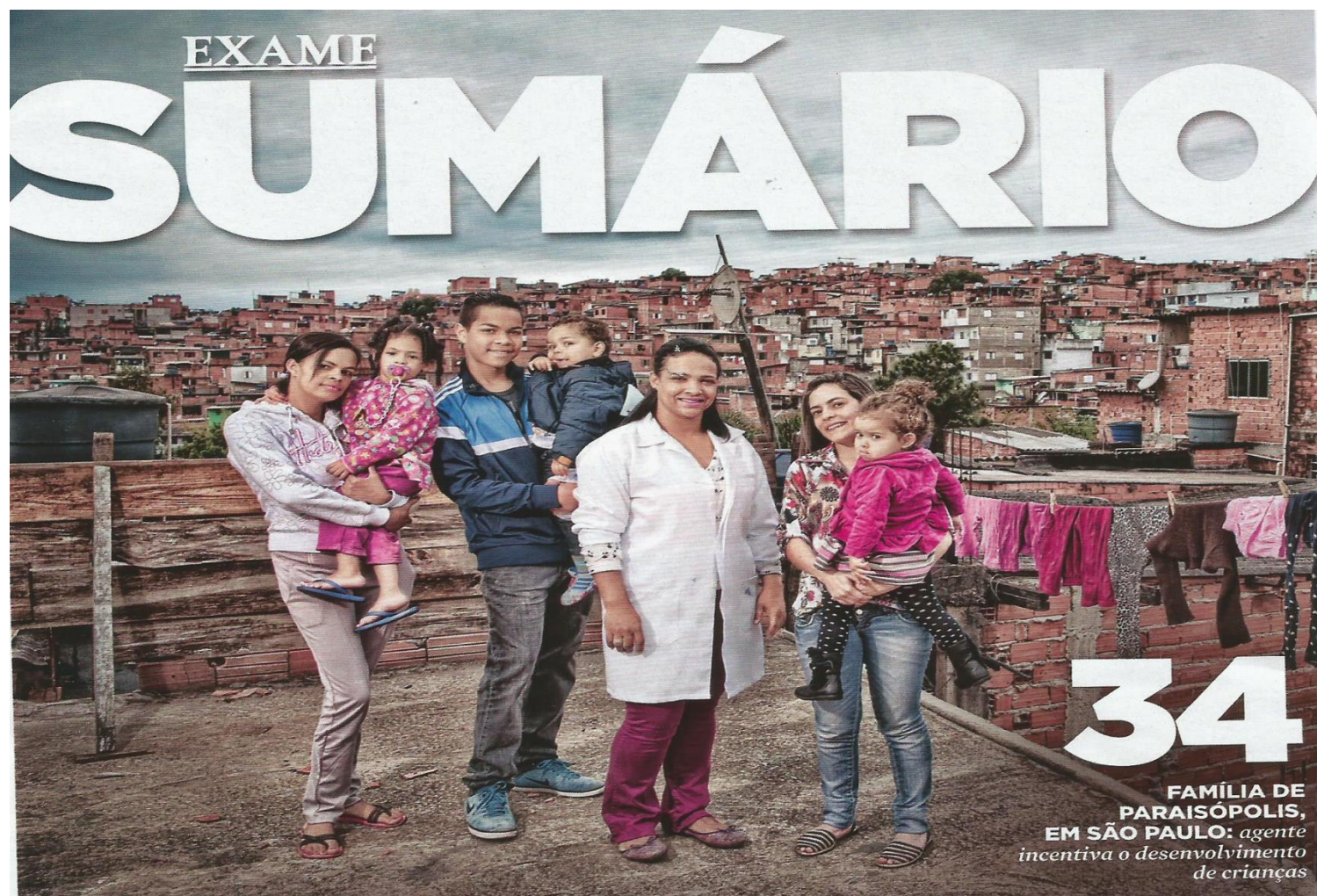


Figure 3.1: The pathway and its nine elements lead us to Vision 2050

A Importância da Educação e o Cuidado na Primeira Infância - PIAUI



EDUCAÇÃO E SUSTENTABILIDADE

CAMINHOS PARA UMA NOVA ERA



Núcleo de Estudos do Futuro



PUC . SP . Brasil



The Millennium Project



EXAME



EXEMPLAR DE
ASSINANTE
VENDA PROIBIDA

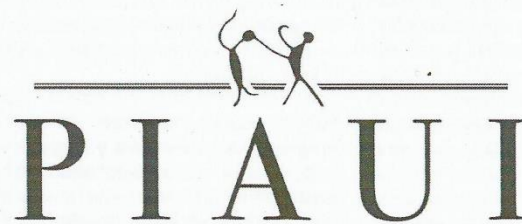


ESPECIAL
AS MELHORES
CIDADES
PARA FAZER
NEGÓCIO

A NOVA FRONTEIRA DA EDUCAÇÃO

Experiências no Brasil e no exterior e pesquisas na área da neurociência são unânimes em apontar a importância da educação na primeira infância — e seu enorme impacto na produtividade da economia e no combate à desigualdade

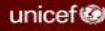
Se mudamos o início da historia, mudamos a historia toda



Primera Infancia a Ultima Infancia

INFANCIAS
DE LA PRIMERA A LA ULTIMA:
Una coalición internacional e
intergeneracional por un mundo
mejor y posible

GUIA para promover el Cuidado y Monitoramento de las Condiciones de Vida (Well-Being), Transformación Sociocultural y Desarrollo Humano Integral em los Países con foco em la caminada de la Primera a la Última Infancia



