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Understanding bitcoin currency and blockchain technology as a media system

Peter, Kimberley and Schaus, Michael

Suggested citation:

Understanding
Bitcoin Currency & Blockchain Technology as a Media System
an in-depth lesson on, nor prediction about, Bitcoin or blockchain; nor is it advocating adoption

a set of insights from research and application of an integrated model to seed scenarios
BACKGROUND CONCEPTS

CONCEPTS
1. Money as technology

Barter

Gold

Convertible fiat

Fiat 2.0

GOOD

ASSET
Scrooges big sin was to freeze his money; for **money**, as all students of it recognize, **is of use only when it’s moving, since it derives its value entirely from whatever it can translate itself into.**

— Margaret Atwood, Payback
2. Complementary currencies

- **Fureai Kippu**: Sectoral Currency
- **Bristol Pound**: Local Currency
- **Bitcoin**: Cryptocurrency
RESEARCH PROCESS — SCOPE

Toronto community

Global network
RESEARCH PROCESS — OVERVIEW

Understanding context + concepts

- Reviewed literature
- Engaged six experts
- Analyzed + interpreted
RESEARCH PROCESS — OVERVIEW

Understanding context + concepts

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Development of a research framework

- Considered ideas + mapped as media on TETRAD
- Sharing + gathering input
- Explored within system over time using Panarchy model
INSIGHT #1

Technology as leading innovation, hits up against the **slowness** of policy innovation.
INSIGHT #2

Some people and groups are early adopters out of necessity, e.g., remittance payments.
**RESEARCH PROCESS — IDEAS**

**IDEAS**

- **Merchant commerce (B2B/B2C)** - Reduced friction and cost, with immediacy of transaction
- **Online shopping and trade**
- **Control over and access to funds**
- **Ownership of money**
- **Definitive settlement of transactions**
- **Banking for everyone (including criminals)**
- **Tangibility of cash**

**Black = Bitcoin**

**Brown = Blockchain**

- **Currency without borders**
- **Knowledge of money and where it comes from**
- **Safety of storing and transacting in bitcoin over being tied to central banking systems (applies to individual, businesses and governments)**
- **Asset (value store) only used as ‘flight to safety’ and not as a good (medium of exchange)**
- **Safety of value store in the face of unknown deflationary decline**
- **Blind following of ‘heat’ of bitcoin in exchanges, like fiat exchanges (e.g., terrorist initiated ‘puts’)**
- **Definitive settlement of transactions**
- **Transaction reversal**
- **Current regulations and compliance policies for existing B2B interactions**
- **Management of balance of medium of exchange and holder of value (slows velocity)**

**Financial services shouldering the risk of bitcoin-related transactions**

- **An interesting case study along trajectory of earlier digital currencies (Liberty Dollar, Chaumian eCash, Szabo’s Bitgold)**
- **Traditional centralized stock exchanges**
- **Bricks & Mortar stores**
- **Forms of digital payment that support centralized banking structures (e.g., Paypal, Apple Pay, Google Wallet)**
- **US Treasury Bills as a safety net**
- **Monoculture/monocurrency**

**Knowledge of money and where it comes from**

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What does the media, or technology, ENHANCE?
What does the media, or technology, **ENHANCE**?

What does the media, or technology, **RETRIEVE**?

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What does the media, or technology, ENHANCE?

What does the media, or technology, REVERSE INTO?

What does the media, or technology, RETRIEVE?
Media Tetrad

What does the media, or technology, **enhance**?

What does the media, or technology, **reverse into**?

What does the media, or technology, **retrieve**?

What does the media, or technology, **obsolesce**?

What does the media, or technology, **ENHANCE**?

What does the media, or technology, **REVERSE INTO**?

What does the media, or technology, **RETRIEVE**?

