

# **III WORLD FORUM SCIENCE AND DEMOCRACY**

- **PUBLIC ENGAGEMENT, SOCIAL PARTICIPATION AND CONTROL IN DEVELOPMENT OF NANOTECHNOLOGY 2001-2011: EXPERIENCE OF BRAZILIAN RESEARCH NETWORK IN NANOTECHNOLOGY, ENVIRONMENT AND SOCIETY - RENANOSOMA.**
- **PAULO R, MARTINS**
- **COORDINATOR - RENANOSOMA**
- **TUNIS, MARCH 23/25 ,2013**

# RENANOSOMA



# EDGARD MORIN (1)

- “THE SPACESHIP EARTH IS MOVED BY FOUR MOTORS AND AT THE SAME TIME, UNCONTROLLED: SCIENCE, TECHNIQUE, INDUSTRY AND CAPITALISM (PROFIT)
- THE PROBLEM IS CREATING A CONTROL OVER THESE ENGINES: THE POWERS OF SCIENCE, TECHNIQUE, AND INDUSTRY MUST BE CONTROLLED BY ETHICS THAT CAN ONLY IMPOSE ITS CONTROL BY THE POLICY

1- MORIN, EDGARD. POR UMA GLOBALIZAÇÃO PLURAL. FOLHA DE SÃO PAULO DOMINGO, 31/3/02, P.A16

# BRAZILIAN REDEMOCRATIZATION PROCESS

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- FIGHTING AGAINST MILITARY GOVERN
- WORKERS PARTY
- 1982 CAMPAIGN FOR DIRECT ELECTION FOR PRESIDENT
- 1983 CUT TRADE UNION
- 1985 INDIRECT PRESIDENT ELECTION
- 1985 LAUNCHED SCIENCE, TECHNOLOGY AND INNOVATION MINISTRY
- MST – LANDLESS MOVEMENT
- 1988 BRAZILIAN CONSTITUTION
- 1999 FIRST DIRECT BRAZILIAN PRESIDENT ELECTION

# BRAZILIAN REDEMOCRATIZATION PROCESS

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- 1986 LAUNCHED MST – LANDLESS MOVEMENT
- 1988 BRAZILIAN CONSTITUTION
- 1989 FIRST BRAZILIAN DIRECT ELECTION FOR PRESIDENT
- 1992 IMPEACHMENT BRAZILIAN PRESIDENT FERNANDO COLLOR
- 1994/2002 FHC GOVERN
- 2003/2010 LULA GOVERN
- 2011 – 2014 DILMA GOVERN

# **PUBLIC COMPETITION IN NANOTECHNOLOGY WITH PUBLIC MONEY**

- 2001 4 NETWORKS
- 2005 10 NETWORKS
- 2008 15 NATIONAL SCIENCE AND TECHNOLOGY INSTITUTE IN NANOTECHNOLOGY
- 2009 16 SMALL NETWORKS
- 2011 12 SMALL NETWORKS IN NANOTOXICOLOGY

# **MCT/CNPq calls for research for these purposes**

- **1) increase the scientific and technological development;**
- **2) increase international competitiveness of Brazilian science, technology and innovation;**
- **3) equally regional development;**
- **4) integration between public and private research centers and companies**

# **MCT/CNPq calls for research for these purposes**

- 5) Qualified job creation;**
- 6) Increase the Brazilian industry technological level;**
- 7) Increase the Brazilian economic development.**



**PRESIDENT LULA'S SPEECH  
CAMPINAS , AUGUST 19 2005  
OPENNING THE NANOSCIENCE AND  
NANOTECHNOLOGY BRAZILIAN PROGRAMME**

- **1) Brazil need export knowladge;**
- **2) Technological innovation is the base for the new Brazil that we want for the future;**
- **3) Brazil is a n unequal coutry. At a same time have places in first industrial revolution and others in third industrial revolution;**
- **4) Scientific comunity shoud be responsable for the decisons of reseach**
- **5) Science and Technology are essential tools economic and social development and are priority of federal govern;**

