Selected Constructive and Destructive Approaches to Post-Quantum Cryptography

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gustavo@cryptme.in

November 12, 2019

Defense Against Committee

Cryptography 101

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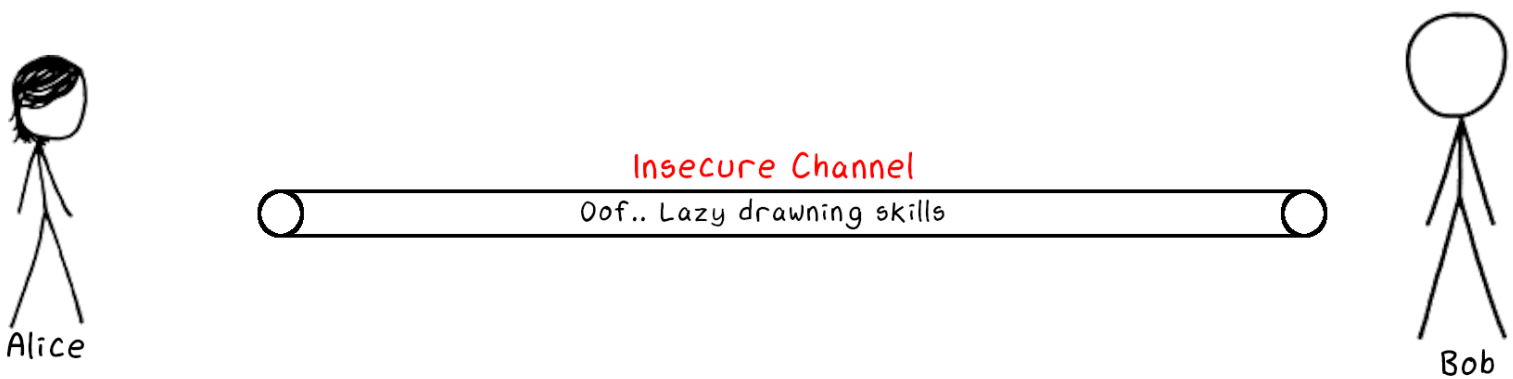
Communication Problem

Communication Problem



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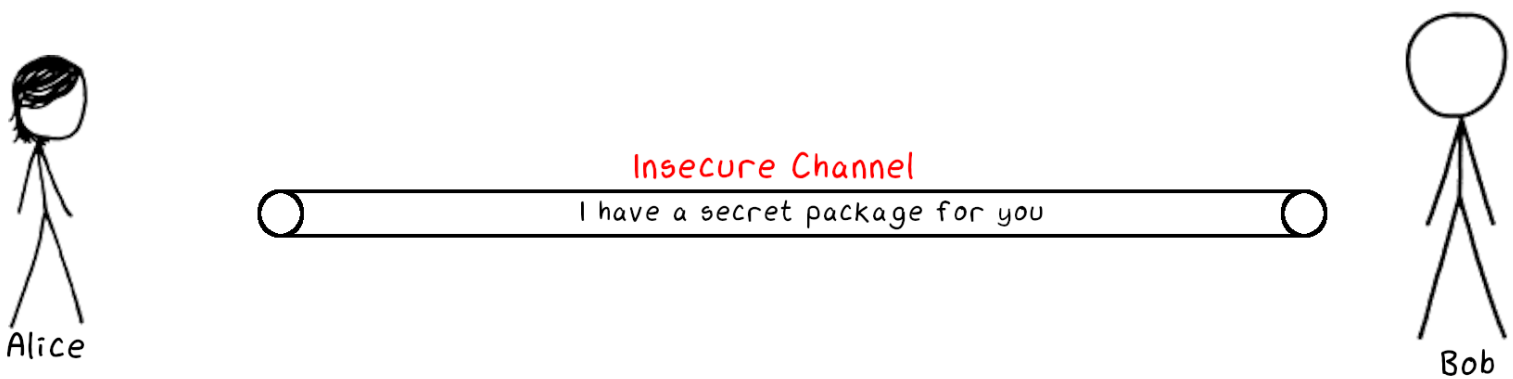

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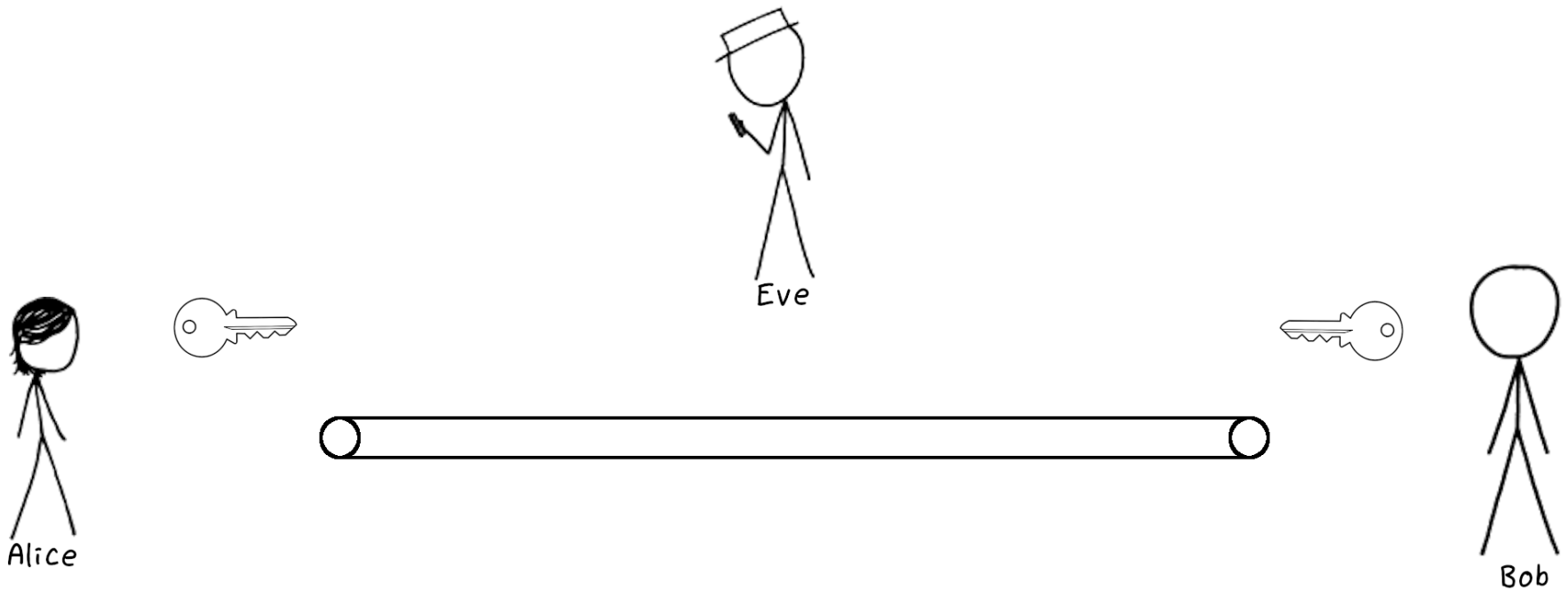

