

Detectives

Forensics

Chemicals. Artifacts. Bodies. Events.

Crimes. Missing-somethings. Terrorism.

Archaeology. Paleology. History. Literature. Sports!

**Today we're going to learn about the Processes, some
Instruments and Technologies, and Four (4) Really Hard Cases**

Detect, Analyze, Test, Evaluate “DATE”

Find the Dots (that could be relevant)!

Connect the Dots (that matter)!

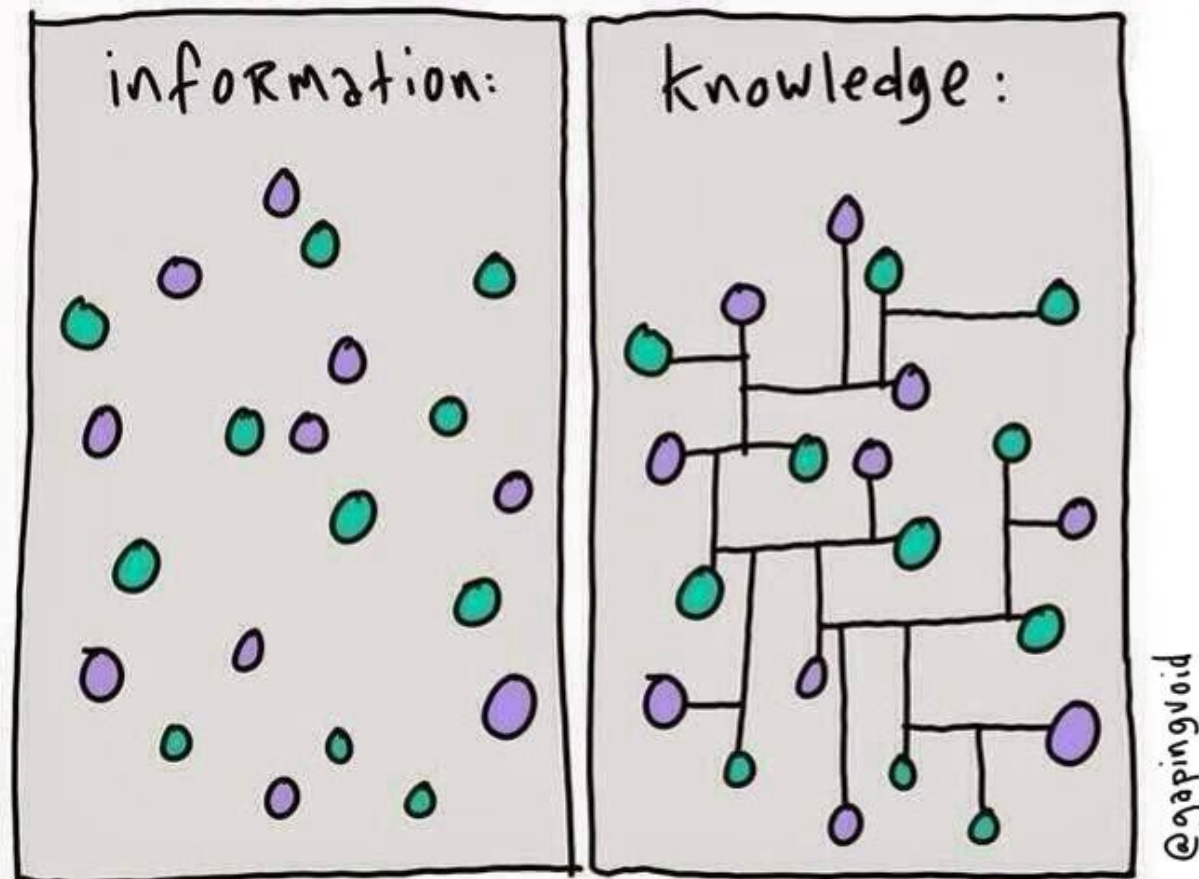


Remember!

“Data” is just “stuff” – it’s raw, like flour out of the sack.

“Information” has some “order” to it, some “function” – it’s like the dough all mixed for cookies, ready for the oven, but it’s still not edible, it’s still not cookies!

“Knowledge” is something you can use and do things with – it’s like the cookies fresh out of the oven! (Look Out for *Cookie Monster!!!*)



Find the Dots
Connect the Dots
Make Hypotheses
Test, Compare, Evaluate
Conclude
Act

But keep your mind open to the alternatives!

3 “A”s --- Awareness, Attention, Accuracy

3 “C’s” --- Careful, Concrete, Critical

3 E’s” --- Early, Energetic, Empathic

Put A+C+E together and you get what? An ACE

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Meet “Robin”. She’s a detective – of sorts. We’ll get to know a little about her in the course of today, and you might hear more about her in the future.

She and her friends are geeky-nerd geniuses, you know the type. They are skilled with gaming, but they’re also super-smart in coding and programming. They fight cybercriminals and some really evil people, mostly using their detective skills while sitting in their living rooms and bedrooms and maybe on a plane, train or boat.

They call themselves “the Hood” and I am glad to know them and be on their good side.

1. Grozny and the Co-60

Radiation and alpha and beta particles

War, and an abandoned/forgotten bombed-out factory

Where it was intended to go – the metro stations

including in USA

Smart People, Sensors, Robots

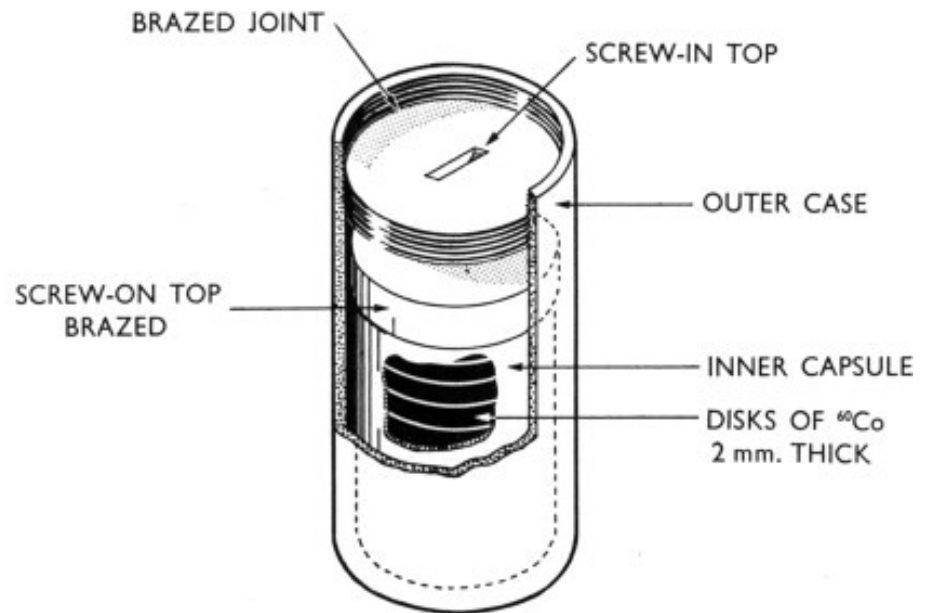
The current war in Ukraine and opposition within Russia



Grozny, Chechnya, Russia



**Industrial radioactive
isotope containers**



Cobalt-60 --- used in making polymers (plastics)

Cobalt catalysts are used to synthesise chemicals in the creation of polyester and related chemicals



Sensors and Robots

Slinky Robots!





More Robots (ULV)

A Very Friendly self-propelled tricycle!