**PRESIDENT LULA'S SPEECH  
CAMPINAS , AUGUST 19 2005  
OPENNING THE NANOSCIENCE AND  
NANOTECHNOLOGY BRAZILIAN PROGRAMME**

- 6) The best investment is to put money in Science , Technology and Education;**
- 7) Need to increase the connection between university and companies;**
- 8) National Programme of Nanotechnology is part of Industrial, Technological and Trade Policy.**
- 9) Power = Scientific and Technical knowledge;**
- 10) The best form to look for social justice.**

# RENANOSOMA ACTIVITIES

[www.nanotecnologia](http://www.nanotecnologia.doavesso.org)doavesso.org

- **LAUNCHED OCTOBER 2004 DURING THE I SEMINANOSOMA WITH 12 RESEARCHERS FROM ONLY HUMAN SCIENCE. TODAY 36 RESEARCHERS BELONGS TO RENANOSOMA FROM HUMAN , NATURAL AND EXATS SCIENC**
- **9 INTERNATIONAL SEMINAR**
- **6 BOOKS PRINTED**
- **4 DVD PRODUCED**
- **2 COMICS PRINTED**

# RENANOSOMA ACTIVITIES

[www.nanotecnologia.doavesso.org](http://www.nanotecnologia.doavesso.org)

- **PUBLIC ENGAGEMENT IN NANOTECHNOLOGY PROJET**
- **VIRTUAL ACTIVIES**
- **164 CHATS 2007/2008**
- **190 PROGRAM “NANOTECHNOLOGY INSIDEOUT” (2009 – 2013)**
- **ALL TUESDAY 3PM TO 4PM SÃO PAULO TIME**  
[www.iptv.usp.br](http://www.iptv.usp.br)
- **INFORM AND DISCUSS NANOTECHNOLOGY (IN A PLURAL WAY) WITH THE NOT ESPECILIZED PEOPLE**

# RENANOSOMA ACTIVITIES

[www.nanotecnologia.doavesso.org](http://www.nanotecnologia.doavesso.org)

- **PRESENTIAL ACTIVITIES**
- **AROND 150 CONFERENCES AND DEBATES IN TRADE UNIOS, SINDICATES, NGOS, SCHOOL, UNIVERSITIES, CONSUMERS DEFENSE, PARLAMENT, GOVERN, INDUSTRY ORGANIZATION, SEMINARS, CONGRESS,**

# NANOPARTICAL AND MACROPOLICY

- ISSUES TO BE PUNCTUATE IN A POLITICAL DEBATE
- WHAT ARE THE UTILITIES FROM THESE NANOTECHNOLOGIES?  
WHO WILL BE THE OWN OR WILL BECOME THE OWNOR?  
WHO WILL THE RESPOSIBLE IF THE THINGS GO WRONG ?  
IN WHO WE CAN TRUST?  
WHO WILL BE INCLUDED AND EXCLUDED?

# **Preliminary Conclusion of Nanoscience and Nanotechnology in Brazil**

- **The roll of priority to development nanotechnology in Brazil is a mirror from USA and EU, so this is not against inequality.**
- **There are no connections between development nanotechnology, Brazilian biodiversity and fight against inequality.**
- **Scientific and Technological Development will “naturally” correct Brazilian inequalities.**
- **Brazil can not loose this “historic opportunity” to development the country by nanotechnology**

# **Preliminary Conclusion of Nanoscience and Nanotechnology in Brazil**

- **Only Scientific Community and State decide about nanotechnology. There are not social control or public participation in these decisions.**
- **Unequality is not subject for the Brazilian Nanoscience and Nanotechnology development to contribute for changing Brazilian Society**



# CONTACT

- PAULO MARTINS marpaulo@uol.com.br
- www.nanotecnologiadoavesso.org
- www.nanotecnologiadoavesso.blogspot.com
  