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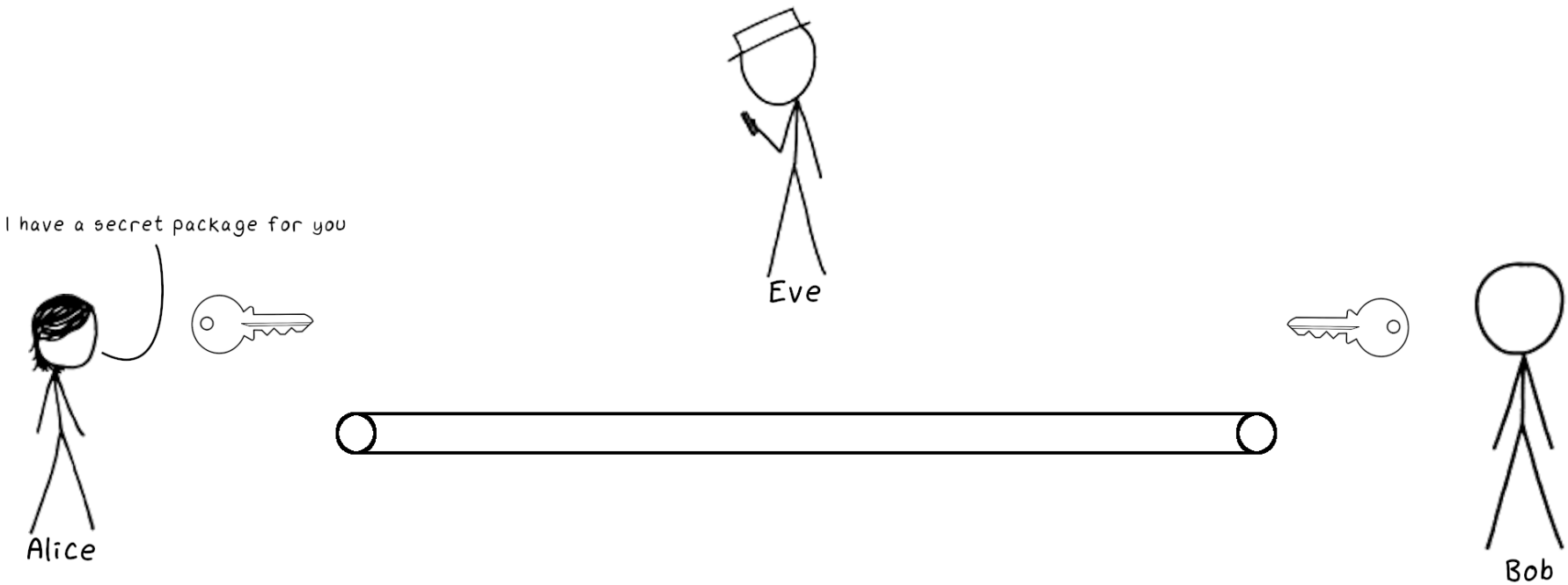

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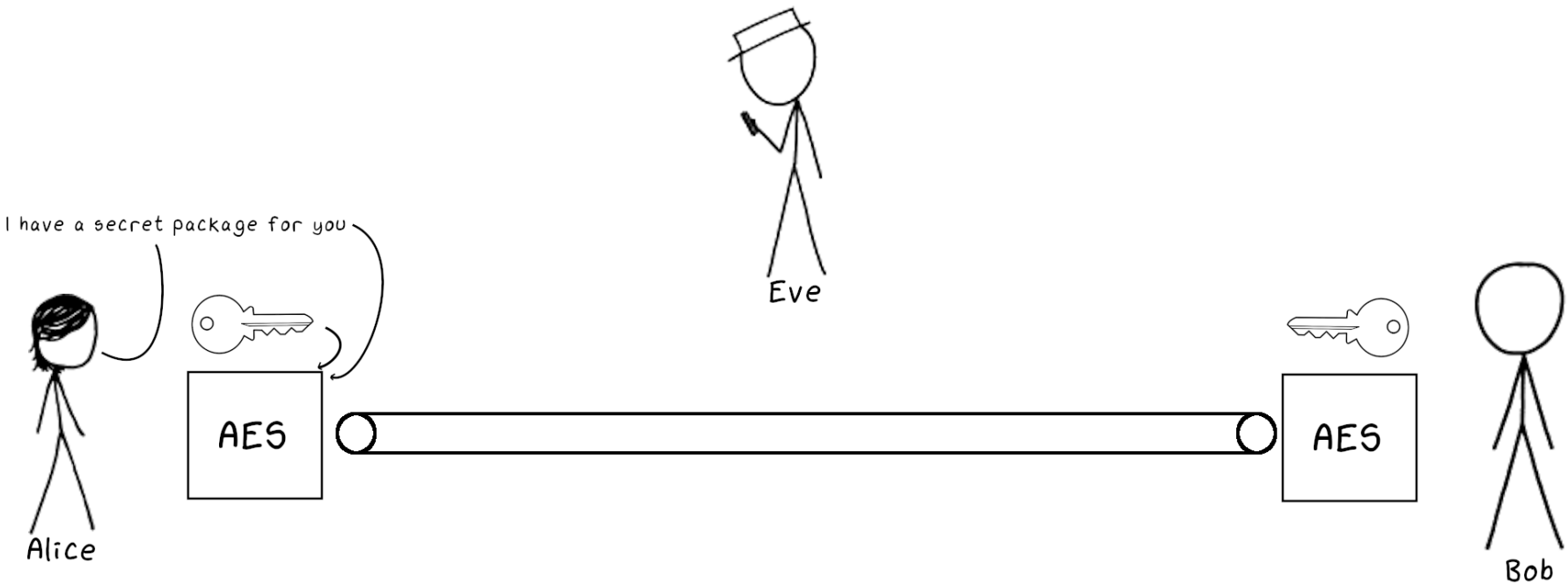

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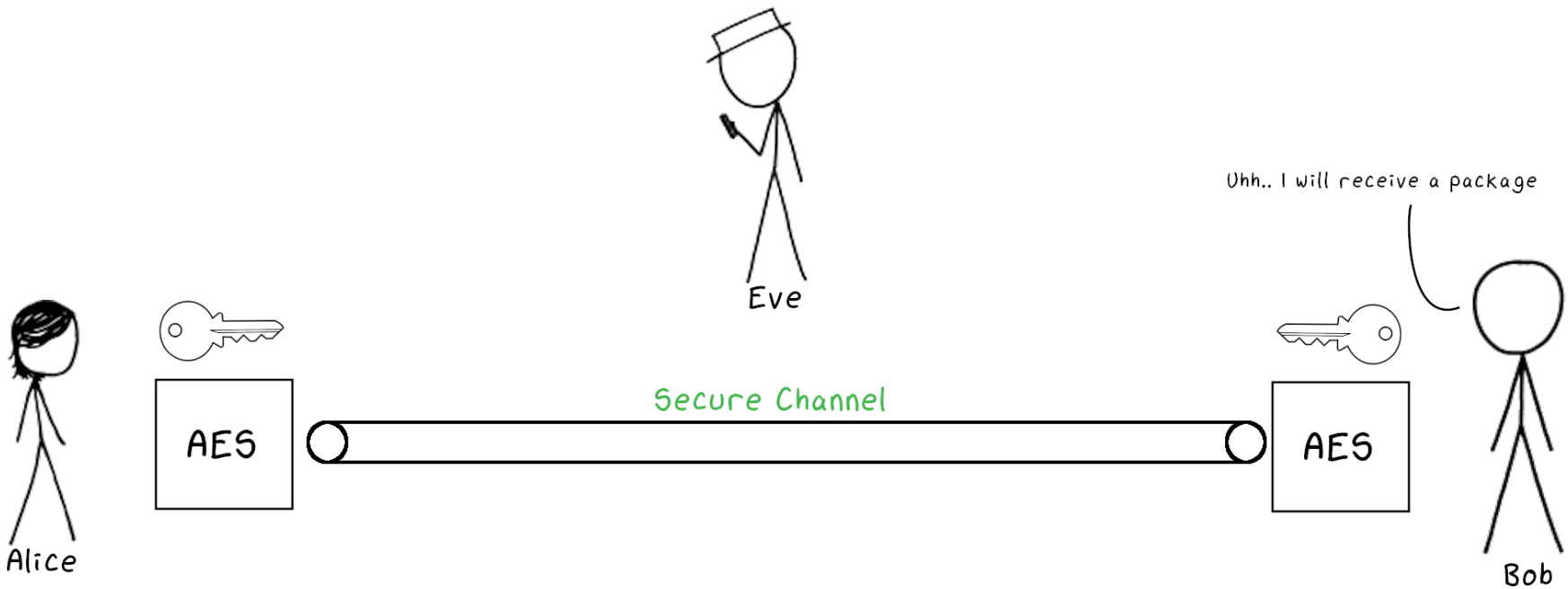