**The Terrorists' Targets –
Where they were going to
put the radioactive
materials**



2. MODIS and MODE

Bridges – like over the New River – and in Minneapolis

Cracks from metal fatigue – many are interior, invisible

Minneapolis – I-35, August 1, 2007 --- 13 died

Our instruments and some images



I-40 BRIDGE SHUT DOWN AFTER CRACK FOUND

LOCAL
abc 24 10:01
62°

HEADLINES: NSON'S COVID VACCINE

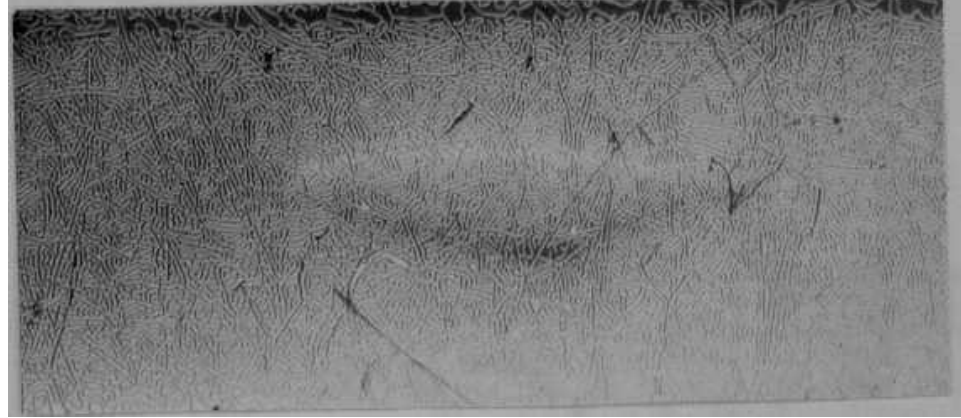
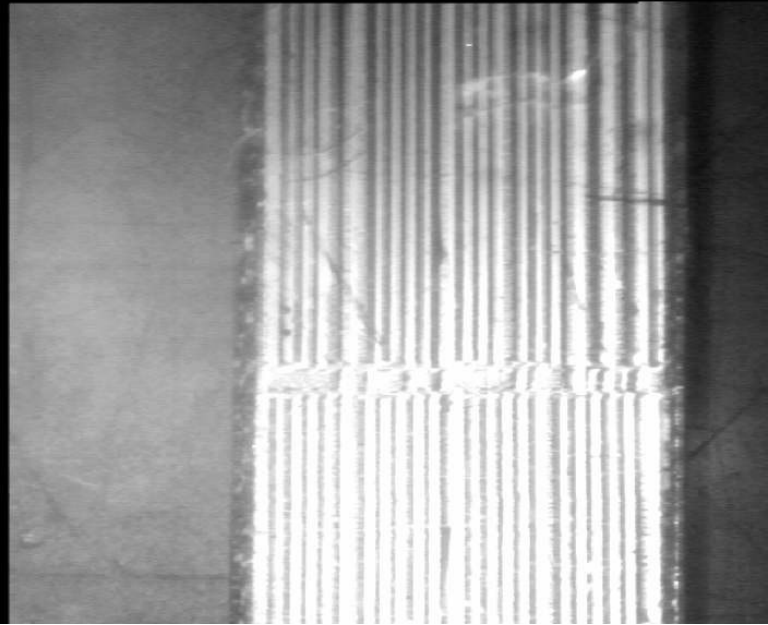


7 foot long crack

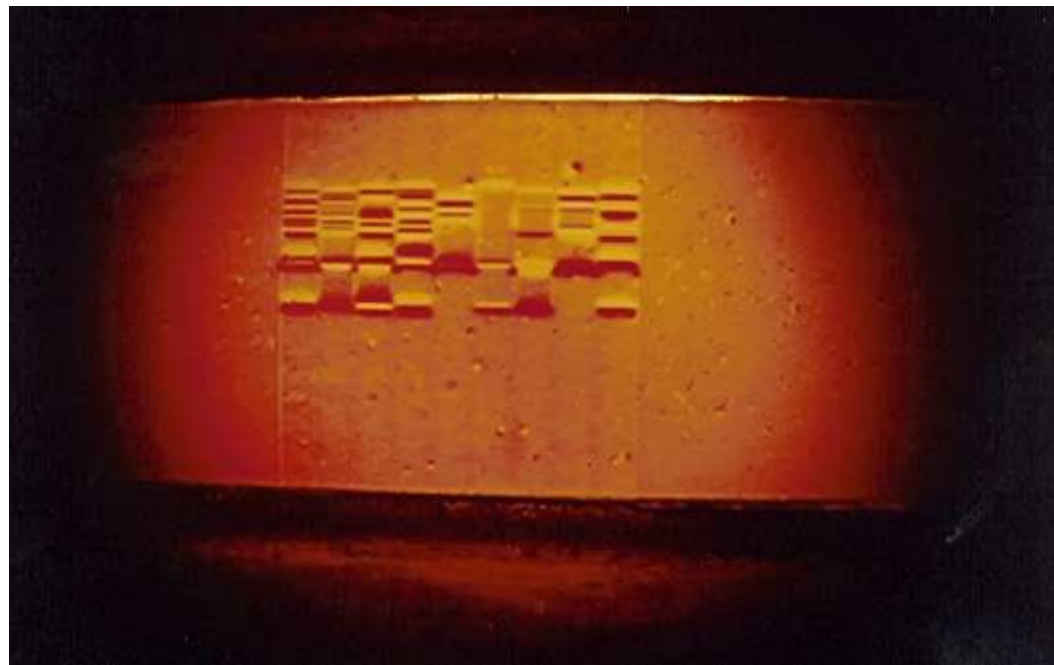
Cracks in Bridges – these one can see, but they begin on the inside of the steel

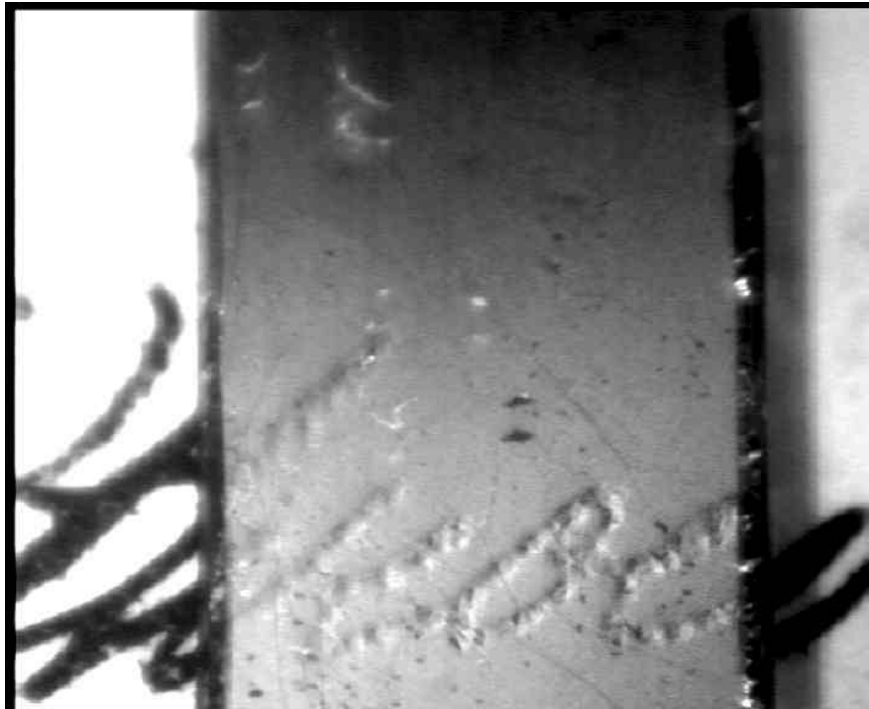
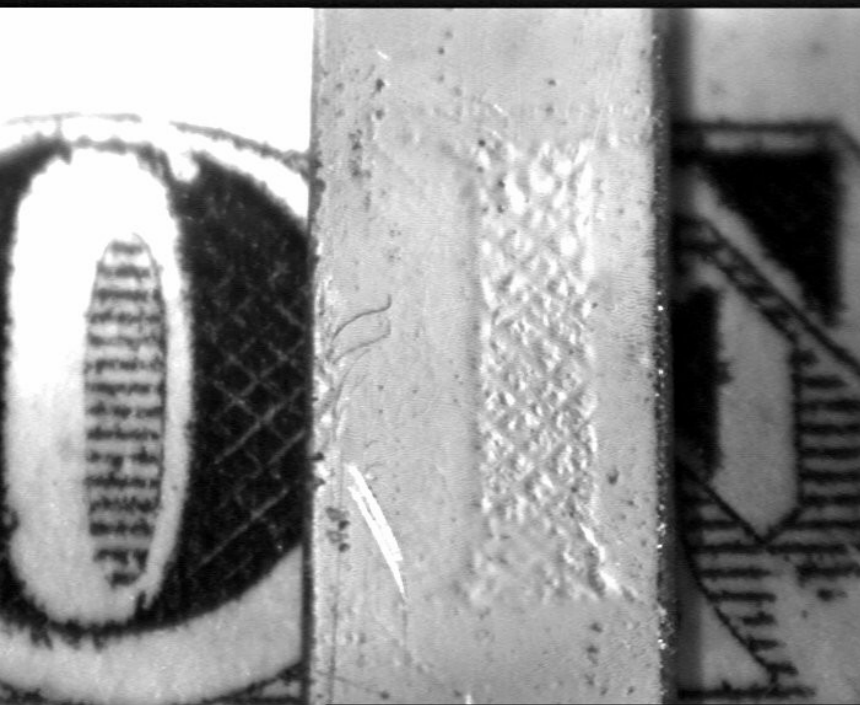