- TV BY INTERNET PROGRAM  
NANOTECHNOLOGY INSIDEOUT EVERY  
TUESDAY 15H AS 16H SÃO PAULO TIME
- WWW.IPTV.USP.BR

# RESIST | Researching Inequality through Science and Technology Stakeholders' Board Meeting, Rio de Janeiro, Brazil

- Nanoscience, Nanotechnology and Inequality: The Brazilian Case
  - Dr. Paulo Roberto Martins
  - Coord Renanosoma
  - Researcher at IPT
  - [marpaulo@ipt.br](mailto:marpaulo@ipt.br)
- January 19 2007

# 2001

- **CALL CNPQ 01/2001**
- **4 NETWORKS 2001/2005 - R\$10 MILL**
- **MATERIALS NANOSTRUCTURATED**
- **NANOBIOTECHNOLOGY**
- **MOLECULAR NANOTECHNOLOGY  
AND INTERFACES**
- **SEMICONDUCTORS AND  
NANODEVICES**

# 2003

- **Regulation MCT n° 252, de 16.05.2003**
- **Work Group to produce the report**
- **“Development in Nanoscience and Nanotechnology”**
- **Development Programme of Nanoscience and Nanotechnology for the Brazilian Federal Govern Plan 2004-2007**
- **R\$ 8.4 MILLION**
- **Public Consult.**

# 2004

- **Regulation MCT n° 614, 12/01/2004**
- **BRAZILNANO NETWORK**
- **Development Programme in  
Nanoscience and Nanotechnology**
- **Industrial, Technological and Trade  
Policy**

# 2004

- **CALL CNPQ 12/04 13 PROJECT**
- **BIOTECHNOLOGY R\$3.5 MILLION**
- **CALL CNPQ 13/04 5 PROJECT**
- **SOCIAL, ENVIRONMENTAL AND ETHICAL IMPACTS R\$125.000,00**

# 2005

- **CALL MCT/CNPQ 29/2005**
- **10 NETWORKS 2005/2009**
- **R\$12 MILLION**
- Simulation and Modelling of Nanostructure
- NanoPhotonic
- Nanobiostructure
- Nanostructured coating
- Microscopy /Probe (Varredura de Sondas)

# 2005

- Carbon Nanotubes
- Nanoglucobiotechnology
- Molecular Nanotechnology and Interfaces
- Nanobiomagnetism
- Nanocosmétique



# 2005

- **CALL MCT/CNPQ 28/2005  
YONGS DOCTORS**
- **19 PROJECTS R\$ 3 MILLION**
- **CALL MCT/CNPQ 58/2005**
- **INCUBATOR FOR NEW COMPANIES**
- **11 PROJECTS R\$1 MILLION**

# **INSTITUTOS NACIONAIS DE CIÊNCIA E TECNOLOGIA - 2008**

Sua missão é promover pesquisa de padrão internacionalmente competitivo, formação de recursos humanos e transferência de conhecimento para a sociedade, o setor empresarial e o governo, procurando, neste último caso, interagir com o SIBRATEC.

O Edital Nº 15/2008 MCT/CNPq/FNDCT/CAPES/FAPEMIG/FAPESPP– **Institutos Nacionais** , foi lançado em parceria com a CAPES, a FAPEMIG, a FAPERJ e a FAPESP, com recursos do CNPq e do FNDCT, no valor de **R\$ 270 milhões** e contribuição das três FAPs, no valor total de **R\$ 135 milhões**, a serem liberados em três parcelas – 2008, 2009 e 2010.

