

# DUAL USE

– Words, Legal Norms and  
Reality –

Dr Aleksandar Bogojević



INSTITUTE OF PHYSICS BELGRADE

National institute of the  
Republic of Serbia

# Words

Words (concepts) shape our thoughts and perception of reality. There is no thinking without words, yet most people use words without thinking too deeply about what these words mean or imply. This is why it is easy to manipulate people to work against their own interests. All you need are words, and words are slippery, with multiple meanings and uses.

Today we focus on the concept of **Dual use technology**:

- What does this mean?
- Who created this concept and why?
- Is the concept still relevant, how it relates to our best interests and what we should be doing about it?

# Implicit Definitions

EU defines dual use items and technologies through the following categories:

- Nuclear materials, facilities and equipment
- Materials, chemicals, "microorganisms" and "toxins"
- Materials Processing
- Electronics
- Computers
- Telecommunications and "information security"
- Sensors and lasers
- Navigation and avionics
- Marine
- Aerospace and Propulsion

# Dual Use, Actually

As we can clearly see from the above implicit definition, (to a good approximation) **dual-use is a synonym for physics** (part of the technology coming from the science minus the knowledge and methodology).

Worse yet, today dual use has become **just a set of legal norms** which we have agreed to abide by, sometimes without understanding why these norms were enacted, by whom and for what reasons. Note, however, that **these norms are a result of a world order that is rapidly changing**.

Despite the change, we agree to stick by these norms, yet we need do this (we can do this) without technologically stifling Serbia.

# Start of Journey

Before we can talk about Dual use technology (or any other technology), before we can talk about the legal norms set in place to regulate this technology, let us briefly go to the root of these technologies and look at the different ways that science influences society.

# How Science Influences Society

## 1. **Indirectly** (through education)

- New knowledge, worldviews, beliefs

## 2. **Directly** (through technology):

- New tools with which to change the world

Both types of influence lead to **Future Shock**: Profound and ever accelerating changes in society

# Dual Use Technology

Direct effects of science (material goods and services) are immediate and easy to track.

- Technology can be relevant to civilian society or to its security, or (most often) to both (**dual use technology**).

As our knowledge grows it becomes more **interconnected** and its consequences have ever wider and unexpected impact.

- If we wait long enough **all technology is dual-use**, so this is not a well-defined concept, rather **a set of legal norms that societies adapt** (or not) for all sorts of reasons...

# Dual Use Norms

The role of dual use norms is to help build walls that keep “others” at bay, limit their military capacity and ultimately stunt their growth.

- Ultimately, these walls do not work (at making us safer), **at most they buy us some time.**
- We all need to **be far more more creative.** Otherwise, these will be just new versions of the Great Wall of China, Maginot line, or Berlin Wall...
- In the long run walls don't work, prohibition does not work. Lack of challenges and new frontiers breeds irrational fear, pessimism and isolationism. **Empires rot from within their newly built walls**, not by being invaded by the dreaded “others”. Unfortunately, this is the world we live in today.



# Dual Use Education?

We have focused on dual use technology, i.e. the concept of dual use as applied to the direct ways in which science impacts society.

It is quite probable that in the long term the indirect effects of science impact society much more profoundly. Yet, we still don't have a related concept such as **dual-use education** (but we should).

Remember, education is about new knowledge, worldviews and beliefs. All of these are important to civilian society but also for its security and survival, hence they too have a dual use.

# The times they are a-changin' (Part 1)

Used to be that we were in a cold war, and we were deathly afraid, but we went to the Moon.

Presidential science advisors were all physicists, and physics research was well funded.

With the exception of the occasional use of recreational psychedelics, being rational was in. Science and technology inspired us, and music was cool (perhaps because of the drugs).

# The times they are a-changin' (Part 2)

Then the world slowly came out of the cold. We were happy for a short while, and then we started going nowhere pretty fast.

Big Pharma became more important than Big Nuke, and all the sciences were defunded except bio-med.

The world became addicted to X-files, vampires and werewolves. Then came terrorism and might-makes-right bullying, and we were again afraid. Then came social media, and we started spying on ourselves.

# The times they are a-changin' (Part 3)

Now we live longer but wonder what is the point. Our markets have grown while our disposable incomes have vanished. We no longer dream great dreams and we no longer aim high.

We no longer have morals, and we no longer have ideals. The guys with the white hats are no longer distinguishable from those with the dark ones.

Today, education is crap and knowledge is crap. The future is out and crazy is in. Oh, and **the cold war is back.**

# Measuring, Understanding, Managing

We can do better. We need to be aware of the change, not fear it. Working together we need to understand it and manage it. We need to be rational and mature. We need to understand that we are not playing a zero-sum game. Otherwise, we will be living the last days of civilization as we know it.

Up to now we have discussed two ways how science effects society: directly, through technology, and indirectly, through education. Recently a third way has appeared, and it can be of great help: using science as a tool for **measuring and understanding social change and managing future shock**.

- This is important stuff, so we can't leave it to the social scientists – physicists have to do it. The field is called **socio-physics**.

# Recap

- I believe that it's an excellent time to talk of dual-use, but this time in a wider sense.
- It is no longer time to think in either-or terms, it is not time to be afraid of the world and how it is changing.
- It is no longer time to wall ourselves off from each other, to look at the past as if there is no future to aspire to.
- It is no longer time to think of ourselves as good or bad, exceptional or insignificant. Concepts like center and periphery are no longer relevant, they are now just psychological barriers that fool big countries to believe they are exceptional and stop small countries from dreaming big.

Who ya gonna call?  
(if there's something strange in the neighbourhood)

Unfortunately, Ghostbusters will not help us this time...

It's time to think big, be creative and to mitigate crazy. It's time again to talk to physicists. **Who else are you going to call?**

PHYSICISTS:

We don't just build atomic bombs

# Afterthought

- This talk has been a form of social experiment. Thank you for participating.
- I expect that most of you were not listening. If you were, this could have been the start of an interesting and much needed **Science and Diplomacy** dialogue that Institute of Physics Belgrade would be keen to host.
- Others listened but did not understand as it clashed with their programing. Let me quote Puck (from Shakespear's *A Midsummer Nights Dream*):

If we shadows have offended,  
Think but this, and all is mended,  
That you have but slumbered here  
While these visions did appear...