国際科学技術関係大臣会合での講演について

1. 国際科学技術関係大臣会合について

　　平成16(2004)年より毎年、世界の多様な地域から各国の科学技術担当大臣等が一堂に会して科学技術政策を議論するため、京都で開催されるSTSフォーラム※に合わせて「国際科学技術関係大臣会合」を開催。本年は、第13回「国際科学技術関係大臣会合」に先立ち、ワーキングランチ（昼食会）を開催。ワーキングランチ及び本会合には、日本を含む約23か国の科学技術大臣等が参加。

　　※STS フォーラムは、平成14年、当時の尾身幸次科学技術政策担当大臣が発案。平成16年から毎年、京都で開催され今年が13回目。NPO法人STSフォーラムが主催。ダボス会議の科学技術版と言われ、世界各国から、政治家、政策立案者、ノーベル賞受賞者を含む科学者、ビジネスマン、ジャーナリスト等が一堂に会している。毎回、「科学技術の光と影」をテーマに、科学技術と社会に関する問題を人類に共通なものとして議論、意見交換を行い、いかにして科学技術の「光」を伸ばし、「影」を克服していくかについて検討している。

2. 日時および場所（ワーキングランチ）

　　2016年10月2日（日）　12:20 － 13:10
　　京都国際会館　Annex 2　（京都府左京区宝ヶ池）

3. 次第

　　鶴保科技政策大臣主催ワーキングランチ（昼食会）：12:20-13:10
　　　　　　基調講演（原山CSTI議員）（25分）
　　第13回「国際科学技術関係大臣会合」：13:30-15:30
　　　　　テーマ及びSTI政策に関するプレゼンテーション（山脇統括官）（7分）
　　　　　各国意見交換（93分）
　　　　　ラップアップ（原山CSTI議員）（7分）

4. 内容

　　基調講演「Taking Advantage of Artificial Intelligence?」 と題して、第五期科学技術基本計画、その核となるSociety 5.0の概略を説明した後、「人工知能と人間社会に関する懇談会」について、その背景、設立趣旨、検討の方法と内容、目標について説明した。

　　基調講演であり質疑は設定されなかったが、昼食中の講演であるにも関わらず参加者に集中して聴講され、スライドの写真が撮られるシーンも多く、複数の参加者から資料の配布を求められるなど関心の高さが感じられた。

　　後日、出席国には講演スライド資料を配布し、今後ホームページ等に掲載予定である。

5. 講演の様子

6. 講演資料

次ページより。

STI and Society
Taking Advantage of Artificial Intelligence ?

Yuko Harayama
Executive Member
Council for Science, Technology and
Innovation (CSTI)

Shaping Innovation

- Political discourse
  - Innovation for growth
  - Innovation for addressing social & global challenges
  - Innovation for empowering industry, institutions, people
  - Innovation for development
  - …
  - Innovation for society ➡ "Society 5.0"

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The 5th S&T Basic Plan (2016-2020)

1. Introduction: changing context and our goal
   - Era of drastic change
2. Preparing the next: Future industry and society
   - **Society 5.0**
3. Addressing **socio-economic & global challenges**
4. Investing in "fundamentals": People and Excellence
5. Better functioning STI systems
6. **STI and society**
7. Leading effective STI Policy implementation

http://www8.cao.go.jp/cstp/english/basic/5thbasicplan.pdf

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"Society" at the heart

- Technology-driven ➡ Human-centered
- Society backed by STI
  - Enabling technologies, but not only ("beyond technique")
- Value of sustainability and inclusiveness
- Everybody on board

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Society 5.0

What's next?