**Our instrument – the
MODE sensor**

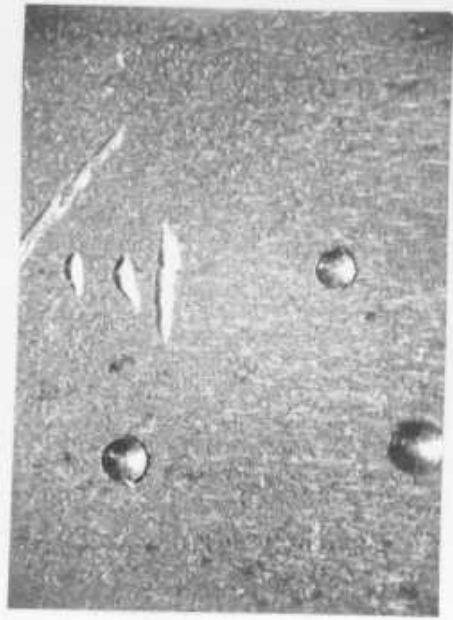
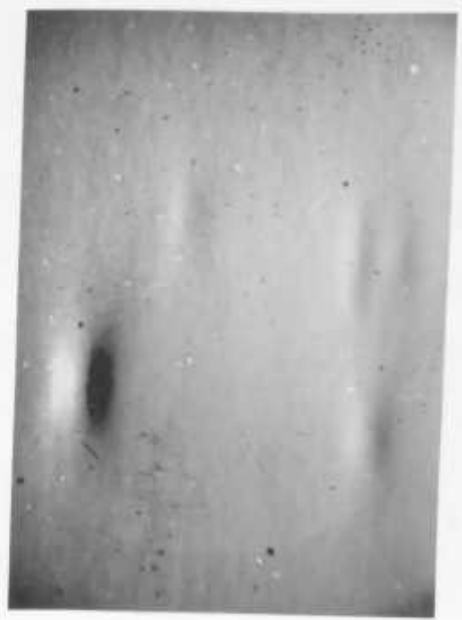
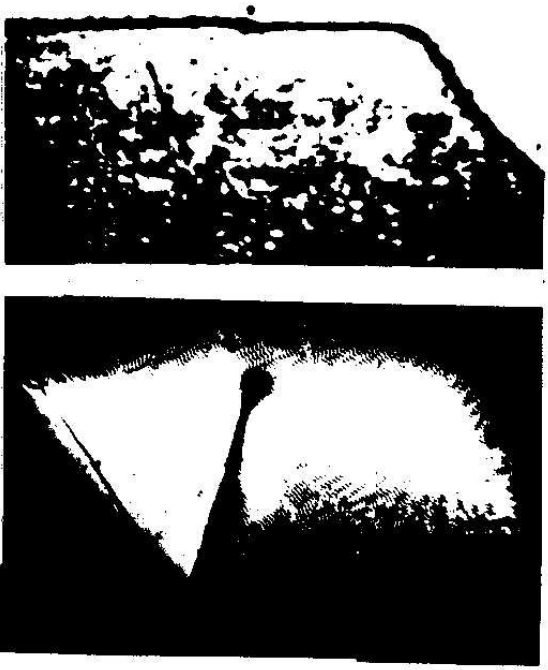


A barcode from a credit card, a security hologram on a passport, and a defect in a piece of steel





**Magnetic markers in banknotes
for anti-counterfeiting**



Pieces of steel – showing what is on the inside and the other side





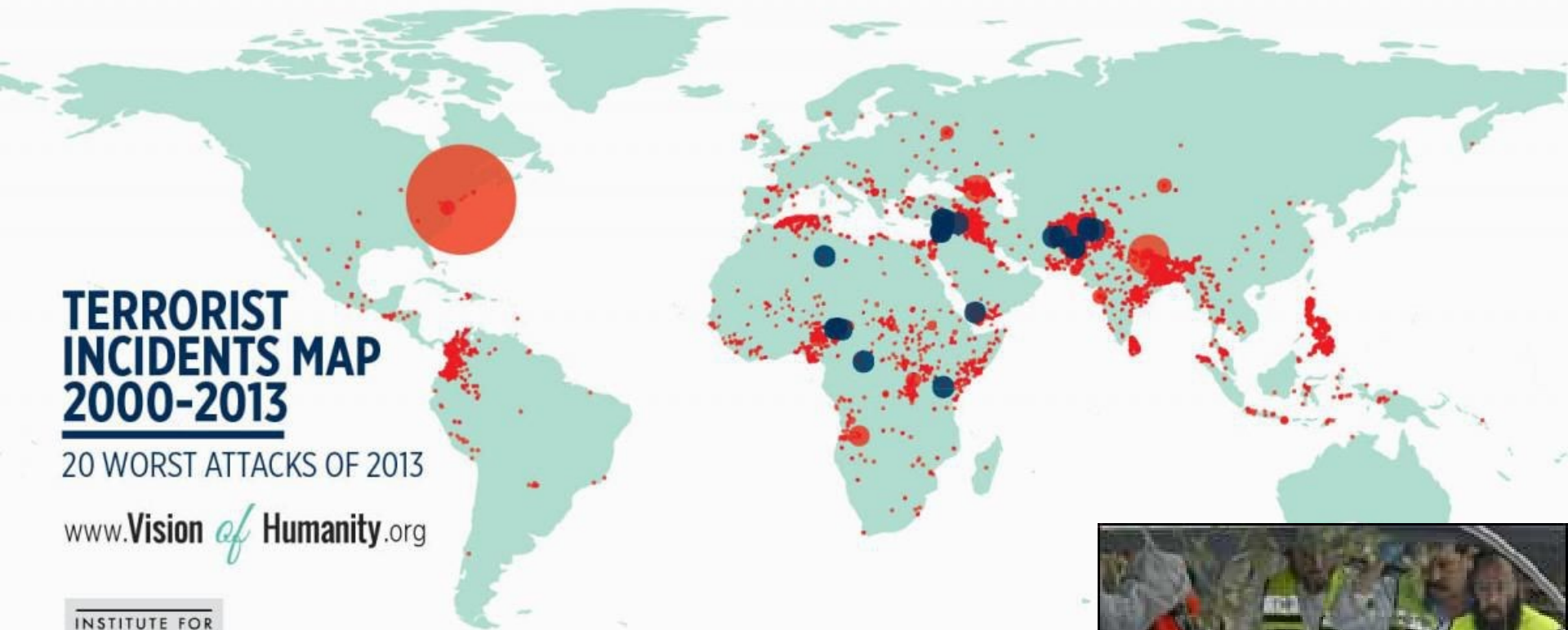
Minneapolis, MN
I-35 Bridge Collapse



3. CEBIT and Detection of Chemicals including Explosives
Terrorism Attacks in Israel and Elsewhere
C4 (PETN) and other explosive chemical
“Liquid Explosives” – why you can’t take drinks on airplanes
What the instrument looks like
How it works
Results!
+
Some team-mates and some delicious food!