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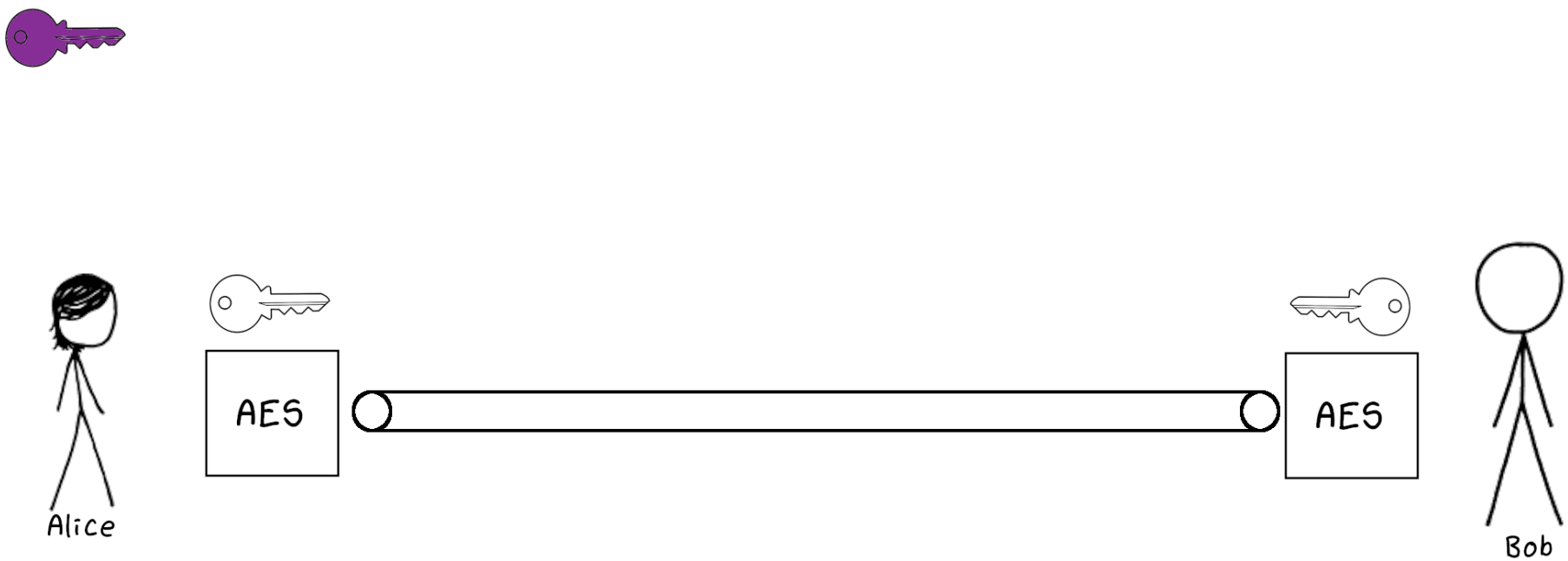

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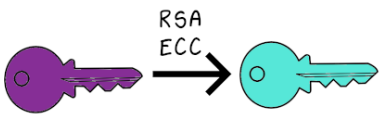