DISTRIBUIÇÃO

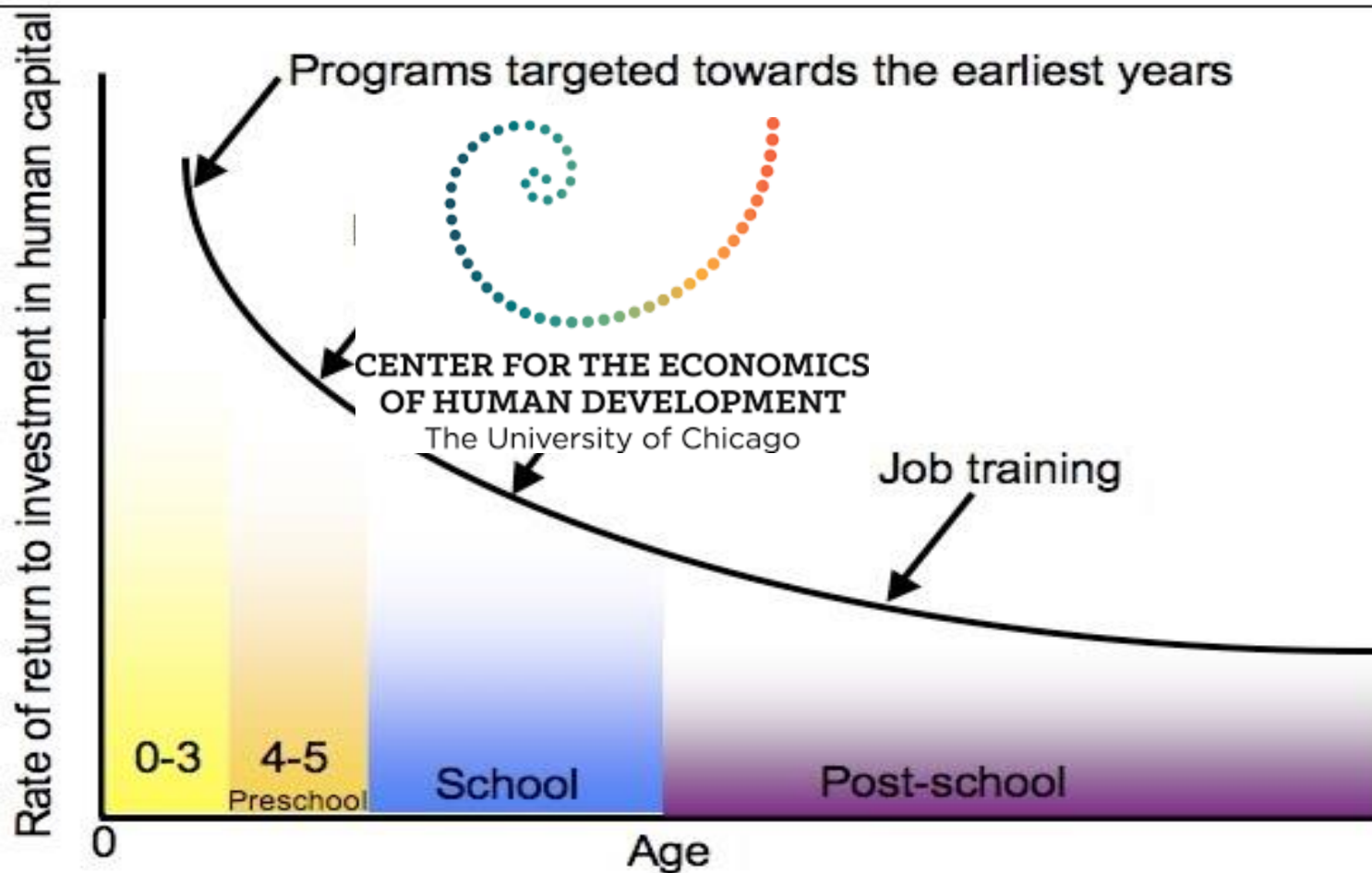


WWW.VIDEOCAMP.COM





Rates of Return to Human Capital Investment at Different Ages: Return to an Extra Dollar at Various Ages





CENTER FOR THE ECONOMICS
OF HUMAN DEVELOPMENT
The University of Chicago

THE HECKMAN EQUATION:

A solution for better education and health outcomes, less crime and poverty and greater economic prosperity

<http://www.smartbeginnings.org/Portals/5/PDFs/Research/HeckmanEquation.pdf>

INVEST in educational and developmental resources for disadvantaged families to provide equal access to successful early human development.

+ DEVELOP cognitive skills and social skills in children early —from birth to age five when it matters most.

+ SUSTAIN early development with effective education through adulthood.

= GAIN more capable, productive and valuable citizens that pay dividends to America for generations to come.



- **1. Intelligence and social skills are set at an early age — and both are essential for success**
- **2. Early investment produces the greatest returns in human capital**
- **3. America's advantage will come from helping the disadvantaged.**
- **4. Quality economic returns come from quality investments in early childhood development**