TERRORIST INCIDENTS MAP 2000-2013

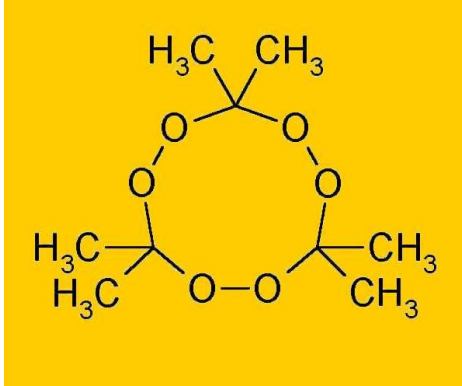
20 WORST ATTACKS OF 2013

www.Vision of Humanity.org

INSTITUTE FOR
ECONOMICS
& PEACE

Terrorist Incidents over 13 years

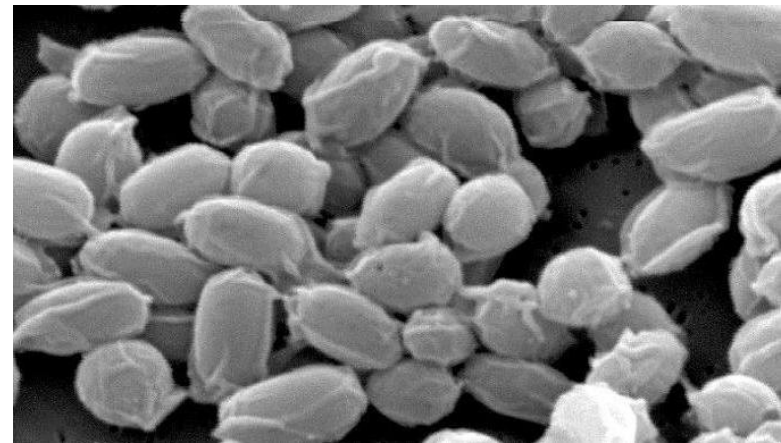


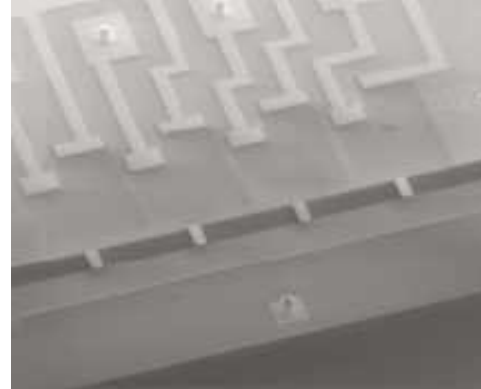
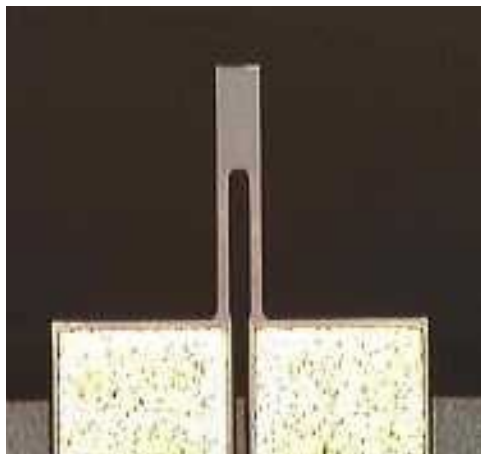
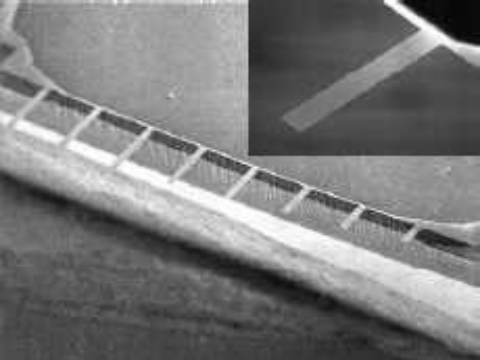


Explosives and Bioweapons

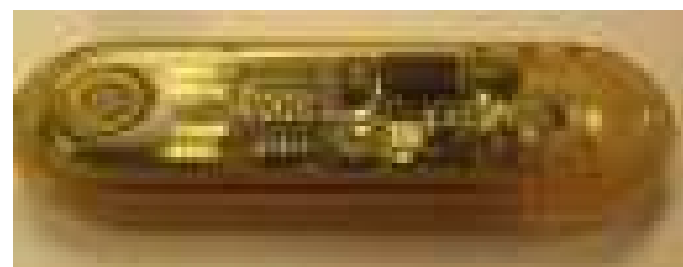
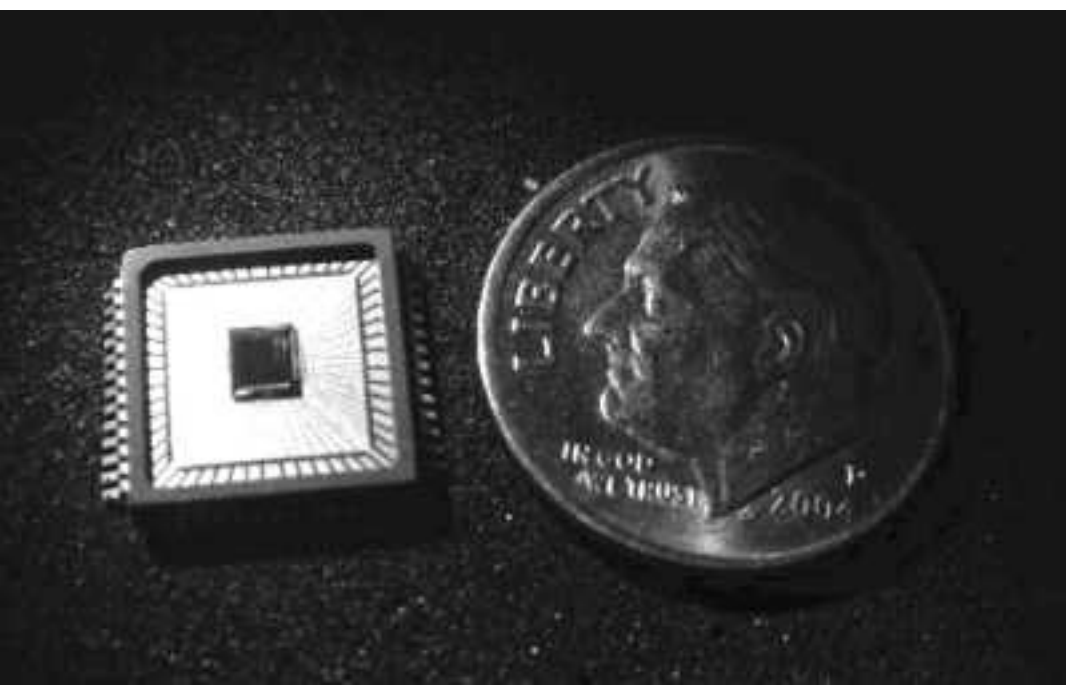


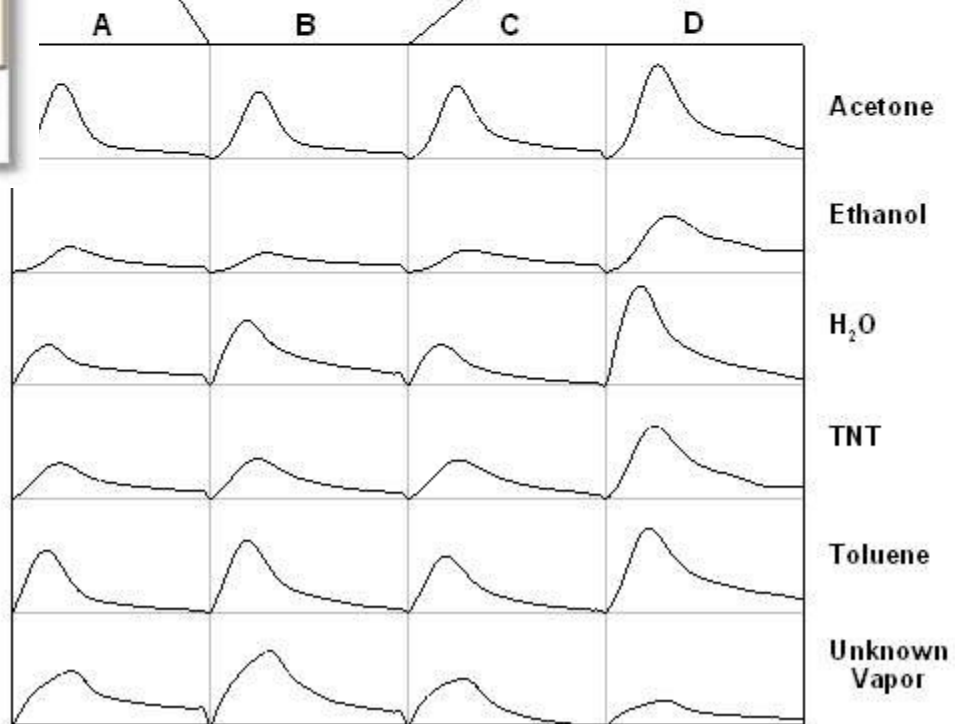
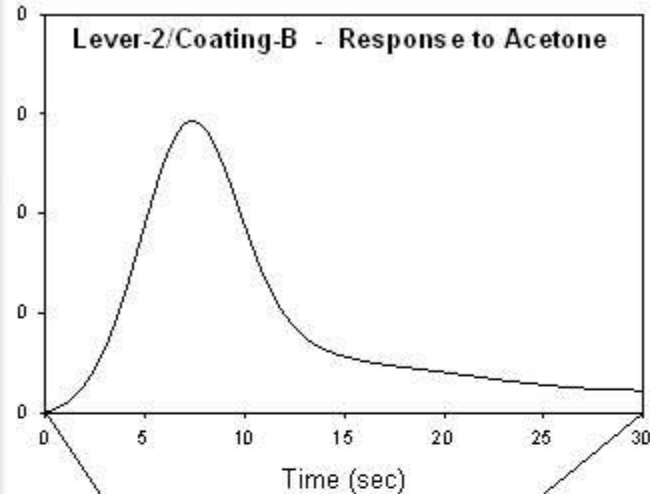
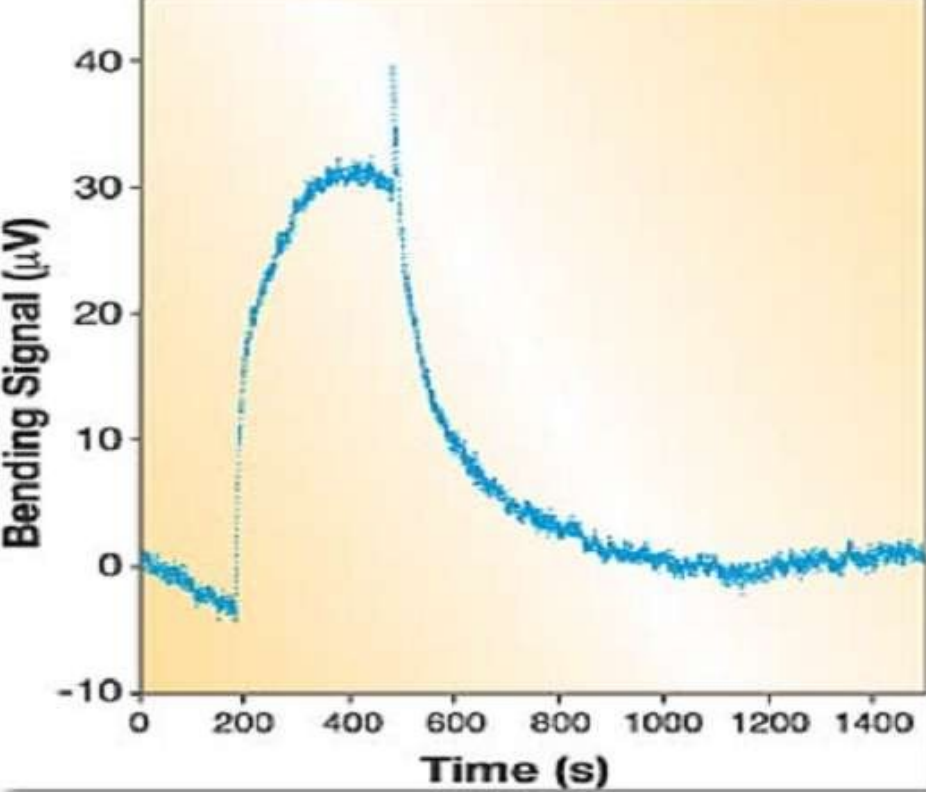
(NNO)





