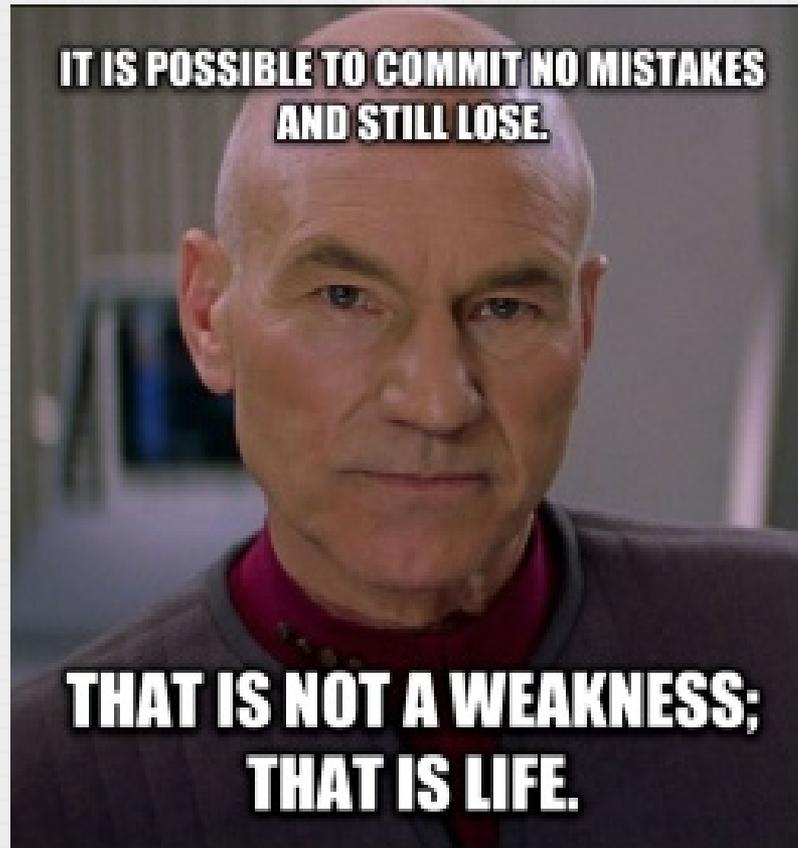


# **INCENTIVES IN BITCOIN**

**PRESENTED BY GEORGE PAPAGEORGIU**

**UNIVERSITY OF NICOSIA,  
MSC IN DIGITAL CURRENCY**

**WHAT GOT US HERE  
MIGHT NOT BE ENOUGH TO TAKE US  
WHERE NO ONE HAS GONE BEFORE**



# FIRST, SOME ASSUMPTIONS

The Bitcoin community wants it to go to the moon

ALICE

The Bitcoin community wants it to remain permissionless ?

But interface with the existing economy?

BOB

The Bitcoin community want it to remain resilient (decentralized, fungible, private, voluntary)

So many subjective things, so many ways to make them happen

CAROL

People in Bitcoin want to see adoption increase

- 1 layer ?
- Multiple layers on top of a CLS ?