What does the media, or technology, **OBSOLESC**?
IDEAS Mapped on Media Tetrad

- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
- Online shopping and trade
- Ownership of money
- Definitive settlement of transactions
- Banking for everyone (including criminals)
- P2P Exchange (removes third party intermediaries)
- Tangibility of cash
- Upside of barter (robust sense of shared value in the moment + open opportunities of digital market)
- Tangibility of risk (materiality in the area of investment)
- Intimacy of transactions
- Policy and freedom of pre-Internet Web 1.0 days
- Security of transactions
- Control over and access to funds
- Decentralized power of issuance
- Transactional trust (math as contract)
- Anonymity (pseudonymity) of transactions
- Evolution of the Internet (birth of IoT, new business models, access and usage/citizens of the Internet)
- Innovation (and accelerates it)
- Decentralized activism (on the blockchain)
- Internal integration and communication
- Currency without borders
- Transactional trust (math as contract)
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- Knowledge of money and where it comes from
- Trust for access
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- Blind following of ‘heat’ of bitcoin in exchanges, like fiat exchanges (e.g., terrorist initiated ‘puts’)
- Thinking through the incentive dynamics unique to any system
- Transaction reversal
- Need for 3rd party in transactional relationships
- Middlemen

- Safety of storing and transacting in bitcoin over being tied to central banking systems (applies to individual, businesses and governments)
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IDEAS Mapped on Media Tetrads

**Black = Bitcoin**

**Brown = Blockchain**

**Enhances**

- Internal integration and communication
- Knowledge of money and where it comes from
- Decentralized activism (on the blockchain)
- Transactional trust (math as contract)
- Banking for everyone (including criminals)
- Definition of settlement of transactions

**Reverses into**

- Trust for access
- Asset (value store) only used as ‘flight to safety’ and not as a good (medium of exchange)
- Blind following of ‘heat’ of bitcoin in exchanges, like fiat exchanges (e.g., terrorist initiated ‘puts’)
- Seeking ‘Breach opportunities’ (increased incentive to destabilize reliability, stability, pseudonymity afforded by blockchain)

**Bittcoins**

- Security of transactions
- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
- Control over and access to funds
- Innovation (and accelerates it)

**Blockchain**

- Safety of storing and transacting in bitcoin over being tied to central banking systems (applies to individual, businesses and governments)
- Safety of value store in the face of unknown deflationary decline
- Thinking through the incentive dynamics unique to any system

**Obsolesces**

- P2P Exchange (removes third party intermediaries)
- Tangibility of cash
- Anonymity (pseudonymity) of transactions
- Opposite side tipping the balance away from real value to empty or misguided messaging and products
- Management of balance of medium of exchange and holder of value (slows velocity)

- Reinforcement of online shopping and trade
- Currency without borders
- Decentralized power of issuance
- Innovation (and accelerates it)
- Transaction reversal

- Online shopping and trade
- Currency without borders
- Security of transactions
- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
- Control over and access to funds
- Transactional trust (math as contract)
- Banking for everyone (including criminals)
- Internal integration and communication

- Transaction reversal
- Current regulations and compliance policies for existing B2B interactions
- Transaction reversal
- Ownership of money
- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction

- Transaction reversal
- Current regulations and compliance policies for existing B2B interactions
- Transaction reversal
- Internal integration and communication
- Knowledge of money and where it comes from

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**ENHANCES**

- Online shopping and trade
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- Transactional trust (math as contract)
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- Tangibility of cash
- Upside of barter (robust sense of shared value in the moment + open opportunities of digital market)
- Tangibility of risk (materiality in the area of investment)
- Intimacy of transactions
- Policy and freedom of pre-Internet Web 1.0 days
- Financial services shouldering the risk of bitcoin-related transactions
- Dependency on technology (reliability and uptime)
- Control over and access to funds
- Decimal power of issuance
- Innovation (and accelerates it)
- Evolution of the Internet (birth of IoT, new business models, access and usage/citizens of the Internet)
- Transaction reversal
- Current regulations and compliance policies for existing B2B interactions
- Management of balance of medium of exchange and holder of value (slows velocity)
- Oppressive government controls
- Obsessive security
- Face-to-face social engagement
- Innovative potential in value-yielding businesses and products
- Maxxing out utility of investment
- Anonymity (pseudonymity) of transactions
- Opportunism tipping the balance away from real value to empty or misguided messaging and products
- Security of transactions
- Middlemen
- Need for 3rd party in transactional relationships
- Traditional centralized stock exchanges
- US Treasury Bills as a safety net
- Bricks & Mortar stores
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**RETREIVES**