Our instrument – CEBIT
A small “MEMS” chip

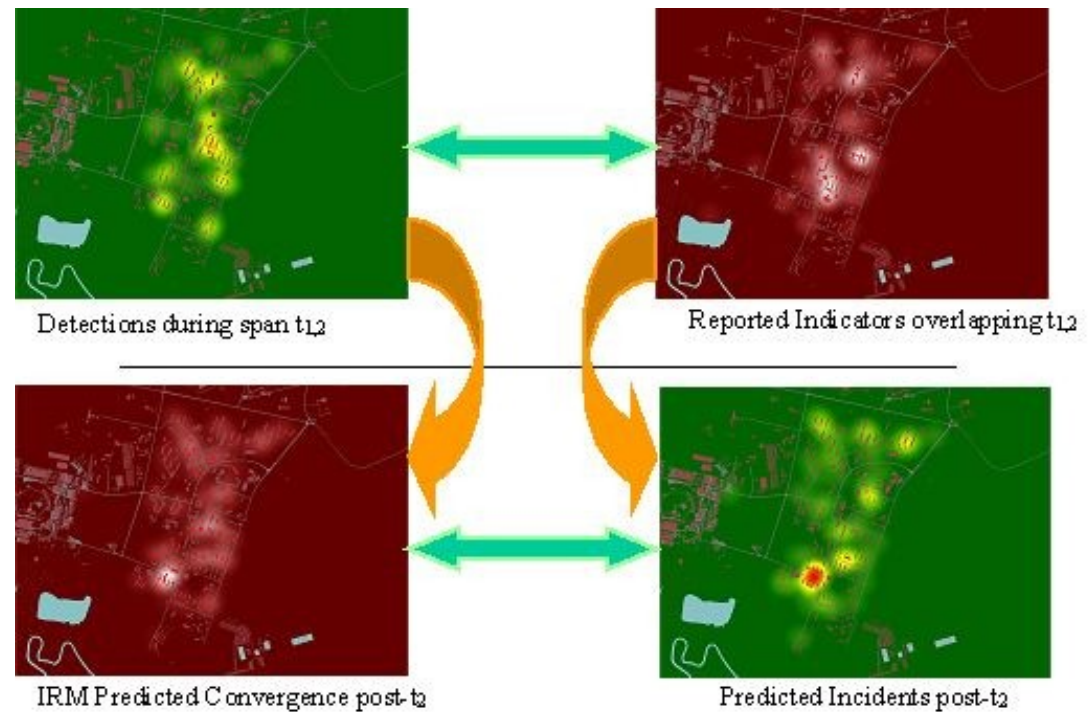




**RESULTS – Signals, Comparison,
Detection, Tracking, Finding,
Stopping the Threats**



How we turn Forensic Information Into Maps and Find Things



It all gets back to the Essence of Detective Work and Forensic Science





The World can be hard, but
let's always try to keep
Good, Friendly, Happy Times
in mind!



4. Charlottesville, Virginia, 2010+
University of Virginia – “Just another Rock Concert”
Morgan Harrington
“Thinking Outside the Box”
“Connecting the Dots”
“Thinking Like the Psychopath”
Sad Outcome
Even Sadder, Yet Another
Hannah Graham
R.I.P.
But Let Us Never Forget
And Let Us Work Harder, Better, to Prevent More of This



Charlottesville, Virginia





Morgan Harrington (1989-2009)



It was the big Metallica concert at U-VA. She was with friends and went to the restroom. Her friends called and she told them that she was locked out of the arena because of its "no re-entry" policy, Last seen hitchhiking on a nearby bridge, looking for a ride home.

Hannah Graham's friends last heard from her via text message after she told them she was on her way to a party, but was lost. She had attended another party before disappearing.

According to surveillance footage and witness testimony, among the last places Graham was seen was at the bar of the Tempo Restaurant, drinking (underage!), with an older man.



Hannah Graham (1996-2014)

Over a decade earlier, the person ultimately convicted of both murders, one Jesse Matthew, had twice been accused of sexual assault at two separate Virginia colleges – Liberty University in Lynchburg and Christopher Newport University in Newport News.

He left each school immediately after each allegation. The reported assaults occurred within an eleven-month period of each other. Police investigated each report, but in neither incident was a criminal case brought against him.

There were other allegations and reports about him from Northern Virginia, also about sexual assault.

The murderer's *modus operandi* ? Taxi driver.

“Need a lift? Hop in the car...”



INTERPOL

Behavioral Analysis

Forensics

Psychology

LOGIC (REASON)

Massive Data

Modeling

INTUITION

**and some help from
some very powerful
computers and their
intelligent agents...**



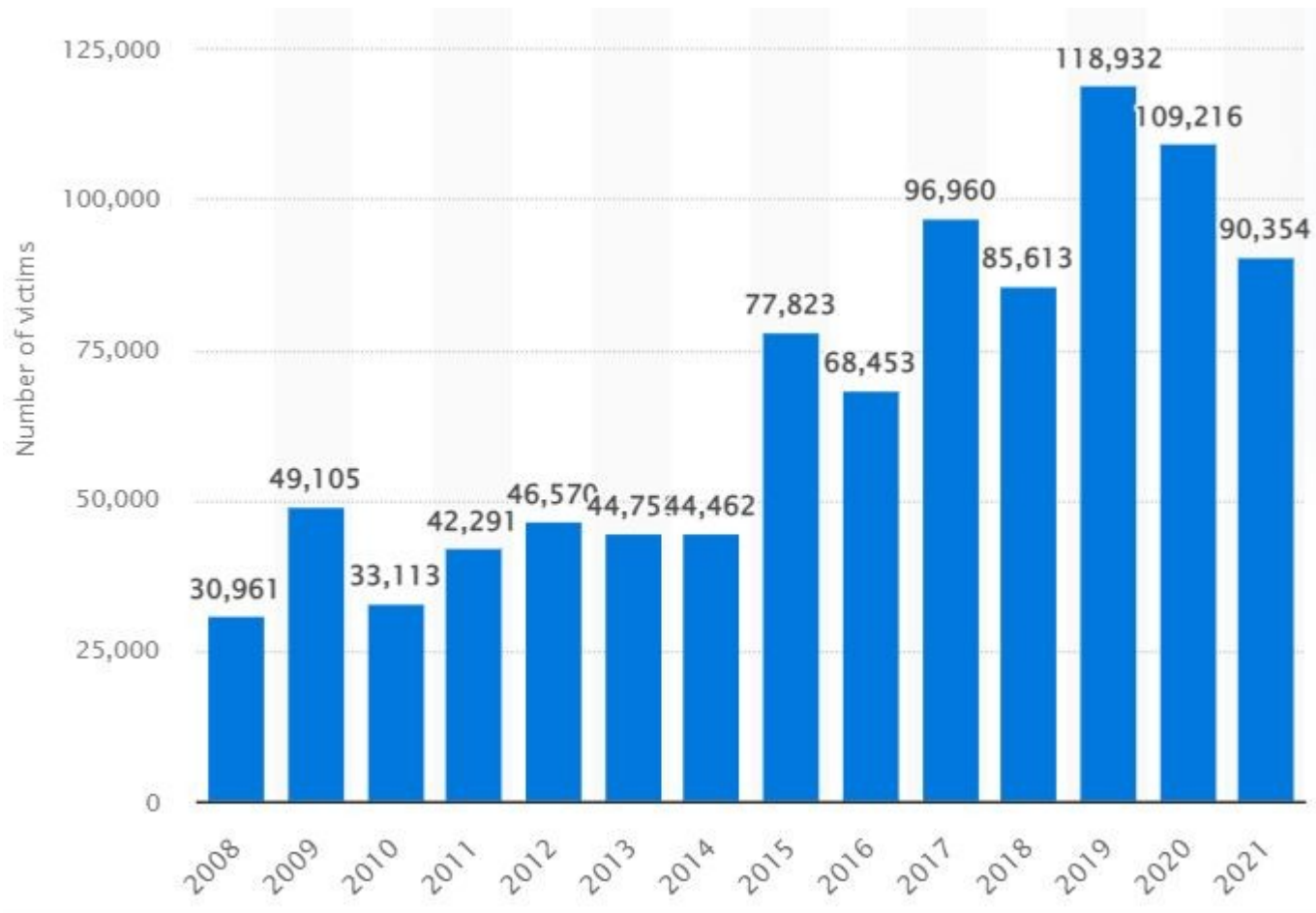
**The HATES and
How this Destroys Lives and Ruins Society**