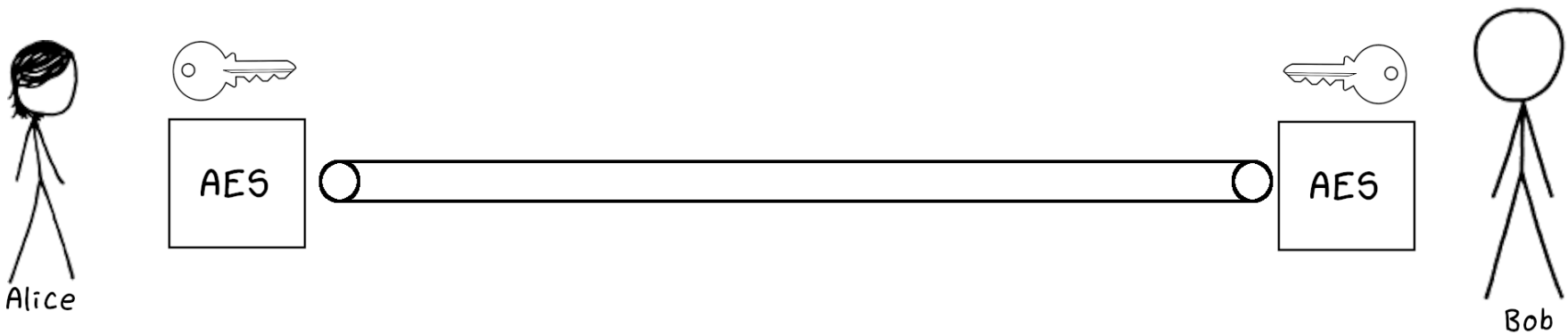

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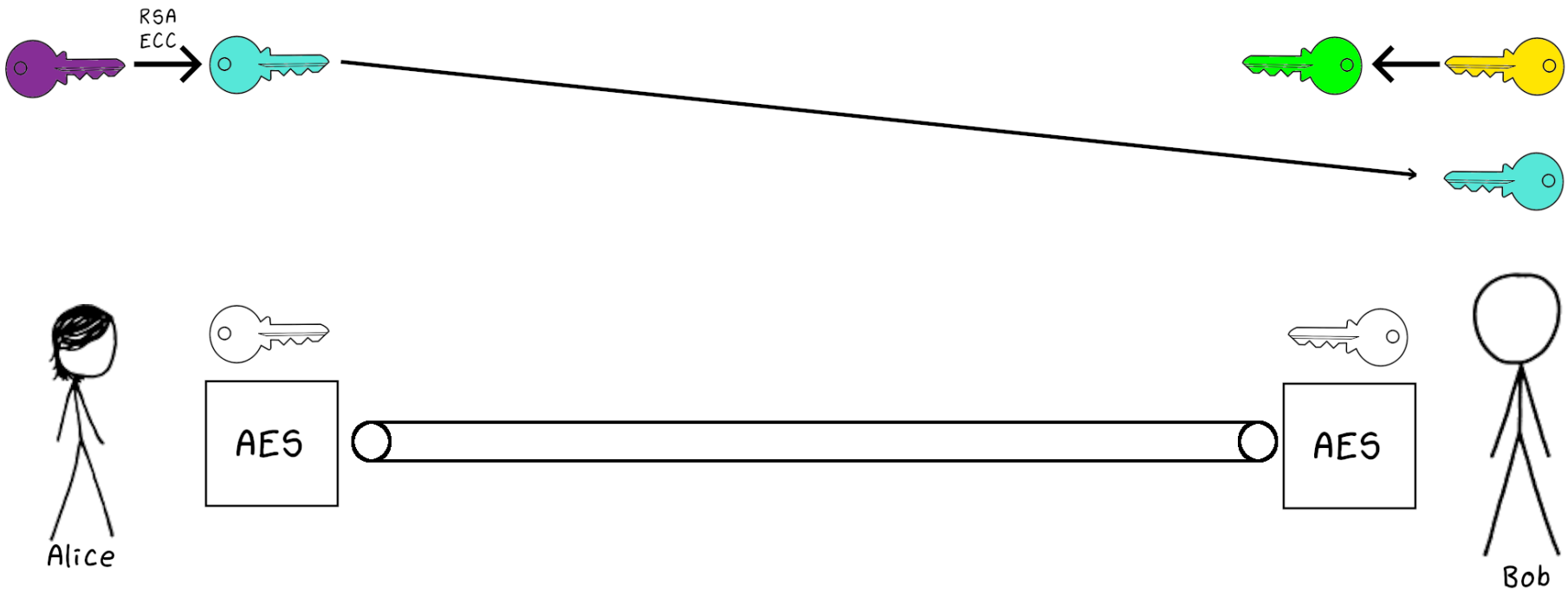

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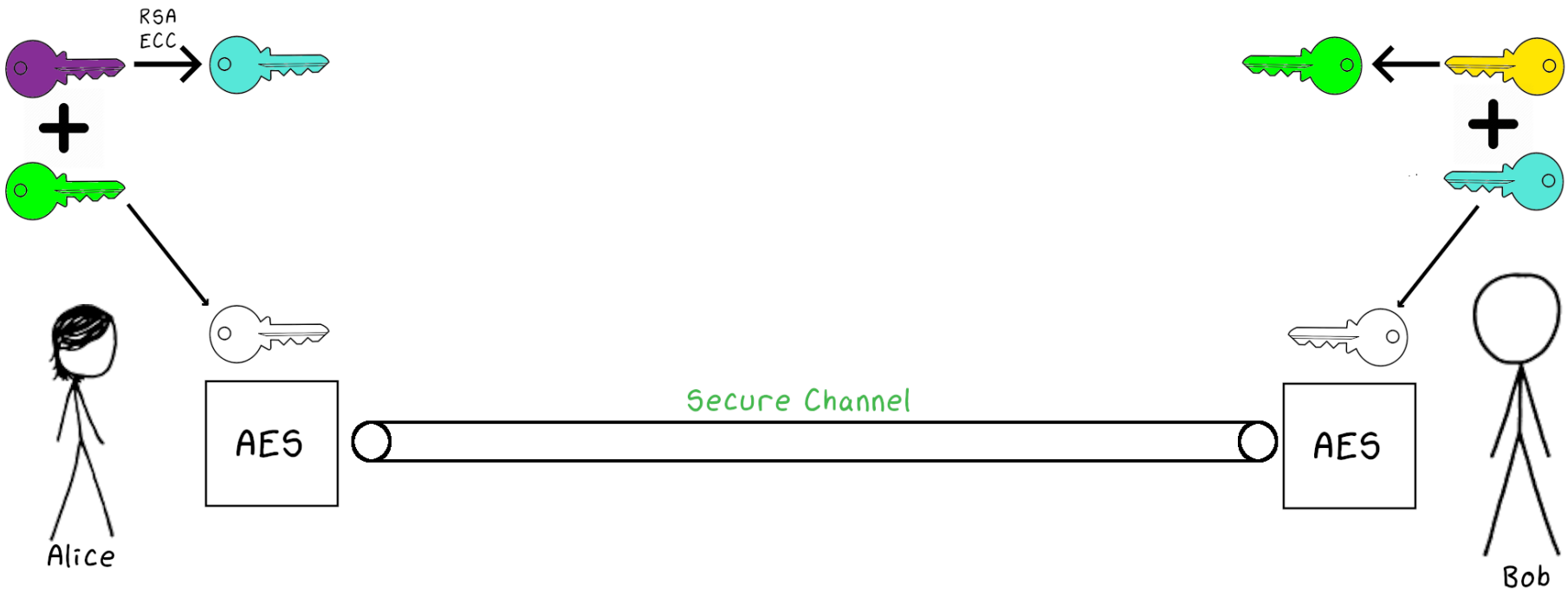

Mathematics behind Cryptography

In a nutshell, cryptography desires certain properties to be secure:

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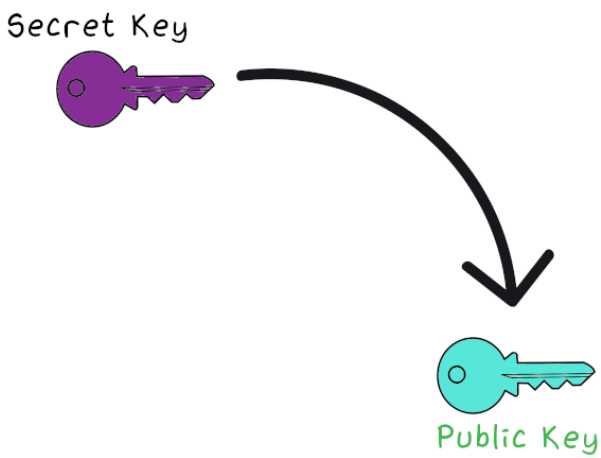

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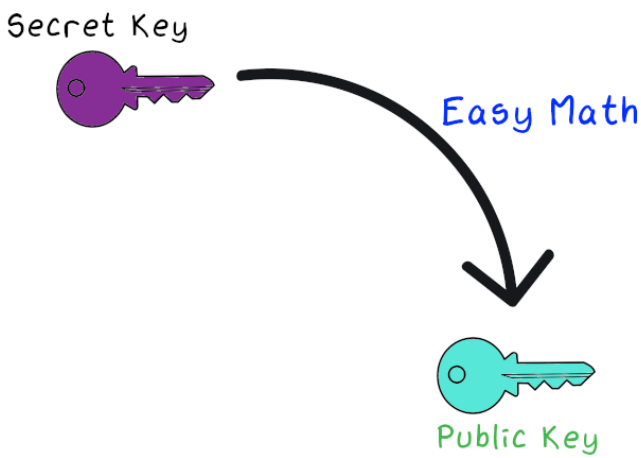