# INSTITUTOS NACIONAIS DE CIÊNCIA E TECNOLOGIA EM NANOTECNOLOGIA - 2008

NOME DO INSTITUTO	TOTAL APROVADO (em R\$)
INCT de Ciências dos Materiais em Nanotecnologia	4.200.000,00
INCT de NanoBioEstruturas e Simulação NanoBioMolecular	4.000.000,00
INCT de Engenharia de Superfícies	4.000.000,00
INCT em Materiais Complexos Funcionais	4.950.000,00
INCT em Fotônica para Comunicações Ópticas	6.567.045,12
INCT de Fotônica	7.088.549,36
INCT de Catalise em Sistemas Moleculares e Nanoestruturados	4.799.414,53
INCT de Sistemas Micro e Nanoeletrônicos	7.197.327,58
INCT de Nanomateriais de Carbono	7.199.000,00
INCT de Nanotecnologia para Marcadores Integrados	4.799.404,48

# INSTITUTOS NACIONAIS DE CIÊNCIA E TECNOLOGIA EM NANOTECNOLOGIA - 2008

INCT de Nanodispositivos Semicondutores	6.300.000,00
INCT de Nanobiotecnologia do Centro-Oeste e Norte	7.197.824,79
INCT de Eletrônica Orgânica	4.800.000,00
INCT de Nano-Biofarmacêutica	6.272.000,00
INCT de Óptica e Fotônica	6.756.599,26
<b>TOTAL</b>	<b>86.127.165,12</b>

# **COMITE INTERMINISTERIAL DE NANOTECNOLOGIA (PORTARIA 10/07/12)**

- **I - da Ciência, Tecnologia e Inovação (MCTI), que o coordenará;**
- **II - da Agricultura, Pecuária e Abastecimento (MAPA);**
- **III - da Defesa (MD);**
- **IV - do Desenvolvimento, Indústria e Comércio Exterior (MDIC);**
- **V - da Educação (MEC);**
- **VI - do Meio Ambiente (MMA);**
- **VII - de Minas e Energia (MME); e**
- **VIII - da Saúde (MS).**

# O NECESSÁRIO CONFRONTO SOCIAL DESTA NOVA TECNOLOGIA

- APRENDER COM O PASSADO : TRANSGÊNICOS;
- ROMPER COM O CÍCLO EM TERMOS DE PROPAGANDA, SEGREDO, FALTA DE TRANSPARÊNCIA, MEDO E CONFLITO;
- LEVAR EM CONSIDERAÇÃO DESDE O INÍCIO PREOCUPAÇÕES SOCIAIS, AMBIENTAIS E ÉTICAS;
- PARTICIPAÇÃO DO PÚBLICO NO PROCESSO DE PRODUÇÃO E ADOÇÃO DESTA TECNOLOGIA;

# NANOPARTÍCULAS E MACROPOLÍTICA

- Como conduzir o debate público sobre a nanotecnologia?
- Extrair lições do evento “transgenicos”.
- Transparência desde o início da constituição do ‘Projeto NanoBrasil’
- Explicitar como aumentar a ‘inteligência social’ sobre nanotecnologia e com isto enriquecer as tomadas de decisões que levem visões e valores públicos
- O debate deve permitir ao público formar e rever posições sobre a nanotecnologia. Vários métodos que levam a este objetivo são conhecidos
- O debate deve informar a prioridade de pesquisa.
- Revisão permanente em função do desenvolvimento da nanotecnologia. Esta revisão deve levar em conta o debate público precedente.



# **CAMINHANTE NÃO HÁ CAMINHO, O CAMINHO SE FAZ AO CAMINHAR ANTONIO MACHADO/POETA ESPANHOL**

- Devemos pois, superar a idéia de que a ciência e a tecnologia é produzida pelos cientistas e deve ser apresentada como um produto acabado ao público, não restando a este outra coisa que não seja aceitar o fato consumado. Ciência e Sociedade devem caminhar juntas, lado a lado, para indicar o caminho que a tecnologia deve seguir, em que as decisões sobre as pesquisas sejam abertas a apreciações e debates, e que pressupostos possam ser alterados desde o início dos trabalhos de pesquisa. Somente desta forma e que poderemos contar com o engajamento do público e, com isto, os resultados das pesquisas não serão objetos de conflito com a sociedade.