

SESSÃO 4
AS IDEIAS QUE MUDARAM O
MUNDO

STEVEN
JOHNSON

WHERE GOOD IDEAS
COME FROM

THE NATURAL
HISTORY OF
INNOVATION

FROM THE BESTSELLING
AUTHOR OF EVERYTHING
BAD IS GOOD FOR YOU
AND THE INVENTION
OF JIB

ESTRUTURA DA APRESENTAÇÃO

- ❖ Introdução: Pontos de Partida
- ❖ O “Quadrante de Pasteur” (Stokes, 1997)
- ❖ O “Quarto Quadrante” (Johnson, 2010)
- ❖ O que Johnson nos ensina

INTRODUÇÃO

- ❖ O 'Paradoxo de Darwin'
- ❖ A Cidade Superlinear: Dimensão, Interação e Criatividade
- ❖ Internet e Velocidade: Do 10/10 para o 1/1?
- ❖ O Adjacente Possível
- ❖ O *Zoom* Longo: Abertura e Conectividade vs Concorrência
- ❖ Interligação das Ideias vs. Protecção: Os dilemas do sistema de Patentes

Research is inspired by:

		Considerations of use?	
		No	Yes
Quest for fundamental understanding?	Yes	Pure basic research (Bohr)	Use-inspired basic research (Pasteur)
	No		Pure applied research (Edison)

(adapted from *Pasteur's Quadrant: Basic Science and Technological Innovation*, Stokes 1997).

PASTEUR'S QUADRANT

“For the most part, science is valuable as an input to technological change (...) because much of scientific research is in fields that are oriented to providing knowledge that is of use in particular areas”, that is, in ‘Pasteur’s Quadrant’.
(...) “To restrict access to basic science is to cut down significantly on the number of parties who can effectively invent in a field”

(Richard Nelson, Technology, Institutions and economic Growth, Harvard univ. Press, Cambridge, Mass., 2005, pg. 243)

O QUARTO QUADRANTE (Johnson, 2010)

1

MERCADO/INDIVÍDUO

2

MERCADO/ EM REDE

3

NÃO-MERCADO/
INDIVÍDUO

4

NÃO-
MERCADO/REDE

Mason Jar
 Tesla Coil
 Gatling Gun
 Nylon
 Vulcanized Rubber
 Programmable Computer
 Revolver
 Dynamite
 AC Motor
 Air-Conditioning
 Transistor

MARKET/INDIVIDUAL

Airplane
 Steel
 Induction Motor
 Contact Lenses
 Moving Assembly Line
 Locomotive
 Electric Motor
 Refrigerator
 Telegraph
 Sewing Machine
 Elevator
 Steel
 Typewriter
 Plastic
 Calculator
 Internal Combustion
 Engine
 Telephone

Lightbulb
 Automobile
 Radio
 Welding Machine
 Motion Picture Camera
 Vacuum Cleaner
 Washing Machine
 Vacuum Tube
 Helicopter
 Television
 Photography
 Jet Engine
 Tape Recorder
 Laser
 VCR
 Personal Computer
 Bicycle

MARKET/NETWORKED

NON-MARKET/INDIVIDUAL

Spectroscope
 Bunsen Burner
 Rechargeable Battery
 Nitroglycerine
 Liquid Engine Rocket
 Uncertainty Principle
 Electrons in Chemical
 Bonds
 Absolute Zero
 Atomic Theory
 Stethoscope
 Uniformitarianism
 Cell Nucleus
 Benzene Structure
 Heredity
 Natural Selection
 X-Rays
 Blood Groups

Hormones
 $E = mc^2$
 Special Relativity
 Earth's Core
 Radiometric Dating
 Cosmic Radiation
 General Relativity
 Universe Expanding
 Ecosystem
 Double Helix
 CT Scan
 Archaea
 World Wide Web
 Continental Drift
 Superconductors
 Neutron
 Early Life Simulated

NON-MARKET/NETWORKED

Braille Periodic Table RNA Splicing
 Chloroform EKG Cosmic Microwave Background Radiation
 Aspirin Cell Division Global Warming MRI
 Enzymes Cell Differentiation DNA Forensics
 Stratosphere Radioactivity Plate Tectonics
 Cosmic Rays Electron Atomic Reactor
 Modern Computer Mitochondria Nuclear Forces
 Artificial Pacemaker Vitamins Oral Contraceptive
 Radiocarbon Dating Neurotransmitters
 Graphic Interface Genes on Chromosomes
 Endorphins Chemical Bonds Restriction Enzymes
 Infant Incubator Radiography Gamma-Ray Bursts
 Oncogenes Penicillin Universe Accelerating
 Atoms Form Molecules Quantum Mechanics
 Punch Cards (Jacquard Loom) Radar GPS
 Suspension Bridge Liquid-Fueled Rocket
 Second Law DNA (as Genetic Material) Internet
 Anesthesia Krebs Cycle RNA (as Genetic Material)
 Germ Theory Computer Asteroid K-T Extinction

O QUE JOHNSON NOS
ENSINA

DUAS CITAÇÕES

“Like any complex reality, creating innovation environments is a matter of trade-offs”.

(Johnson [2010], pg. 232-3)

“The fourth quadrant should be a reminder that more than one formula exists for innovation. The wonders of modern life did not emerge exclusively from the proprietary clash between private firms. They also emerged from open networks”.

(Johnson [2010], pg. 236)

- **Contexto**
- **Inter-acções**
- **Cumulatividade**
- **Comunidades de utilizadores**
- A combinação de **motivações económicas e não-económicas**
- **Paradoxo da Protecção**