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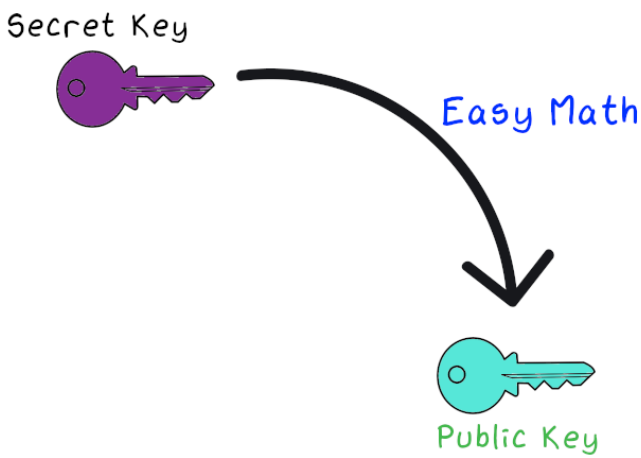

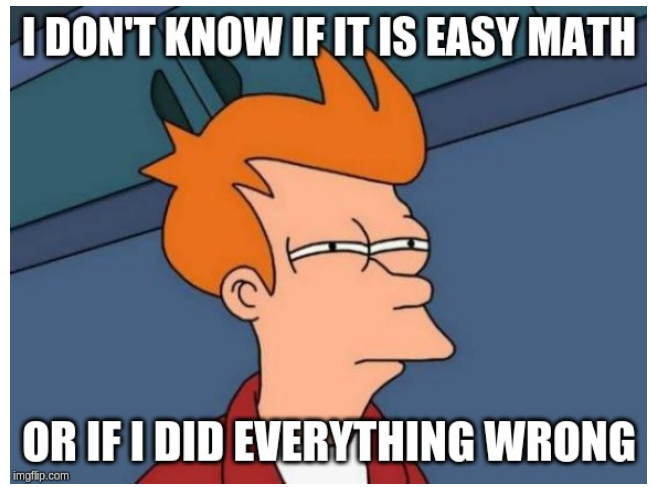

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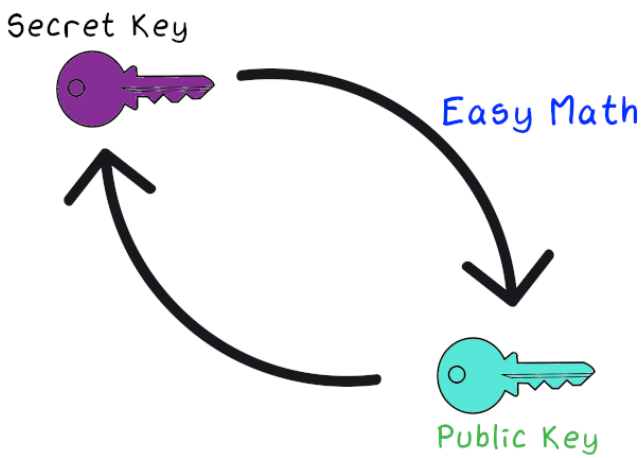

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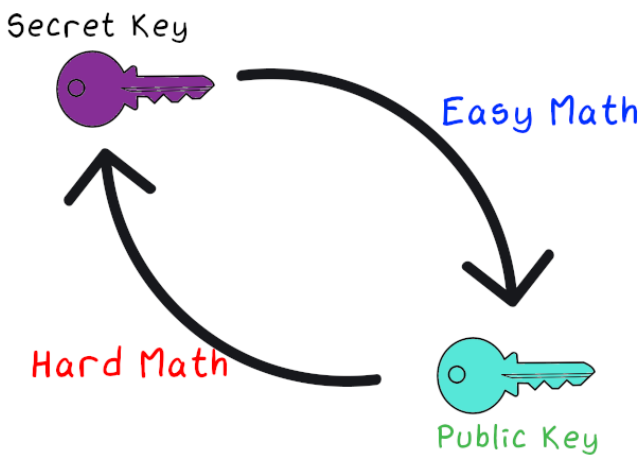

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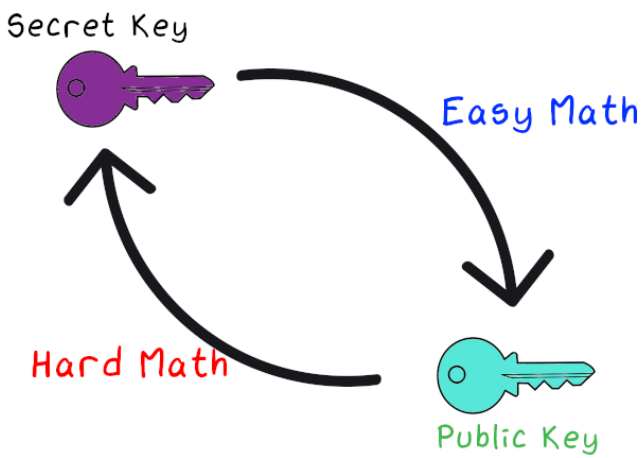

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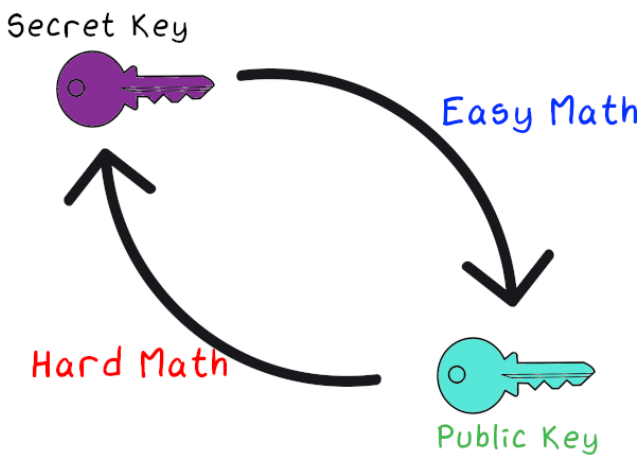
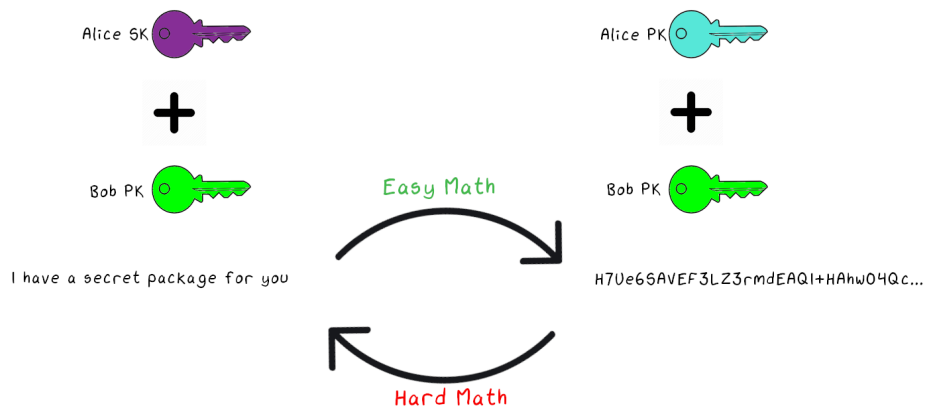
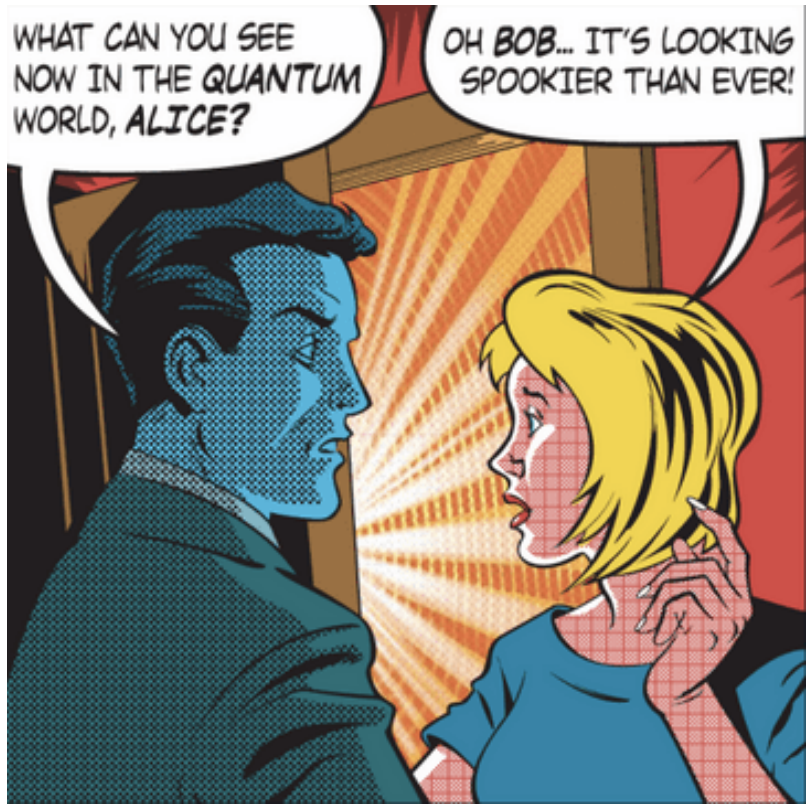