DAVE

# OUR PRIORITIES

**01. BALANCE WITH EARLY  
ADOPTERS**

**EARLY  
ADOPTERS**

**NEWCOMERS**

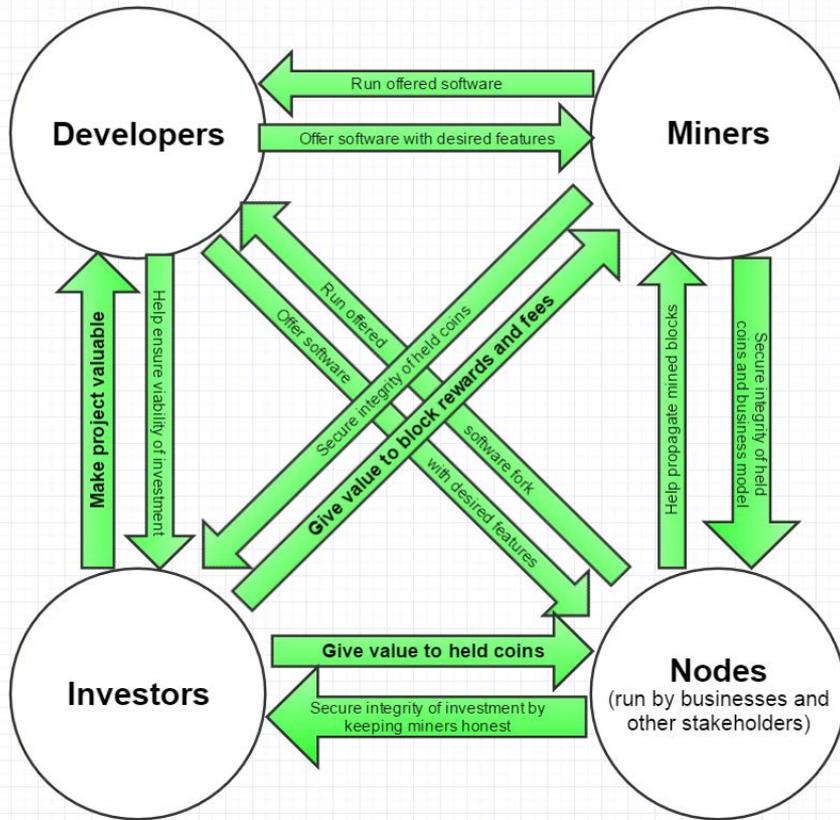
**02. READY THE GROUND FOR NEWCOMERS**

# TENSORS AND ATTRACTORS

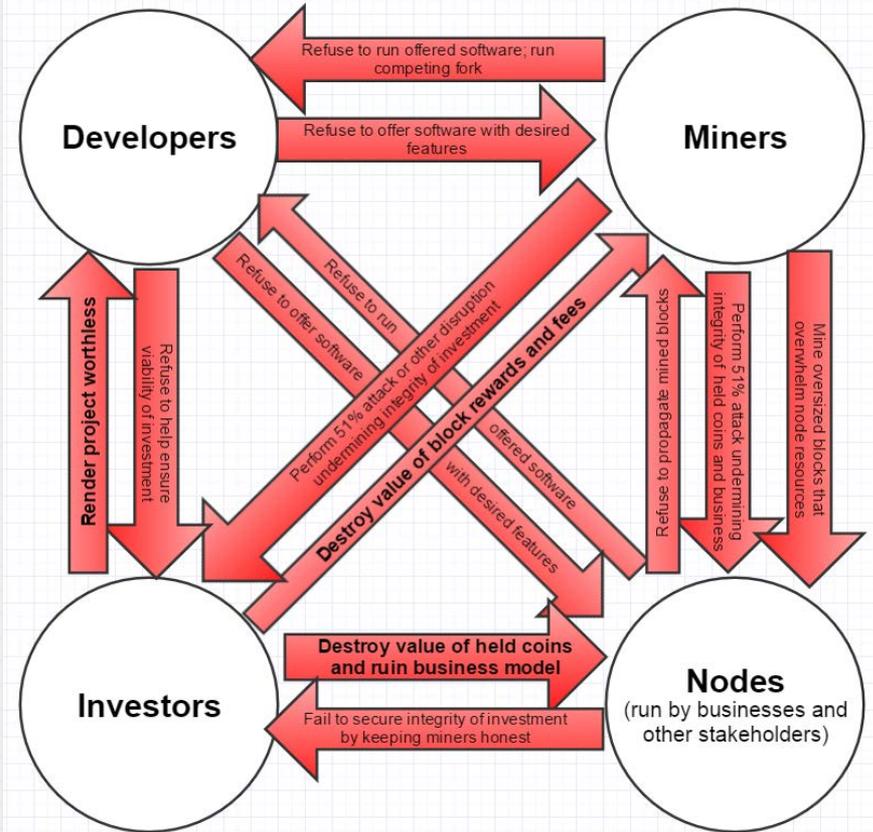
- Mining Decentralization (crucial to keeping consensus “honest” and everyone’s bitcoins safe)
- Economic power, what can’t it buy ?
- Security from internal and external attacks
- Other decentralizations (business, development, wealth, information avenues, etc)
- User adoption (more use cases, more ease of ingress and egress)
- Complexity (attracts some but not others, and certainly new users)
- Node numbers decreasing (no incentives or rewards, just costs)
  - How many is enough, how many is too little ?
  - What’s the cost/benefit of using SPV instead of a node ? (CONOP, Paul Sztorc)
- Censorship (we’re not partial to gatekeepers or authority)
- Privacy