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**Bitcoin Currency**

- **Security of transactions**
  - Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
  - Control over and access to funds

- **Intimacy of transactions**
  - P2P Exchange (removes third party intermediaries)
  - Tangibility of cash

- **Innovation**
  - Evolution of the Internet (birth of IoT, new business models, access and usage/citizens of the Internet)
  - Transactional trust (math as contract)

- **Ease of money**
  - Transaction reversal
  - Management of balance of medium of exchange and holder of value (slows velocity)

- **Trust for access**
  - Trust in cryptocurrency

**Blockchain Technology**

- **Internal integration and communication**
  - Definitive settlement of transactions

- **Security of transactions**
  - Knowledge of money and where it comes from

- **Decentralized power of issuance**
  - Control over and access to funds

- **Anonymity (pseudonymity) of transactions**
  - Transaction reversal
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**Reverses into**

- **Dependency on technology (reliability and uptime)**
  - Transaction reversal
  - Management of balance of medium of exchange and holder of value (slows velocity)

- **Opportunities tipping the balance away from real value to empty or misguided messaging and products**
  - Transaction reversal
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- **Privacy**
  - Transaction reversal
  - Management of balance of medium of exchange and holder of value (slows velocity)

- **Policy and freedom of pre-Internet Web 1.0 days**
  - Transaction reversal
  - Management of balance of medium of exchange and holder of value (slows velocity)

**Enhances**

- **Online shopping and trade**
  - Knowledge of money and where it comes from

- **Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction**
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**BITCOIN CURRENCY**
- **P2P Exchange** (removes third party intermediaries)
- **Anonymity** (pseudonymity) of transactions
- **Tangibility of cash**
- **Transaction reversal**
- **Oppressive government controls**
- **No need for 3rd party in transactional relationships**
- **Forms of digital payment that support centralized banking structures** (e.g., PayPal, Apple Pay, Google Wallet)

**BLOCKCHAIN TECHNOLOGY**
- **Transectional trust** (math as contract)
- **Innovation** (and accelerates it)
- **Privacy of transactions**
- **Maxxing out utility of investment**
- **Intimacy of transactions**
- **Innovative potential in value-yielding businesses and products**
- **Transaction reversal**
- **Current regulations and compliance policies for existing B2B interactions**
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- **Currency without borders**
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- **Decentralized activism (on the blockchain)**
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- **Definitive settlement of transactions**
- **Banking for everyone (including criminals)**
- **Transactional trust** (math as contract)
- **Maxxing out utility of investment**
- **Intimacy of transactions**
- **Policy and freedom of pre-Internet Web 1.0 days**

**REVERSES INTO**
- **Anonymity** (pseudonymity) of transactions
- **Dependency on technology** (reliability and uptime)
- **Safet of storing and transacting in bitcoin over being tied to central banking systems (applies to individual, businesses and governments)**
- **Safety of value store in the face of unknown deflationary decline**
- **Trust for access**
- **Blind following of ‘heat’ of bitcoin in exchanges, like fiat exchanges (e.g., terrorist initiated ‘puts’)**
- **Seeking ‘Breach opportunities’ (increased incentive to destabilize reliability, stability, pseudonymity afforded by blockchain)**