Quantum Computer and Quantum Algorithms



Quantum Computer and Quantum Algorithms

Quantum Leap Into Time And Space Closer To Reality
National Geographic · 15 hours ago

Quantum leap in computing as Google claims 'supremacy'
Jordan Times · 2 days ago

EVALUATE

Quantum computers mean cryptography needs to change, and soon

As quantum computing gains momentum with practical quantum computers due to come online as early as next year, concerns about post-quantum cryptography are pushed to the forefront.

By **Peter Loshin,** Technology Editor

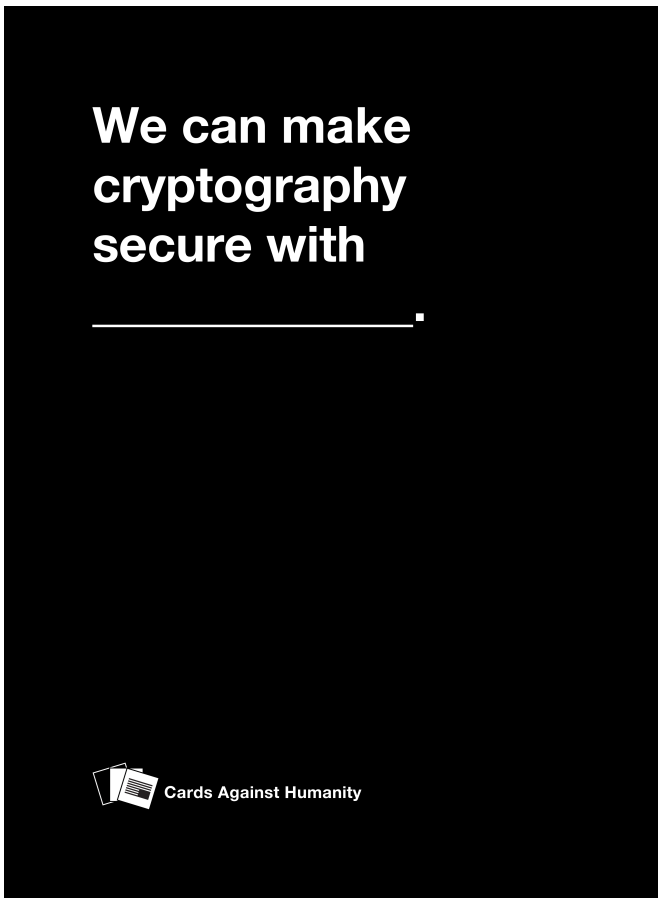
INNOVATION

How Peter Shor's Algorithm Dooms RSA Encryption to Failure

In 1994, Peter Shor created an algorithm for a theorical computer that solved a nearly impossible problem. Now that technology is catching up, Shor's algorithm guarantees the end to RSA Encryption.

By John Loeffler

Post-Quantum Cryptography



Post-Quantum Cryptography

We can make cryptography secure with _____.

Cards Against Humanity

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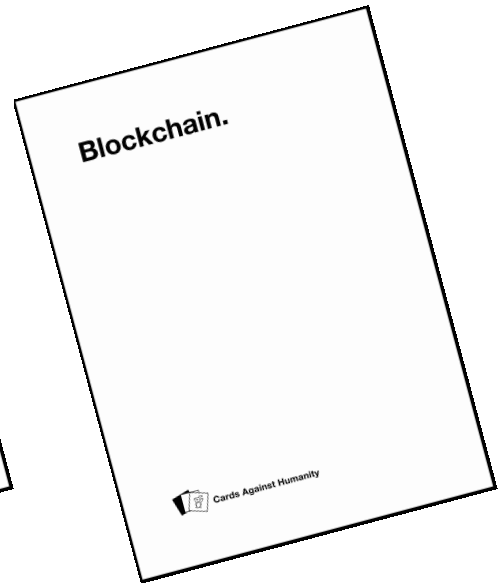

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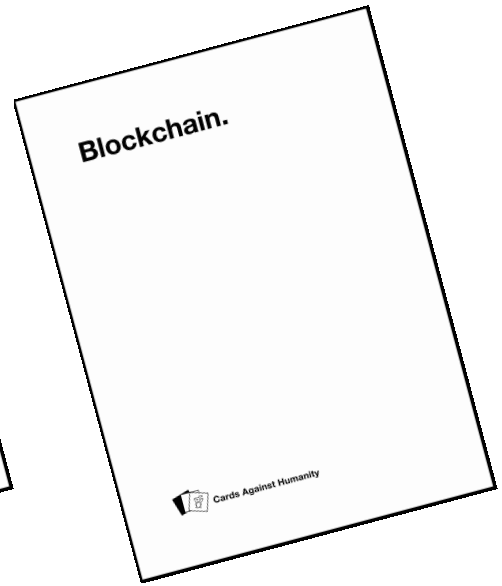