5.0

Hunting & gathering society
In symbiosis with Nature

1.0

2.0

Agrarian society
Beginning of human organization

Information society
Increased value of intangibles & networks

4.0

Industrial society 3.0
Mastering of power & Mass production

Lessons from the History

1. Hunting and gathering society
   – In symbiosis with Nature

   ➡ **Sustainability**

2. Agrarian society
   – Very beginnings of human organization

   ➡ **Inclusiveness**

3. Industrial society
   – Mastering of power and mass production

   ➡ **Efficiency**

4. Information (or digital) society
   – Increased value of intangibles and networks

   ➡ **Power of intellect**

5. **Society 5.0**

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Exploratory fields

3. Addressing socio-economic & global challenges
   – Sustained economic growth and innovation-led regional development
     • Energy, Natural resources, Foods
     • Addressing aging issues
     • Empowered manufacturing
   – Achieving a safe and secure living standard
     • Resilience against natural disasters
     • Food security, living and working environment
     • Cyber security
     • National security
   – Addressing global challenges and contributing to global development
     • Climate change
     • Bio-diversity

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Guiding principles

6. STI and Society
   – Co-creation of STI
     • Dialogue and collaboration
     • Empowering stakeholders
     • Science advise for policy making
       – Science for policy
     • Ethical, Legal and Social Implications (ELSI)
   – Research integrity

• Putting into practice
   – Bioethics Committee ➡ Interim Report on Genome Editing (April 2016)
   – **Advisory Board on Artificial Intelligence (AI) and Human Society (May 2016 ～)**

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What's new in AI?
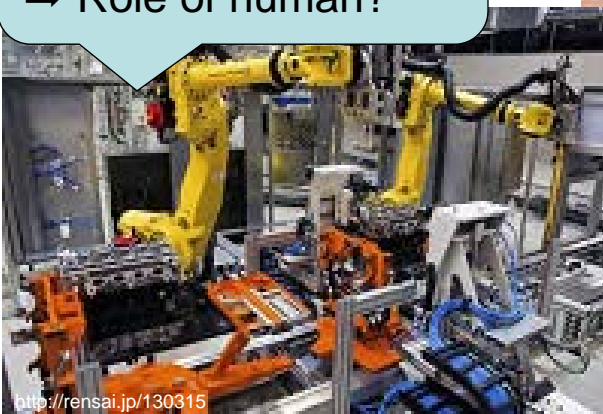
AI competing human!

AI working for human!

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Useful but …

Mobility for elderly, challenged, provincial …
➡ Responsibility for accidents?

Precise, flexible, adaptable, efficient, …
➡ Role of human?

Supportive, fun, user-friendly, …
➡ Relationship with AI?

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Advisory Board on AI and Human Society

- AI from the perspective of human society
- Gathering experts in law, economics, ethics, education, business, and technologies
- Focusing on technologies which would become accessible in near future (not science fiction!)
- And engaging debate with general public (e.g. web-based questionnaire and workshops)

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To be considered ⋯

- Ethics
  - Can we accept being insidiously manipulated by AI into changing our mind, preference, and conviction?
- Law
  - How can we develop laws that protect users and yet accelerate R&D and utilization of AI?
- Economy
  - How can we maximize the benefit from AI while minimizing the income gap between people who can take advantage of AI and those who can't?
- Society
  - How can we avoid excessive dependence on and exaggerated fear of AI?
- Education
  - What should we learn to cope with AI?
- R&D
  - What should researchers do to make AI secure, transparent, controllable, and ethical?

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Case-based approach

- Self-driving cars
  - Who will be responsible for the accident by self-driving cars? Auto company? AI developer? Data supplier?
- Automated manufacturing
  - How can education (human resource development) help workers practice new sophisticated skills so as not to lose their jobs?
- Conversational AI
  - To what extent can we allow AI to stir up our emotions?

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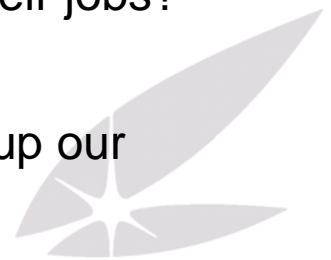
Policy Challenges!

- Designing "Society 5.0"
  - Co-evolution of society and technology!
  - Need for "Janusian thinking"
- Our challenges
  - The problem of "double-edged sword"
    - Benefits (e.g. low cost personalized services) but risks (e.g. privacy issue, discrimination, loss of public anonymity, …)
  - Limits of automated decision making
    - Transparency, Responsibility, Liability
    - Question of "Off switches"
- **Social dialogue involving all stakeholders and international community**
  - Social responsibility
  - Moral imperative

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