**MIDDLEMEN**
- **Traditional centralized stock exchanges**
- **Bricks & Mortar stores**
- **Monoculture/monocurrency**
- **US Treasury Bills as a safety net**
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**SCALE OF MONEY**
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**IMPLICATIONS**
- **Anonymity** (pseudonymity) of transactions
- **Dependency on technology** (reliability and uptime)
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**BITCOIN**

- **CURRENCY**
  - Anonymity (pseudonymity) of transactions
  - Trust for access
  - Intimacy of transactions
  - P2P Exchange (removes third party intermediaries)
  - Tangibility of cash
  - Anonymity (pseudonymity) of transactions
  - Transaction reversal
  - Need for 3rd party in transactional relationships

**BLOCKCHAIN**

- **TECHNOLOGY**
  - Security of transactions
  - Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
  - Control over and access to funds
  - Innovation (and accelerates it)
  - Evolution of the Internet (birth of IoT, new business models, access and usage of citizens of the Internet)
  - Transactional trust (math as contract)
  - Maxxing out utility of investment
  - Managemet of balance of medium of exchange and holder of value (slows velocity)

**RESEARCH PROCESS — IDEAS**

- Online shopping and trade
- Currency without borders
- Security of transactions
- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
- Control over and access to funds
- Innovation (and accelerates it)
- Evolution of the Internet (birth of IoT, new business models, access and usage of citizens of the Internet)
- Transactional trust (math as contract)
- Maxxing out utility of investment
- Management of balance of medium of exchange and holder of value (slows velocity)

**ENHANCES**

- Internal integration and communication
- Knowledge of money and where it comes from
- Decentralized activism (on the blockchain)
- Dependency on technology (reliability and uptime)
- Ownership of money
- Definitive settlement of transactions
- Banking for everyone (including criminals)

**REVERSES INTO**

- An interesting case study along trajectory of earlier digital currencies (Liberty Dollar, Chaumian eCash, Szabo’s Bitgold)
- Blind following of ‘heat’ of bitcoin in exchanges, like fiat exchanges (e.g., terrorist initiated ‘puts’)
- Seeking ‘Breach opportunities’ (increased incentive to destabilize reliability, stability, pseudonymity afforded by blockchain)

**BLACK = Bitcoin**

**BROWN = Blockchain**

**RETREIVES**

- Upside of barter (robust sense of shared value in the moment + open opportunities of digital market)
- Tangibility of risk (materiality in the area of investment)
- Policy and freedom of pre-Internet Web 1.0 days

**OBSEOLCES**

- Security of transactions
- Merchant commerce (B2B/B2C) - Reduced friction and cost, with immediacy of transaction
- Control over and access to funds
- Innovation (and accelerates it)
- Evolution of the Internet (birth of IoT, new business models, access and usage of citizens of the Internet)
- Transactional trust (math as contract)
- Maxxing out utility of investment
- Management of balance of medium of exchange and holder of value (slows velocity)

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Media Tetrad at Three Levels of Economy

MICRO LEVEL
Real Economy
Media Tetrad at Three Levels of Economy

**Micro Level**
Real Economy

**Meso Level**
Financial Services
Media Tetrad at Three Levels of Economy

MACRO LEVEL
National Currency / Policy

MESO LEVEL
Financial Services

MICRO LEVEL
Real Economy
What might the impact be over time?
Panarchy Model
**GROWTH (r)**

“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”
Panarchy Model

GROWTH (r)
“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”

CONSERVATION (K)
“Slow accumulation and storage of energy and material—the sustained plateau or maximum population”

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Panarchy Model

GROWTH (r)
“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”

CREATIVE DESTRUCTION (Ω)
“Tightly bound accumulation of biomass becomes increasingly overconnected until suddenly released—the ultimate limit”

CONSERVATION (Κ)
“Slow accumulation and storage of energy and material—the sustained plateau or maximum population”
Panarchy Model

