Will the Society Accept New Technologies?

NEDO Robot AI Forum 2017
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Tokyo Big Site
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Fukuda & Kondo
My Personal History

1974 Graduated the University of Tokyo, majored in mineral resources development engineering
1976 M. Eng. (The University of Tokyo)
1979 Passed the Bar Examination of Japan
1982 D. Eng. (The University of Tokyo)
1984 Completed the Legal Training for Judicial Apprentice, Admitted to the Bar (The Tokyo Bar Association)
2005-2008
   Section Chief and Chairperson for Law and Technology Study Group of JSME(83th-85th Terms)
2008-Present
   Member of Steering Committee for Law and Technology Study Group
Proposal for Development of Interdisciplinary Study of Law and Technology
Mock Trials in JSME

Mock Trials Concerning Safety of New Technologies

2016  The University of Kyushu (Annual Meeting)  
   — “Case on an Accident of a Self-Driving Car”

2016  The University of Tokyo (Division Meeting of Transportation and Logistics)  
   — “Case on an Accident of a Self-Driving Car II”

2017  The University of Saitama (Annual Meeting)  
   — Case on Safety of Drones

2018  Kansai University (Annual Meeting)  
   Accepting Proposals Relating to Robots
Hypothetical Accident for the First Mock Trial

National Route XX

<table>
<thead>
<tr>
<th>Jam on the Opposite Side Lanes</th>
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<tbody>
<tr>
<td>Bicycle</td>
</tr>
<tr>
<td>Station Wagon</td>
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<tr>
<td>Two Pedestrians on the side walk</td>
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### National Route XX

<table>
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<tr>
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<td>7 km/h</td>
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- **Bicycle**: 4 m
- **Station Wagon 50 km/h**: 15.1 m
- **Dump Truck 60 km/h**: 12 m

- **25 km/h, at Collision**

- **Two Pedestrians on the side walk**
Product Liability Act

- The manufacturer, etc. shall be liable for damages arising from the infringement of life, body or property of others which is caused by the defect in the delivered product .... (Art. 3)

- The term "defect" as used in this Act shall mean a lack of safety that the product ordinarily should provide, .... (Art. 2, Para. 2)
Hypothetical Accident for the Third Mock Trial
Outline of Current Regulations on Drones

- Amended Aviation Act (Effective December 10, 2015)
- Addition of Drones as Regulated Object
- Prohibition of Flight in Specified Areas (Art. 132)
  - Flight Routes of Airplanes
  - Areas with High Density Population
  - Permission Available (MLIT)
- Restriction on Manner of Flight (Art. 132-2)
  - Applicable to All Areas
  - Permission Available (MLIT)
Review for Approval

- Function and Performance of Drones
- Experience, Knowledge and Skills for Operating Drones
- Organization and System for Securing Safety of Drones during Operation
- Route, altitude, and other conditions may be imposed for approval.
What “Safety” Means?

- Definition of Safety
  - Freedom from Unacceptable Risks

- Measures for Securing Safety
  - Design Measures for Intrinsic Safety
  - Safety Guards, and Others
  - Information about Remaining Risks
Importance of Risk Communication

- Acceptance of Risk by the Society
  - No Absolute Safety
  - Recognition of Acceptable Risks

- Fair Allocation of Responsibility for Efforts for Avoidance of Accidents
  - Moral, or Legislation?
  - Necessity of Risk Communication
  - Use of Market Principles
  - Fair Distribution of Losses Caused by Accidents
Difference between Men and Robots (1)

- Speed Limit under the Road Traffic Act (Art. 22)
  - 60km/h (General)
  - 100km/h (Highways)

- Definition of Through Lanes of Highways
  - Lanes constituting through lanes of highways or car-only roads

- Accelerating Lane Emerging the Through Lanes
  - 60km/h
  - Men use common sense in violating the rule.
Fukui District Court Decision, April 14, 2015

G: Owner of Vehicle Y, A: Driver (Sleeping)
G: Killed. A: Injured

G sued Company E, the owner of Vehicle X.
E: Liable for G’s Damages (Failure to prove no negligence)

If Vehicle X was a self-driving car, and Company E sued the manufacturer for compensation, what would be the result?

Vehicle X lacks generally expected safety. Sensors of Vehicle X would have detected non-existence of following vehicles behind Vehicle Y, and should have avoided collision by steering to the right.
Automobile Liability Security Act (Art. 3)

- A person that Operates an Automobile for itself shall, ...be liable to compensate for the damage arising from Operating the Automobile, except where it is proven that such person or the Driver exercised due care in Operating the Automobile, that the event occurred due to the intention or negligence of the victim or any third party other than the Driver, and that there was no defect in automotive structure or function.
Coexistence of Men and Robots

- Major Restriction on Manner of Operation of Drones
  - From Sunrise to Sunset (Item 1)
  - Direct Visibility (Item 2)
  - Minimum Distance from Objects on the Ground or Water (Item 3) — 30m
  - No Dropping of Objects (Item 6)

- No Traffic Rule for Drone Flight
  - No rule similar to such acts as Road Traffic Act, Maritime Collision Avoidance Act, Act on Port Regulations
Use of Market Principles, and Roles of Civil Sectors

Framework for Relieving Victims

- Business operators should bear responsibility unless victims are intentional or gross-negligent.
  - Automobile Liability Security Act
  - Product Liability Act
- Beneficiaries bear cost through insurance.
  - Insurance premium included in fees
- Insurance premium should reflect efforts for safety.
  - Review and Certification by Non-Governmental Organizations
  - Introduction of Market Principles through Insurance Premium
Closing Comments

- Safety and “Anshin”
  - “Safety” means freedom from unacceptable risk.
  - What is “Anshin”?
  - Can “risk” be properly translated into Japanese?
  - Can “Anshin” be translated into English?

- Conditions for Acceptance of New Technologies by the Society
  - Safety = “Anshin” (Satisfactory Explanation)
  - Importance of Risk Communication
<Thank you for your kind attention!>