HATES = Hatred, Abuse, Trafficking, Enslavement, Subjugation

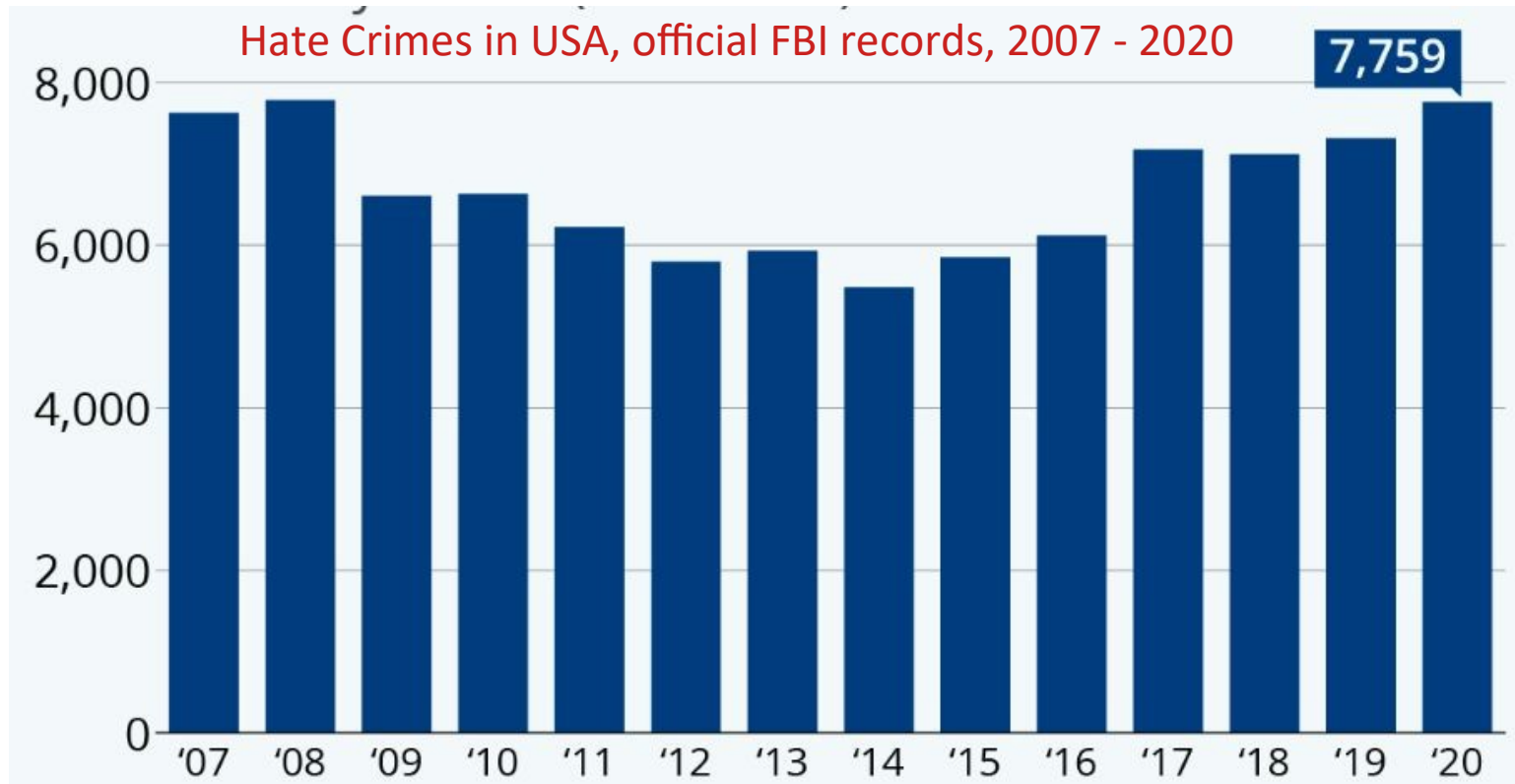
Increases in stress, anger, violence, crimes ----- some statistics → →

It merit to reflect upon some Numbers. Numbers help us to see things in perspective. By comparisons. By reflections.

Global Human Trafficking stats, 2008 - 2021

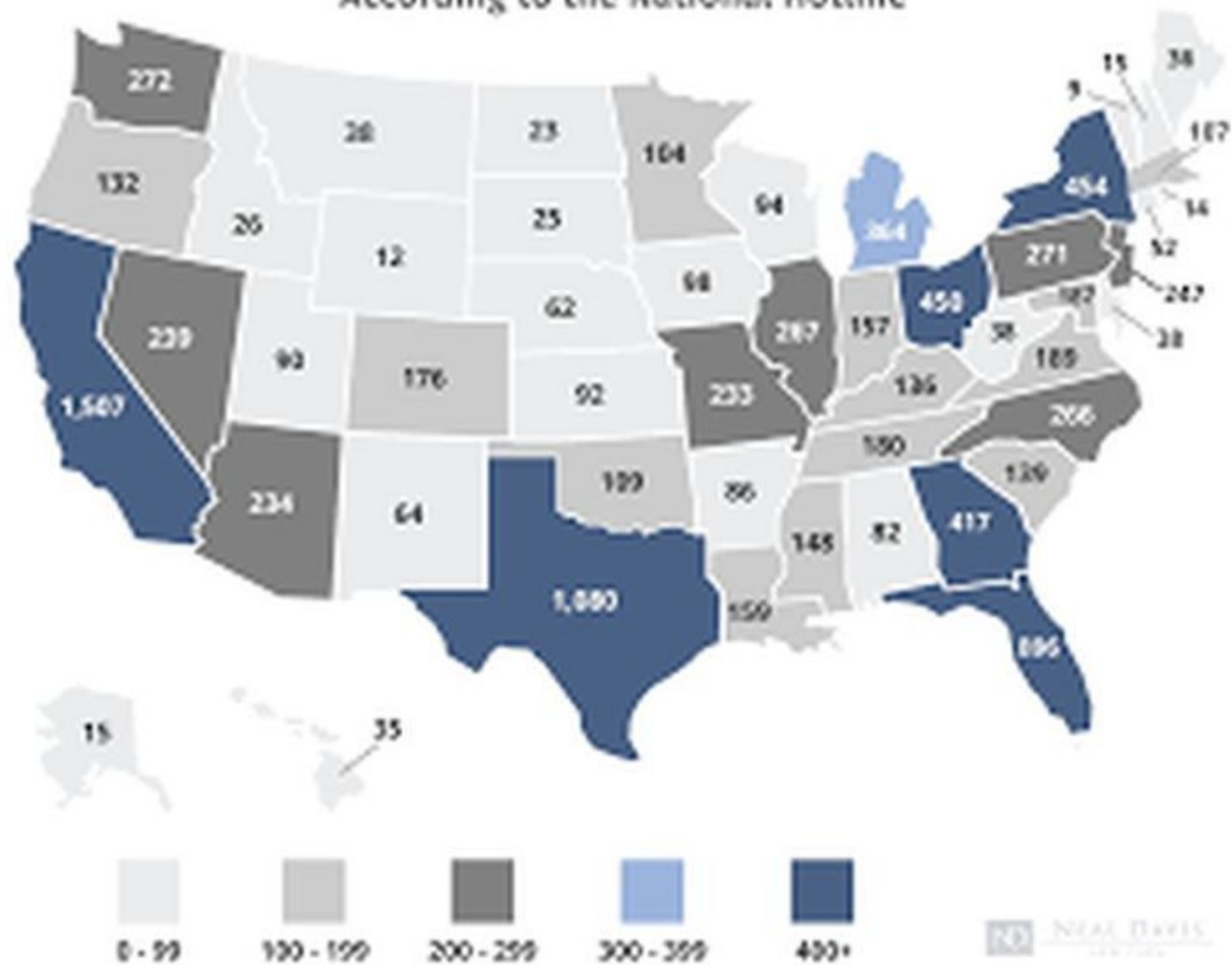


Now, I really want you to think about all those Other Persons who were not “statistics” counted and entered into a spreadsheet or database, but who were in that Gray Zone, and who were not trafficked, not killed, not beaten, not raped, not abused, in the usual, visceral, breaking-the-law ways, but whose lives – whose LIVES – have been tortured, tormented, and put through pain and stress which comes back to haunt, to twist, to lead to an entrapped, embittered, enslaved, subjugated life even if there is no other “person” doing it, only what’s been damaged and hurt so badly inside the mind, inside the Soul...