**REORGANIZATION (α)**
“Appearance or expansion of organisms that begin to capture opportunity—the pioneer species”

**GROWTH (r)**
“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”

**CONSERVATION (K)**
“Slow accumulation and storage of energy and material—the sustained plateau or maximum population”

**CREATIVE DESTRUCTION (Ω)**
“Tightly bound accumulation of biomass becomes increasingly overconnected until suddenly released—the ultimate limit”
Panarchy Model

**SPRING**

**REORGANIZATION (α)**

“Appearance or expansion of organisms that begin to capture opportunity—the pioneer species”

**GROWTH (r)**

“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”

**AUTUMN**

**CONSERVATION (K)**

“Slow accumulation and storage of energy and material—the sustained plateau or maximum population”

**SUMMER**

**CREATIVE DESTRUCTION (Ω)**

“Tightly bound accumulation of biomass becomes increasingly overconnected until suddenly released—the ultimate limit”

**WINTER**

“Rapid colonization of recently disturbed area—the instantaneous rate of growth of a population”
Panarchy Model

GROWTH (r)

CREATIVE DESTRUCTION (Ω)

CONSERVATION (K)

REORGANIZATION (α)
Tetrad Nested in Panarchy

Growth (r)

Creative Destruction (Ω)

Conservation (Κ)

Reorganization (α)


Tetrad Nested in Panarchy

- **GROWTH** (r)
- **CREATIVE DESTRUCTION** (Ω)
- **CONSERVATION** (Κ)
- **REORGANIZATION** (α)

**MEDIA**

- **ENHANCES**
- **REVERSING INTO**
- **RETRIEVES**
- **OBSOLESCES**


Tetrad Nested in Panarchy

RESEARCH PROCESS — IDEAS

GROWTH (r)
CREATIVE DESTRUCTION (Ω)
CONSERVATION (K)
REORGANIZATION (α)

ENHANCES
RETIRES INTO
MEDIA
OBSELESCES


Tetrad Nested in Panarchy

GROWTH (r)

CREATIVE DESTRUCTION (Ω)

CONSERVATION (Κ)

REORGANIZATION (α)

RETREIVES / ENHANCES / REVERSES INTO / OBSELOSES /


Tetrad Nested in Panarchy

**RESEARCH PROCESS — IDEAS**

**SPRING**

- RETRIEVES / REORGANIZATION (α)

**SUMMER**

- ENHANCES / GROWTH (r)

**AUTUMN**

- REVERSES INTO / CONSERVATION (K)

**WINTER**

- OBSOLESCES / CREATIVE DESTRUCTION (Ω)

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Tetrad Nested in Panarchy

ENHANCES / GROWTH ($r$) 

RETRIEVES / REORGANIZATION ($\alpha$) 

REVERSES INTO / CONSERVATION ($K$) 

OBSELESCES / CREATIVE DESTRUCTION ($\Omega$)
Narrative: Remittance at Real Economy Level

RESEARCH PROCESS — IDEAS

ENHANCES / GROWTH (r)

RETRIEVES / REORGANIZATION (α)

REVERSES INTO / CONSERVATION (K)

OBSOLESCES / CREATIVE DESTRUCTION (Ω)

Narrative: Remittance at Real Economy Level
Narrative: Remittance at Real Economy Level

RESEARCH PROCESS — IDEAS

ENHANCES / GROWTH (r)

REORGANIZATION (α)

REVERSING INTO / CONSERVATION (K)

OBSOLESCES / CREATIVE DESTRUCTION (Ω)

Currency without borders
Narrative: Remittance at Real Economy Level

Ownership of money

Currency without borders

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Narrative: Remittance at Real Economy Level

- Ownership of money
- Currency without borders
- Start up culture around new remittance services
Narrative: Remittance at Real Economy Level

RESEARCH PROCESS — IDEAS

SPRING

RETRIEVES / REORGANIZATION (α)

ENHANCES / GROWTH (r)