- **5. We already have successful programs that can and should be implemented in local communities across America**
- <http://www.smartbeginnings.org/Portals/5/PDFs/Research/HeckmanEquation.pdf>

CpE A política educacional brasileira é principalmente ideológica, diz o professor da Faculdade de Letras da PUC-RS, Augusto Buchweit, que acompanha 500 crianças em três cidades para entender o aprendizado da leitura.

Alfabetização será um dos quatro troncos principais da rede CpE. Os outros serão fatores fisiológicos (sono, nutrição e exercício), socioemocionais e transtornos de aprendizagem

PLATAFORMA VIRTUAL CIÊNCIA PARA EDUCAÇÃO



O projeto, que será apresentado ao BNDES, inclui uma sala de neuroimagem –que mapeia a atividade cerebral–, uma de multirregistro –que acompanha o movimento dos olhos e reações do corpo após um estímulo, um centro de tecnologia –para desenvolver softwares e games voltados à educação e um laboratório para pesquisas com animais.

*...Desde el sur del sur, **Amílcar Herrera** y un grupo de científicos argentinos abordan en la **Fundación Bariloche (1975)** el dilema “**Catástrofe o nueva sociedad**” y ponen a la educación en el centro del análisis...*



**“Se destruiremos a
criação,
a criação nos destruirá”**

(Papa Francisco)

Cidade do Vaticano, 21 de Maio de 2014 (ZENIT.org)