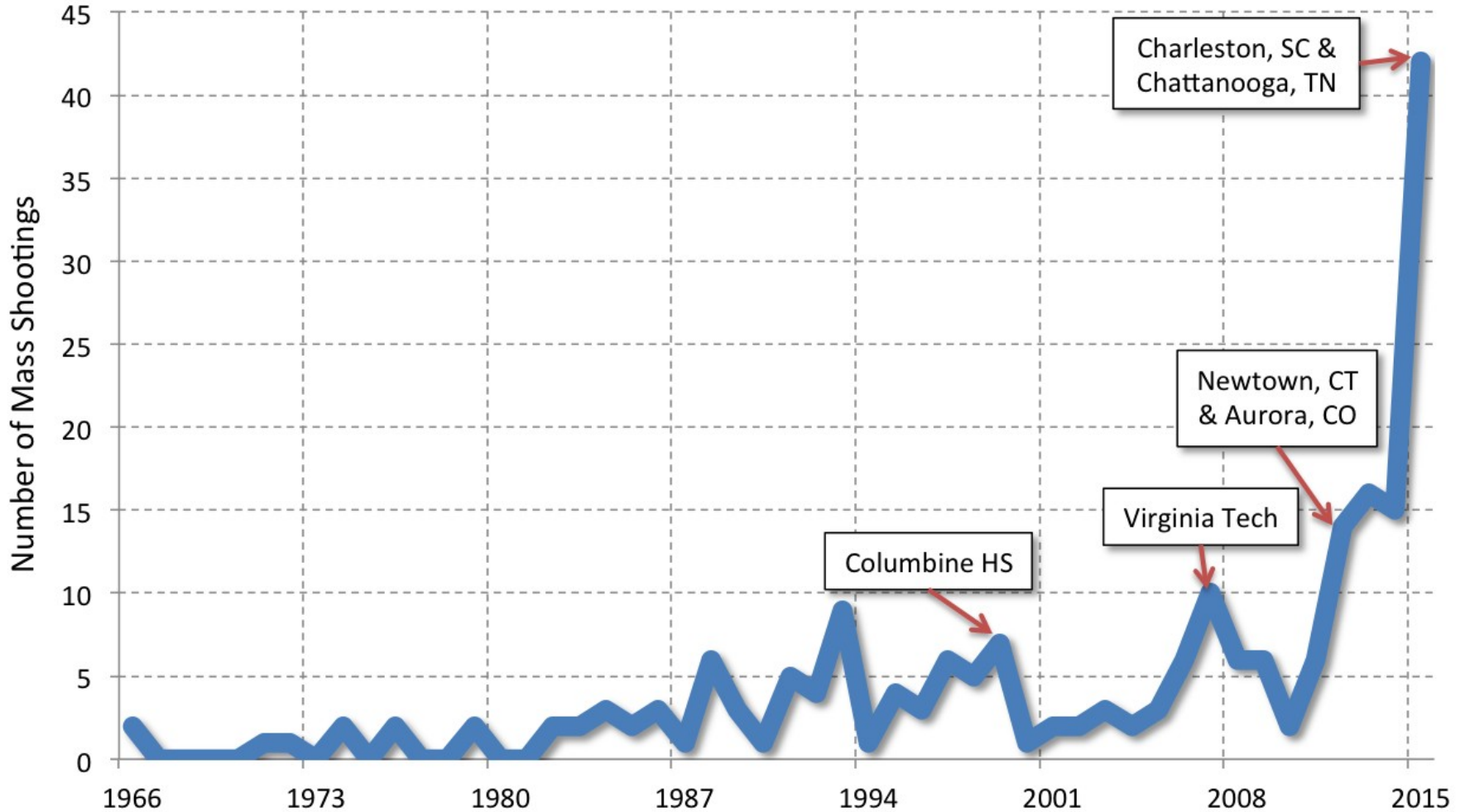


Human Trafficking Cases by State (2019)

According to the National Hotline



Number of Mass Shootings in the United States by Year, 1966 - June, 2015



Data Source: Stanford Geospatial Center, Mass Shootings in America Database (accessed in June of 2015)

**As bad as things have been and are becoming,
we Do have improving STEM,
but even better, more importantly,
we have better awareness and education
and this is about our youth, learning, doing, growing**

-

YOU ARE OUR FUTURE

And

OUR EVERYTHING

Don't forget about Robin...

Finding the “needle in the haystack” is what detective investigation work is like, whether you're doing it with tons of data in the internet-space or in a physical lab with spectrosopes, microscopes, and a lot of other instruments that care about the barely-visible and the invisible, down to nanoscale textures and ultimately molecules and atoms.

But finding that needle in the haystack is also like shooting at a target when you don't want to be seen and when you might have trouble seeing where you are going to send your arrow – and you might only have one shot.



And since I've mentioned Robin,
Let me introduce you to her "sister" of sorts.

DEBORA



She's a SIENT

A "synthetic intelligence entity". A brainy-bot. An "AI", just like in the movies.

And no, she does not talk like "Alexa" and does not have a humanoid face or body.

But she has a Brain that is the closest thing you can imagine to being a Mind that can

THINK LIKE A VICTIM, AND THINK LIKE A CRIMINAL, BOTH AT THE SAME TIME

And Not get confused or have a breakdown and lose her mind...

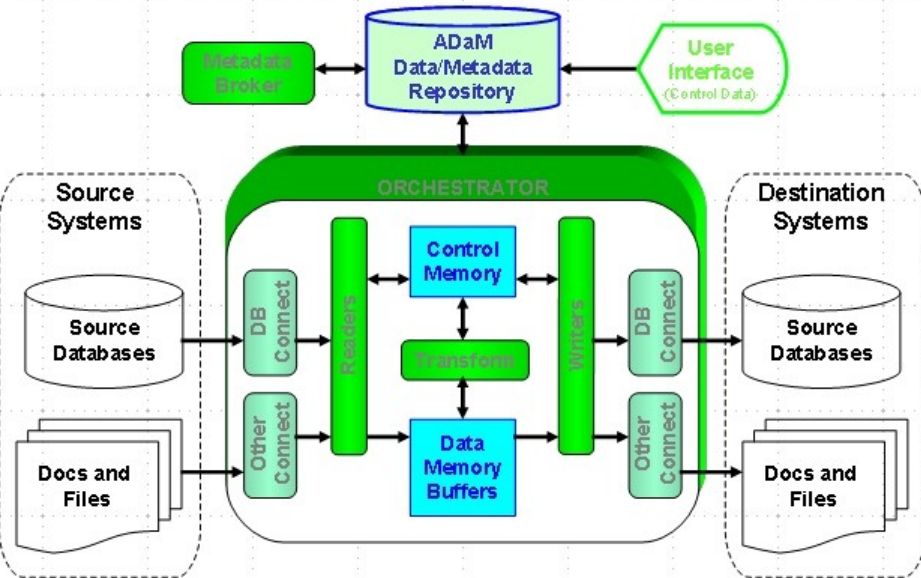
ADAM and EVE



eve

evolutionary model of variant effect

Marks Lab - Harvard Medical School
OATML - Oxford Applied and Theoretical
Machine Learning Group

