THE PHILOSOPHY AND FUTURE OF AUTOMATION

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As professionals in the test automation industry, we have a very interesting and important pedigree. Let’s think deeply today about automation in general.

- A brief history of automation
- A philosophical perspective on automation
- The future of automation (testing & beyond)
αὐτόματος
αὐτό ματος

“self”  “eager, willing”

“self-willed, self-acting, self-driven”
Even before the industrial revolution, clever humans have been trying to get things to run on their own.

- Mechanical water clock
- Feedback-controlled thermostat
- Digesting duck
- Automated loom
More than anything else, the patterns of the industrial revolution have determined the shape of the modern world.

- Harnessing of steam and electricity
- Machine workers, human operators
- Assembly-line methodology
- Massive impact on labor, transportation, production, etc…
Early machines were only partly automated and did only one thing. Then came the insight of using electricity to represent numbers.

- Binary numbers and Boolean logic
- Switches and relays (telegraphs!)
- Logic gates, circuits, and transistors
- Doing math with all of the above
- Remembering data with all of the above
What if you could use encoded numbers to tell circuits what to do with other encoded numbers?

• Code is just a special case of data that triggers supported operations on other data
• The Turing machine and Turing completeness
• Basic binary operations and programmability open the door to full information automation
Formal analysis gives way to the test scripts we know and love.

• Testing didn’t initially mean either “automated testing” or “manual black-box testing”
• The art of formally understanding code, different testing patterns (70s)
• Automated testing goes “mainstream” (80s/90s)
• CI, Agile, TDD, Selenium: all early 00s!
PHILOSOPHY
THE PROMISE OF TECHNOLOGY

What have we bought into and why?

Historically, the point of technology is disburdenment: freedom from drudgery and danger.

- Automation is precisely one mechanism of this promise
- Freedom from repetitive, dull, or dangerous tasks
- Individual perspective: freedom for more creative pursuits
- Business perspective: possibility of faster, more reliable production
- EXAMPLE Manual test step execution vs writing an automated test
Less time testing.
More time innovating.

Find out what testing with Sauce can do for you.

FREE TRIAL
The process of making something automatable can change it in unexpected ways.

- Reality, even software reality, doesn’t always come in automatable form.
- In order to achieve the benefits of automation, we often have to set up rules that change what we want to automate.
- **EXAMPLE** Crop combines => monoculture in farming
- **EXAMPLE** Self-driving cars => global standardization of road shapes and signs
- **EXAMPLE** Unit tests => rewriting app code to be easier to mock
BIG QUESTION #1

When we change something to make it amenable to automation, what are the long-term consequences?
AUTOMATION LEAVES A GAP
And Nature abhors a vacuum

*Automating away a task is supposed to bring freedom. Freedom for what?*

- As a business, how do you quantify the effect? “We ship widgets X% faster”
- As a person, what do you do with the time you’re not spending on basic tasks?
- The ratchet effect of automation. What is the end game of iterative productivity gains?
BIG QUESTION #2

When we automate something out of our lives or businesses, what are we putting in its place? Is it better than before?
AUTOMATION AND HUMAN ESSENCE

Humans vs robots

What characterizes automated processes is very different from what characterizes human processes.

• Automation: fast, reliable, repeatable, cheap, dumb(ish), predetermined
• Humans: inconsistent, expensive, smart(ish), experiential
• The Internet brought automation to daily human life. IoT is taking it to the next level.
• EXAMPLE Facebook automating relationships
• EXAMPLE Automated marketing campaigns
FOOL’S TALE:
A TRUE STORY OF
SALES & MARKETING
AUTOMATION FAILURE
BIG QUESTION #3

Does automation do justice to its domain? Can human life be successfully shaped into automatable categories?
A reflection on the role of humans in an automated system.

- The more sophisticated and efficient the automation, the more crucial the shrinking role of the human operator becomes.
- **EXAMPLE** QF 72
- **EXAMPLE** Stanislav Petrov
BIG QUESTION #4

How do we conceive of ethics in an automated world? How do we prepare for the extremes of automation failure?
THE FUTURE
AN AUTOMATED WORLD

Perplexities and dilemmas new to modern humanity

We are and will increasingly be faced with choices about the extent of automation in our lives and businesses.

• Automation itself is changing
• Work is being radically redefined
• With the power of technology comes the responsibility to decide what it means to be human
Automated testing itself will change radically in the coming years.

- Long-term: auto-generated tests, AI-generated tests
- Short-term
  - Expansion of automation capabilities to every app platform, including VR
  - Figuring out IoT integration testing
  - Standardization of testing practices and protocols (Appium / StarDriver)
- A big question: the role of people in automated testing
Whatever the role of humans is, it will be more important than today

• The role will be more crucial
• The role will be more creative
• The role will be more rewarding
• ...there will be fewer roles like it
• ...it's time to level up!
RECAP
THE DEPTH OF AUTOMATION

The heart of technology. Not darkness. Definitely not that.

Automation is the very engine of technology. Our day-to-day is in one small corner of this massive universe. Let’s not forget it.

• The pattern of automation, and how it got started
• Philosophical questions for our businesses and personal lives
• The need to step carefully into the future. Automation, not automania!
THANKS!