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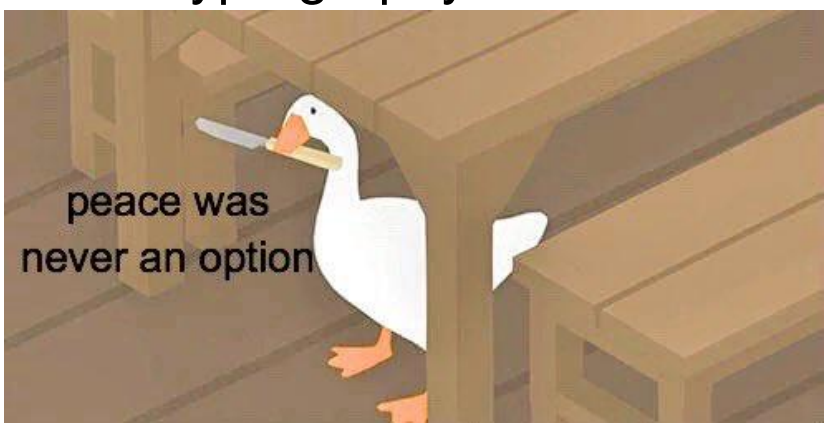

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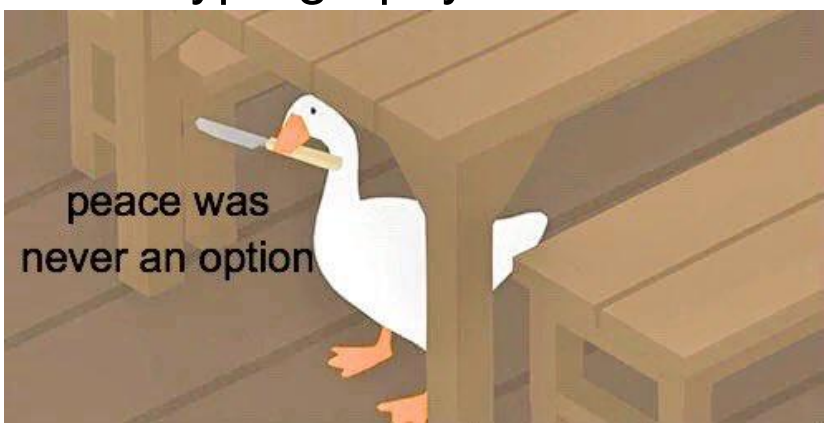

- Evaluate the current cryptoschemes for mistakes;
- Check if the current parameters are secure;
- Use quantum cryptanalysis:
  - Check how to use quantum algorithms;
  - Estimate how big a quantum computer needs to be to run a quantum algorithm;
  - Develop new quantum algorithms.

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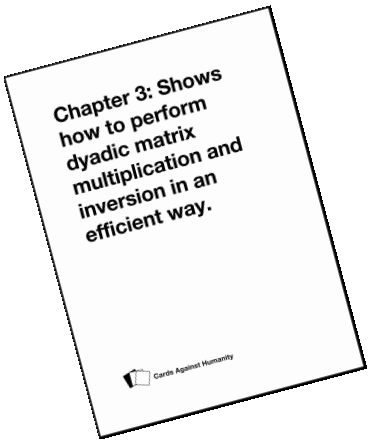

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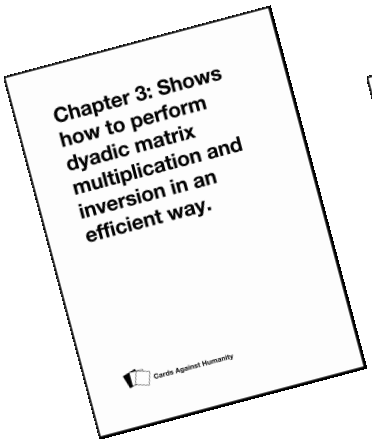

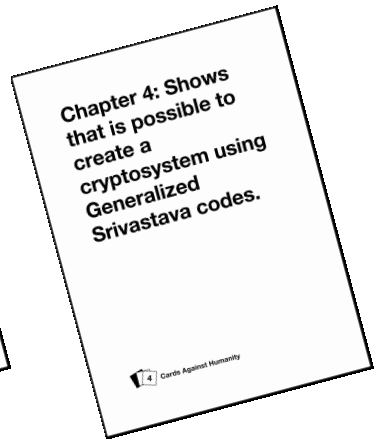

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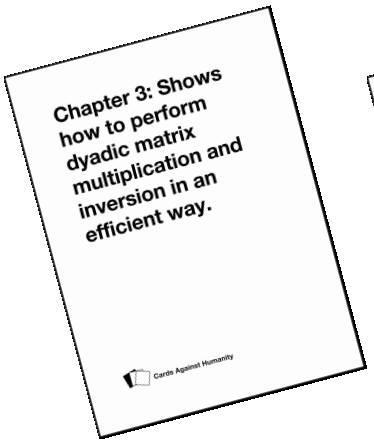

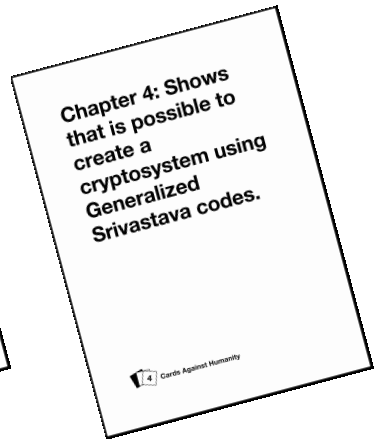

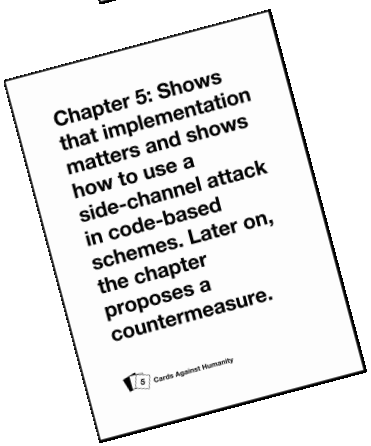

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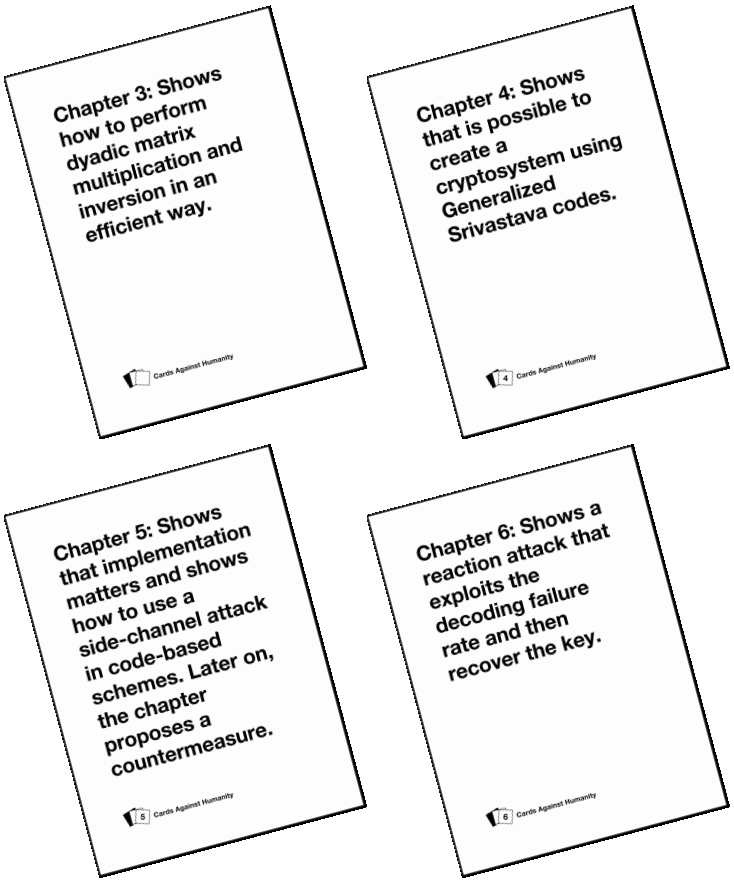