# SYMBIOTIC GOVERNANCE

## Symbiotic Relationships in Bitcoin Governance



## Checks and Balances in Bitcoin Governance



Source Unknown

# NASH EQUILIBRIUM

= **STAY THE COURSE, AND DON'T GO "FULL RETARD"**

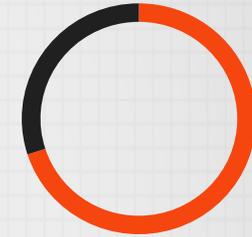
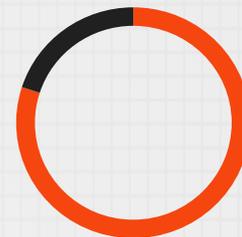
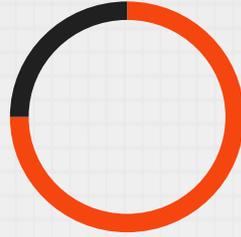
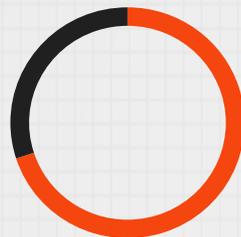
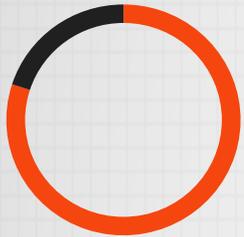
MINERS

USERS

HOLDERS

DEVELOPERS

BUSINESSES



EACH, MUST AT THE SAME TIME BE, **OVER 50% (LOSS)** BUT **UNDER 100% (DOMINATION)**

I'd love more BTC/Block, but who will want to use it then?

I'd love instant and free transactions, but who will secure the blockchain then ?

I'm an early adopter, but that won't matter if I'm the one holding the bag...

I'd love to develop a flawless system, but I'm working on a flying plane, and I need others to use it...

We want more ROI and use cases, so we can bring new users and value, but we can't risk alienation or regulation

Every participant has optimized its outcome based on the other players' expected decision

In other words, **no player** in the game would take a **different action** as long as every other player remains the same. Nash Equilibria are **self-enforcing**; when players are at a Nash Equilibrium they have no desire to move because they will be worse off.

# EVERYTHING FLOWS, **AND NOTHING STAYS** - HERACLITUS



- Miners develop new chips and apply economies of scale, increasing centralization threats
- Developers try to solve bottlenecks and threats, and develop methods to take us into the future
- Users create value when circulating bitcoins in the economy fueling more value creation and wider adoption
- Businesses provide use cases, make coins more accessible, increase adoption, face new regulation, etc
- Holders affect supply/demand

# DOES INTER-GROUP CONSENSUS REALLY MATTER?

## 01. MINERS

Miner's can't disagree between them for long, lest they risk **huge loses**

## 02. USERS/HOLDERS

User and holder “consensus” objectifies the subjective data we have from the whole ecosystem as the **exchange rate. (Mises)**