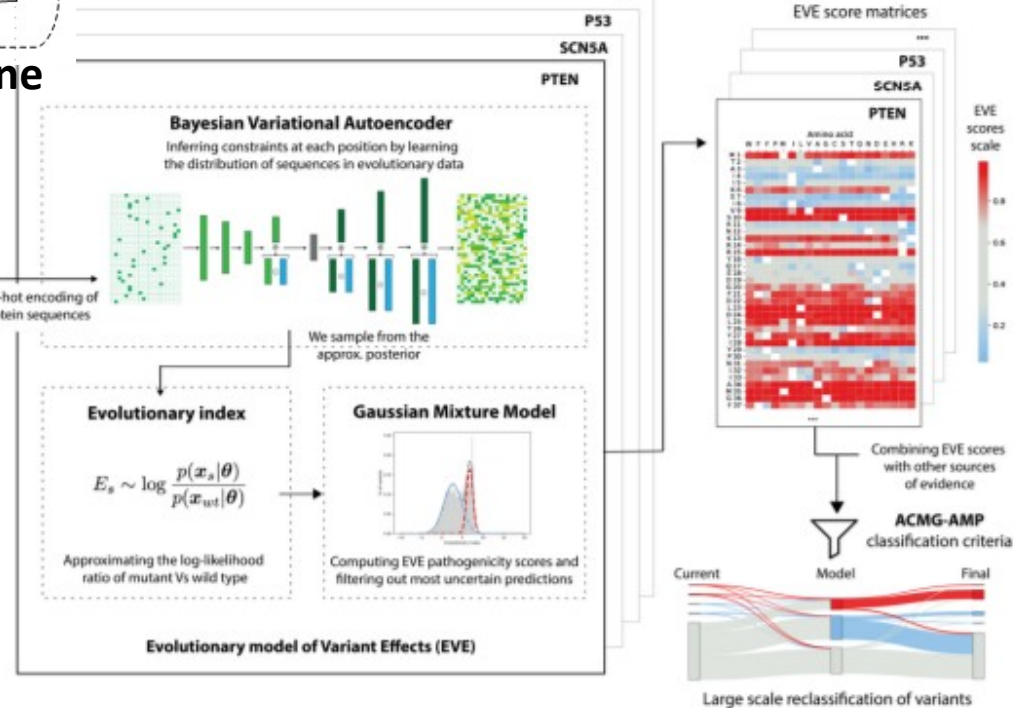


AdaM – Active Data Mover – a VLDB Engine

GOAL with PHEBR:

Adapt EVE logic (Bayesian + NN pattern detection) to task of seeking and identifying patterns within massive data streams of clinical-origin patient medical histories for:

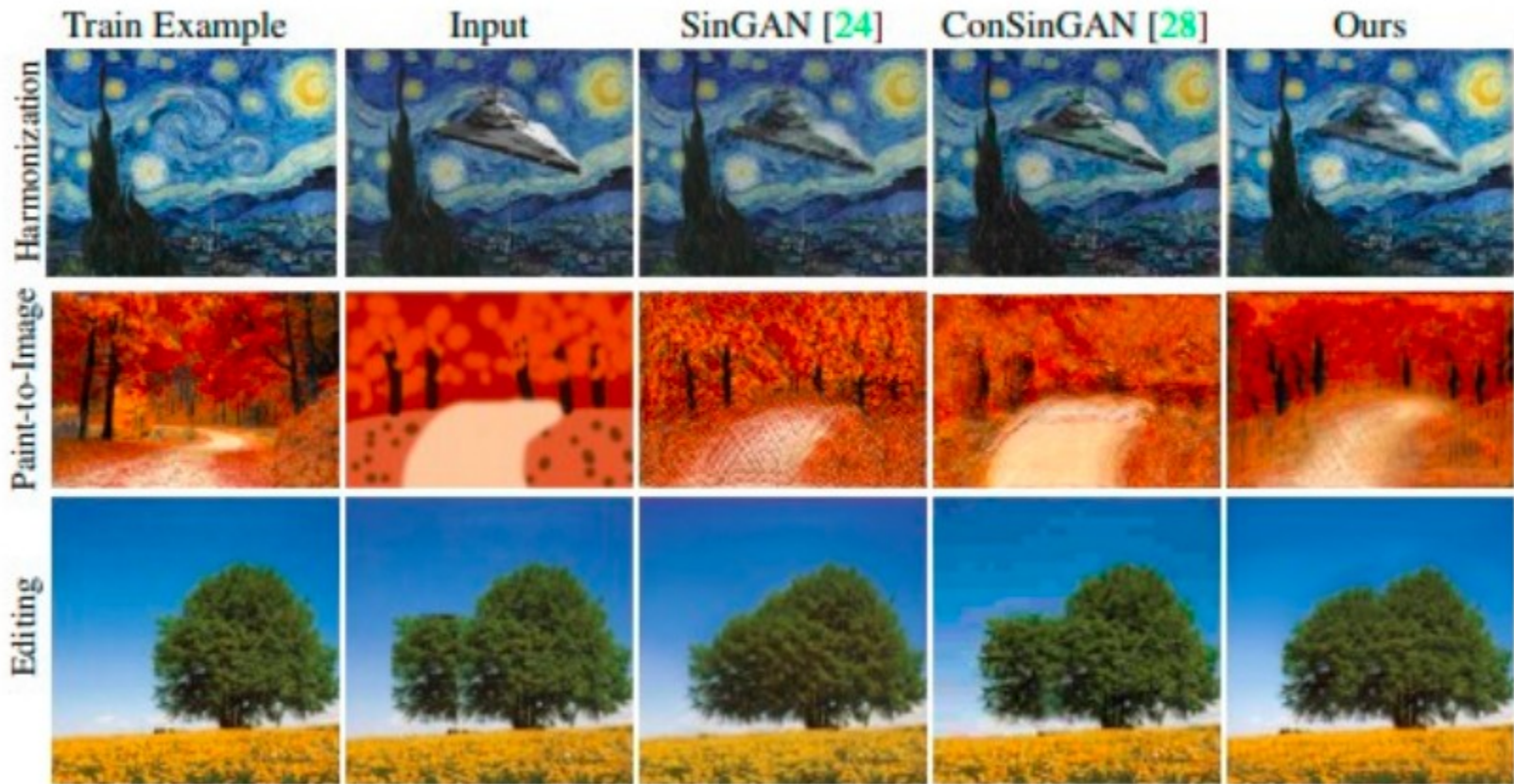
- ◆ Indicators of risk conditions and causal relations on the basis of acquired data sets in PHEBR
- ◆ Missing-gaps - types of data to pursue and collect through future clinical measurements (e.g., behavioral, lifestyle)
- ◆ What-ifs and Hypotheticals pertinent to NpC for investigation and evaluation and linkage with genetic modeling systems like EVE (HMS/OATML)





Now, you're wonderin' --- what does This have to do with the CyberSpecialOps we're doing to fight that HYDRA and help Save and Preserve Lives?

It will take some explainin', to be sure, if you want it – and we're ready to sit down and do some 'splainin'



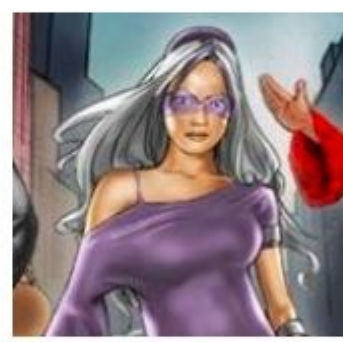
Probably this one didn't help much, either, so it's the last, but you should just trust me here – the science and the STEM really works, it goes down like smooth warm milk or single-malt, whichever you prefer...

What we need now, to make good and powerful use of all this Tech-Ware, is for Robin and Her Friends and the rest of us to be able to sit together and work, talk, share, think, work, argue, draw, shout, explain, experiment more, and

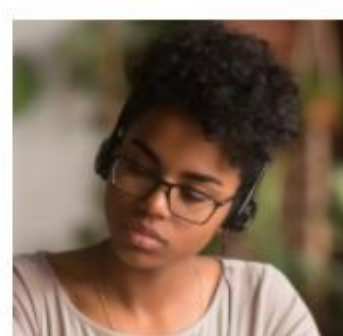
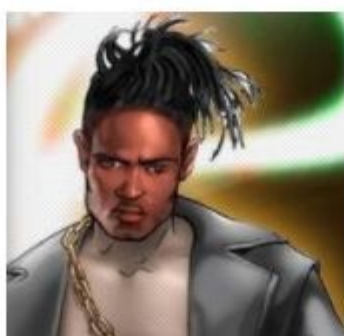
GET THINGS DONE



They're in it, 100%, for the Long Run, for the Battle, no turnin' back now...



But that Hydra is a Real Monster, no make-believe about it...



**I do not know what I seem to the world, but to myself
I appear to have been like a boy playing upon the seashore
and diverting myself by now and then finding
a smoother pebble or prettier shell than ordinary,
while the great ocean of truth lay before me all
undiscovered.**

--- Isaac Newton, 1727

Thank you for listening.

Prof. Martin Dudziak --- “Dr. D”

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**Want to know more about the author and some of his experience, skills, etc., for
deciding what you’d like to do?**

Try here:

www.tdyn.org/sitemap-table.php

Look at this one in particular ---

<http://tdyn.org/robin/>

and this will take you here:

<http://tdyn.org/robin/robin-and-the-hood.php>