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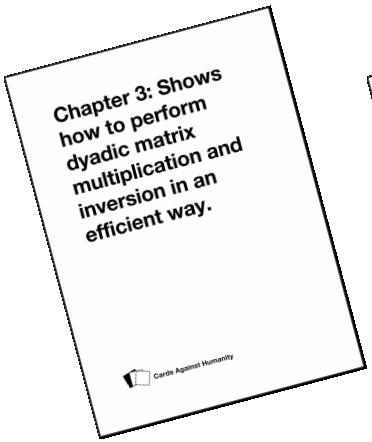

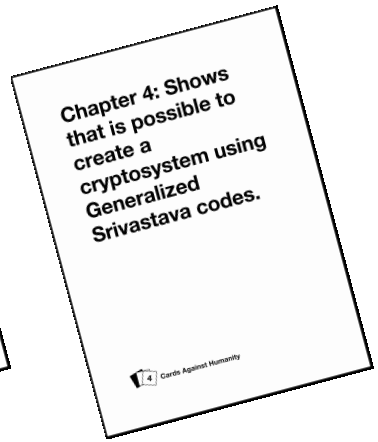

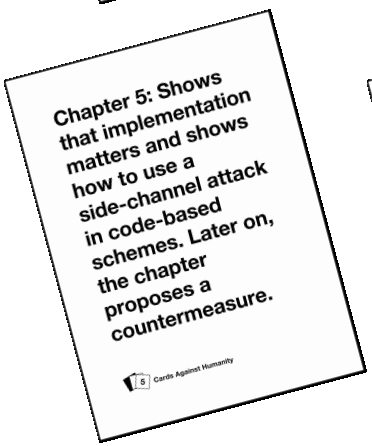

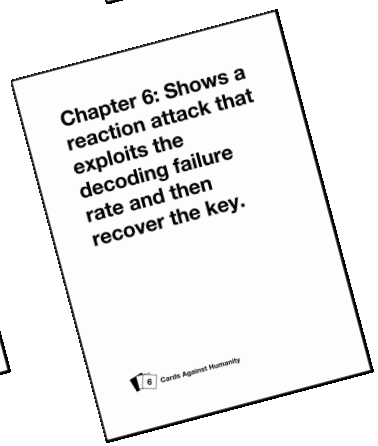

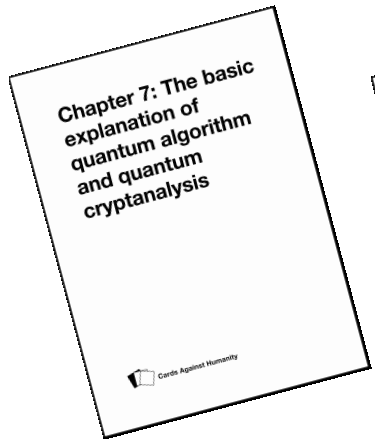

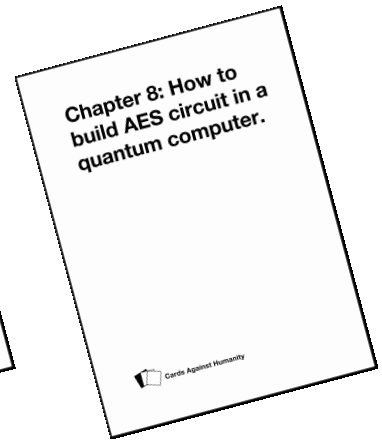

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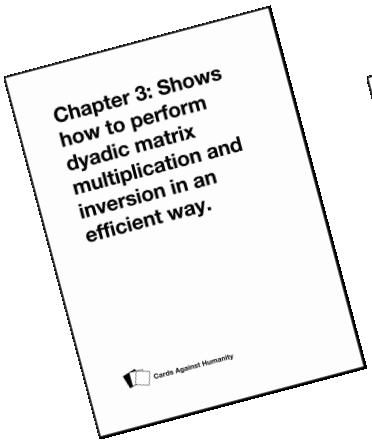

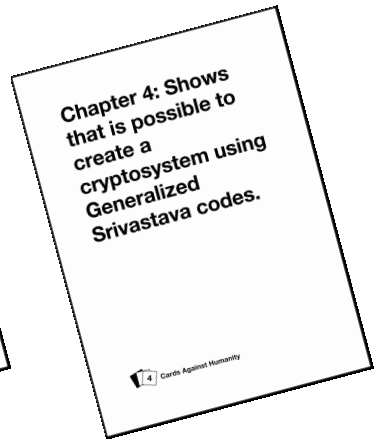

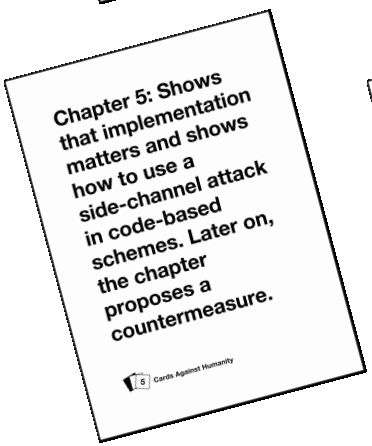

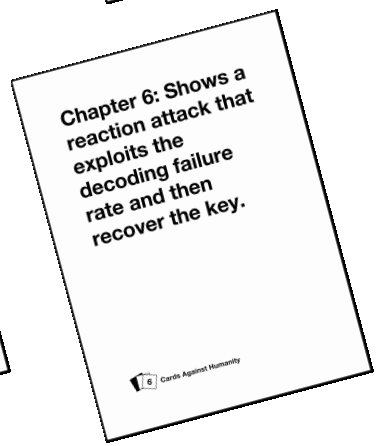

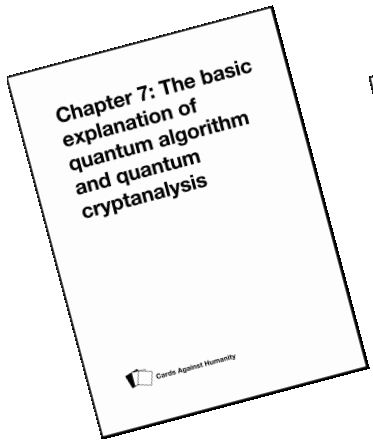

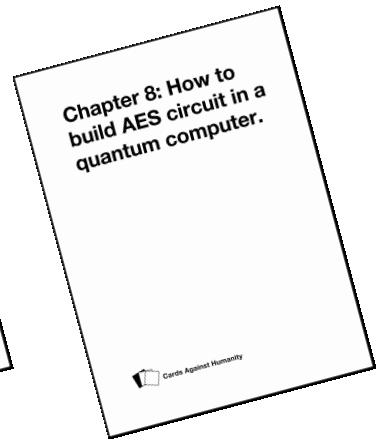

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