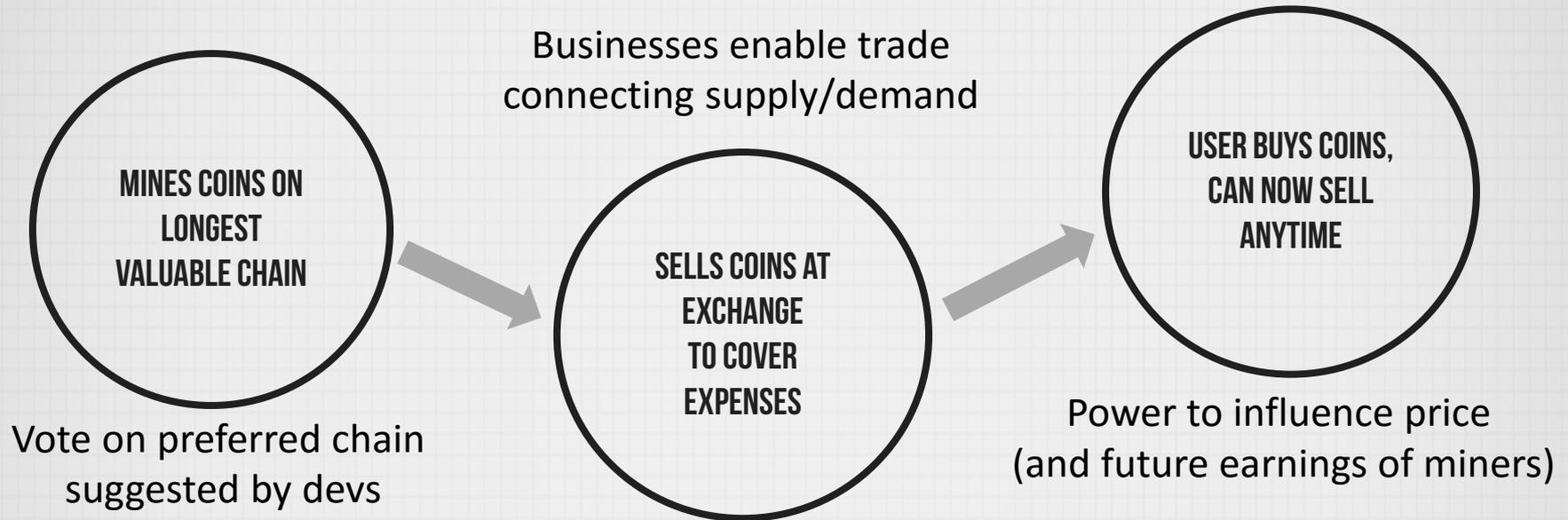
## 03. DEVELOPERS

Developers can disagree, but they determine consensus implicitly. SW can be **forked or ignored** by miners, nodes, users, but **division hurts everyone, a lot**

## 04. BUSINESSES

Businesses can disagree between themselves all they want, the **market decides** who stays and who doesn't, but few can operate without interfacing the fiat environment

# EXCHANGES OF POWER

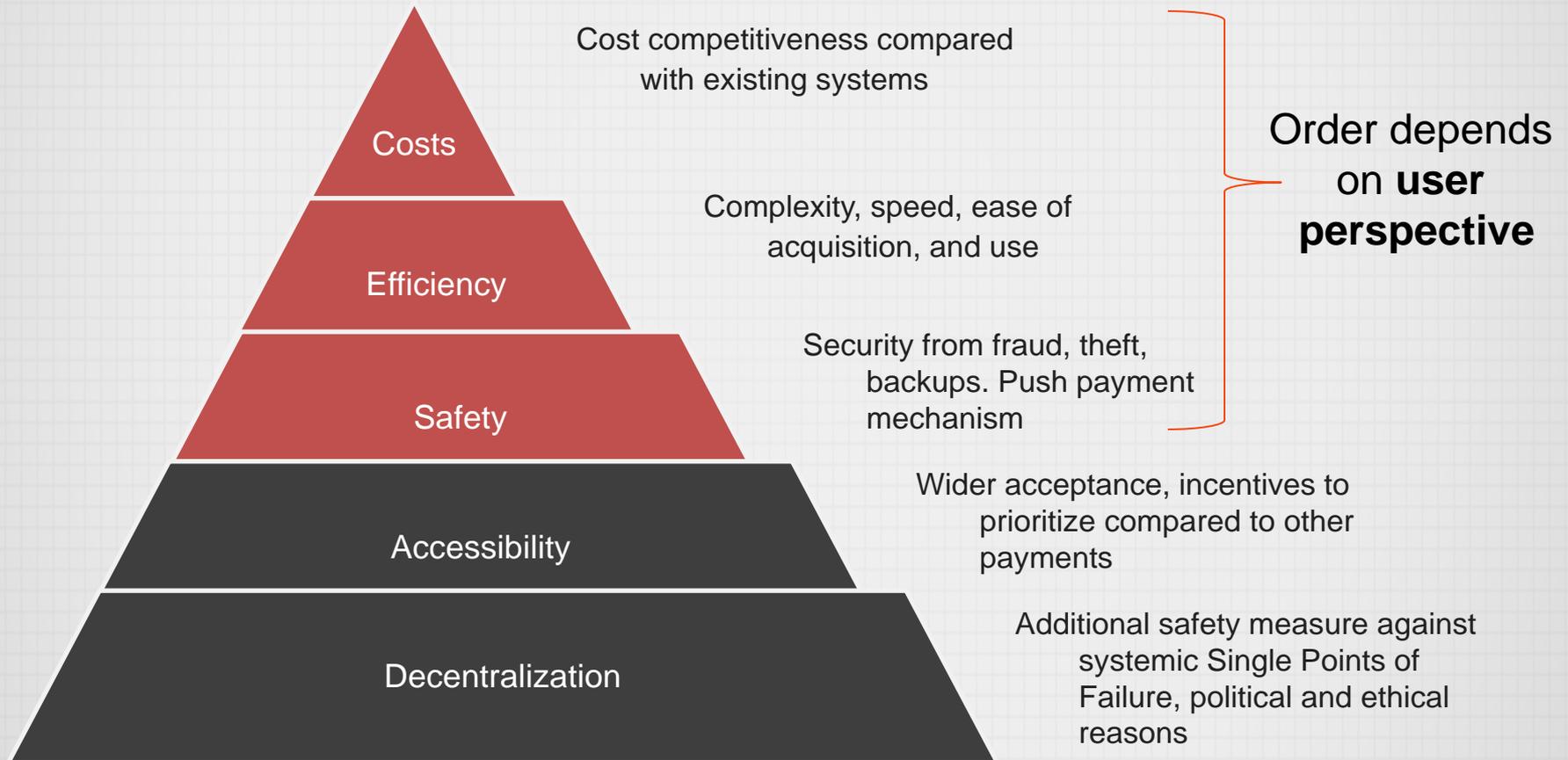


- Miners choose which chain we go on, incentivized by revenues, but it's the **user and business market** that **validates** whether that choice was the right one, so miners are always incentivized to go with the choice that is most profitable for everyone in the long run.

Miners are voting with **present direct power**,  
And convert it into **user latent power**

# THE LONG GAME IS USER ADOPTION

As a monetary and payment system



# WHAT KIND OF SYSTEM ARE WE ?

## DEMOCRACY

FROM THE USERS, FOR THE  
USERS

- Majority rule is of paramount importance, most often through delegates
- Representative democracy with mining pools ?
- Might lead to tyranny of majority ?
- Minorities are left behind, not punished

## OLIGARCHY TIMOCRACY PLUTOCRACY

MONEY AS THE ONLY POWER

- Everyone has an economic voice, and the strength of one's voice is all that matters
- Failed because Plato, Aristotle (elites, oppression)

## ANARCHO-CAPITALISM

NO STATE, SELF OWNERSHIP,  
**N.A.P.**

- The contract is economic self preservation
- No social contract, no law, dispute resolution is aggressive
- DDOS and "spam" = theft ?
- Character assassination /slandering = murder ?

## PRIVATE, SOCIAL-CONSENSUS ANARCHISM

MONEY AS A SOCIAL INSTITUTION,  
EXCHANGE RATE IS LAW,  
CONSENSUS IS DATA, IS  
KING

- Economic self preservation borders on a "tragedy of the commons" when there's no Nash Equilibrium
- Social property is intra group consensus, the "means of production"
- Everything else is pretty much private choices?

HOW ABOUT **UBUNTU** ?

**WE ARE, BECAUSE YOU ARE**

**AND SINCE YOU ARE,**

**DEFINITELY, I AM**

# UNIVERSITY OF NICOSIA

## MSC IN DIGITAL CURRENCY

The First MSc in Decentralized Digital Currency Technologies



# Since 2013

Early 2013, requests from some of our online students around the world to pay their tuition fees in virtual / digital currency i.e. Bitcoin.

First presentation to management about a program dedicated to Bitcoin.

## OUR INITIATIVE:

- We accept Bitcoin for tuition payments
- We launched the world's 1<sup>st</sup> and only Master's Degree in Digital Currencies
- We submitted to the Cypriot Government a comprehensive proposal as to how Cyprus can become a "Global Bitcoin Hub".

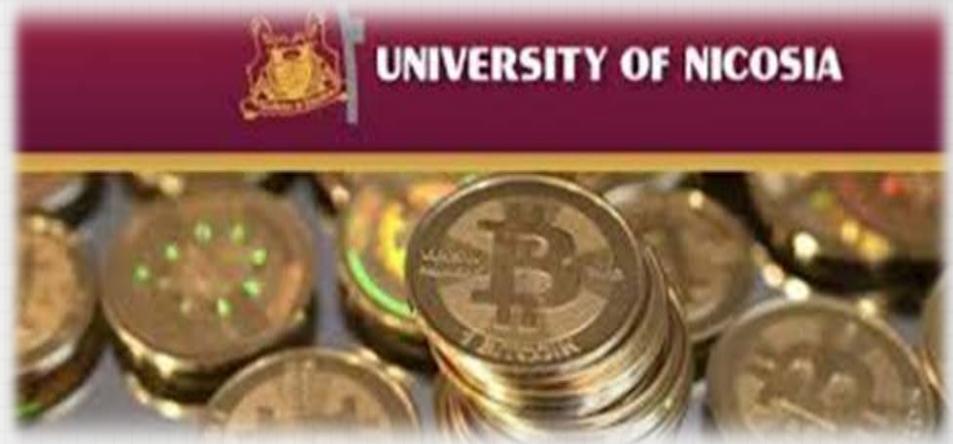
# FREE MOOC **QUICK STATISTICS**

- **APPROXIMATELY 3000 STUDENTS ENROLLED**
- **17% COMPLETION RATE**
- **FROM AROUND 80 COUNTRIES**

# Free MOOC Content

Roughly each of the 12 MOOC sessions, represent individual courses in the MSc that dive far deeper into the specific elements that are discussed in the MOOC.

1. *Introduction to the course*
2. *The Byzantine Generals' Problem*
3. *Basics of Cryptocurrency*
4. *Bitcoin in Practice I*
5. *Bitcoin in Practice II*
6. *Alternative uses of the blockchain*
7. *Alternatives to Bitcoin*
8. *Cryptocurrency & Central Banking*
9. *Cryptocurrency & Financial Institutions*
10. *Regulatory and tax treatment*
- 11-12. *Cryptocurrency, Innovation and the Developing World*
12. *Cryptocurrency & The Developing World*



**Learning Activities and Teaching Methods** - Lectures, Q&A sessions, interactive forums.

**Assessment Methods** - Online multiple choice quizzes, Final Exam in a multiple choice format

# MSC PROGRAMME CONTENT

- Our MSc programme is addressed to merchants, consumers, professionals (accountants, auditors, bankers, lawyers, economists, journalists etc.), civil servants, regulatory authorities, supervisors etc.



# MSC PROGRAMME **MODULES**

- Money & Banking
- International Currency Markets
- Financial markets and alternative investments
- Regulation and Digital Currencies
  
- Open Financial Systems
- Principles of Disruptive Innovation
- Cryptographic Systems Security
- Digital Currency Programming
- Digital Currencies in the Developing World
- Digital Currency Information Systems and Resources
  
- Project/Theses option

**Bitcoin's strengths and weaknesses**

**Conventional systems and how FinTech can be changed by Bitcoin**

**Our aim is to give students a spherical consideration of everything on the table but with an eye to the future**

# FACULTY



## **Mr. Andreas Antonopoulos**

*Andreas M. Antonopoulos is one of the well-respected figures in bitcoin. He is the author of “Mastering Bitcoin”, considered by many to be the best technical guide to bitcoin. As an engaging public speaker, teacher and writer, Andreas makes complex subjects accessible and easy to understand.*

*Mr. Antonopoulos is a Teaching Fellow at the University of Nicosia and will be co-teaching the introductory MOOC course on the program.*

## **Mr. Anthony Di Orio**

*Mr. Anthony Di Iorio is a serial entrepreneur, VC, community organizer, and thought leader in the field of cryptocurrencies and decentralized technologies. He is the founder and CEO of Decentral and Kryptokit and Co-Founder of Ethereum.*

*Mr. Di Orio is the lecturer for the “Principles of Disruptive Innovation” course.*



# FACULTY



## Dr. Ghassan Karame

*Dr. Karame is a Senior Researcher in the Security Group of NEC Research Laboratories in Germany. Before joining NEC Labs, Ghassan was working as a postdoctoral researcher in the Institute of Information Security of ETH Zurich, Switzerland.*

*Dr. Karame is the lecturer for the “Cryptographic Systems Security” course.*



## Mr. Reuben Bramanathan

*Mr. Reuben Bramanathan is a lawyer and tax advisor. His main focus and area of expertise is bitcoin and blockchain technology. Mr. Bramanathan is currently Associate Counsel at Coinbase and lecturer of the “Regulation of Digital Currencies” course.*



## Dr. Charles Evans

*Dr. Charles Evans is a Forensic Economist, Financial Cryptography Consultant and Professor of Economics & Finance. He holds a PhD in Finance from Florida Atlantic University. Dr. Evans balances his time between lecturing the “Money and Banking” course and building Pecuniology.com, which is dedicated to promoting economic and financial literacy worldwide.*

**THANKS**

**FOR YOUR TIME**



**KEEP**

**CALM**

**AND**

**BITCOIN**

**ON**

# Questions?



Contact Us

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Twitter:

@MScdigital