Ownership of money

Currency without borders

SUMMER

FIGURE / GOOD

AUTUMN

REVERSES INTO / CONSERVATION (K)

OBSOLESCES / CREATIVE DESTRUCTION (Ω)

Need for 3rd party intermediaries

WINTER

Start up culture around new remittance services

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Narrative: Remittance at Real Economy Level

**RESEARCH PROCESS — IDEAS**

**SPRING**

- Increased intimacy of transactions
- Ownership of money
- Currency without borders

**SUMMER**

- ENHANCES / GROWTH (r)

**WINTER**

- OBSOLESCE / CREATIVE DESTRUCTION (Ω)

**AUTUMN**

- RETRIEVES / REORGANIZATION (α)

**K**

- Start up culture around new remittance services
- Need for 3rd party intermediaries

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Narrative: Remittance at Real Economy Level

- Anonymity of personal transactions
- Increased intimacy of transactions
- Ownership of money
- Currency without borders
- Start up culture around new remittance services
- Need for 3rd party intermediaries

ENHANCES / GROWTH (r)

RETRIEVES / REORGANIZATION (α)

REVERSES INTO / CONSERVATION (K)

OBSELESCES / CREATIVE DESTRUCTION (Ω)
Narrative: Remittance at Real Economy Level

**RESEARCH PROCESS — IDEAS**

**SPRING**
- Anonymity of personal transactions
- Upside of barter (trust in transaction)
- Increased intimacy of transactions
- Ownership of money
- Currency without borders

**SUMMER**
- Enhances / GROWTH (r)

**AUTUMN**
- Reverses into / CONSERVATION (K)
- Start up culture around new remittance services
- Need for 3rd party intermediaries

**WINTER**
- Obsolesces / CREATIVE DESTRUCTION (Ω)
- Narrative: Remittance at Real Economy Level
- Enhances / GROWTH (r)
- Reverses into / CONSERVATION (K)
- Ownership of money
- Currency without borders
- Anonymity of personal transactions
- UPSIDE OF BARTER (TRUST IN TRANSACTION)

**RESEARCH PROCESS — IDEAS**

**SPRING**
- Anonymity of personal transactions
- UPSIDE OF BARTER (TRUST IN TRANSACTION)
- Increased intimacy of transactions
- Ownership of money
- Currency without borders

**SUMMER**
- Enhances / GROWTH (r)

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- Reverses into / CONSERVATION (K)
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- Narrative: Remittance at Real Economy Level
- Enhances / GROWTH (r)
- Reverses into / CONSERVATION (K)
- Ownership of money
- Currency without borders
- Anonymity of personal transactions
- UPSIDE OF BARTER (TRUST IN TRANSACTION)
How might this play out through levels of the financial system?
RESEARCH PROCESS — IDEAS

Narrative: Remittance at Three Levels of System

MICRO LEVEL

Real Economy Level
Narrative: Remittance at Three Levels of System

MESO LEVEL
Financial Services

MICRO LEVEL
Real Economy Level
Narrative: Remittance at Three Levels of System

MACRO LEVEL
National Currency / Policy

MESO LEVEL
Financial Services

MICRO LEVEL
Real Economy Level
Narrative: Remittance at Three Levels of System

**MACRO LEVEL**
National Currency / Policy

**MESO LEVEL**
Financial Services

**MICRO LEVEL**
Real Economy Level
Narrative: Remittance at Three Levels of System

MACRO LEVEL
National Currency / Policy

MESO LEVEL
Financial Services

MICRO LEVEL
Real Economy Level
How might remittance be an entry point for Bitcoin’s potential to bank the unbanked towards the emergence of a “digital middle class”?
REFLECTION ON THE MODELS AND FUTURE WORK

FUTURE WORK
Media Tetrad

Aggregate emergence — within and across quadrants and at levels of system

Panarchy Model

Taking emergent ideas through time and narrative — both horizontally and vertically
REFLECTION ON THE MODELS — CHALLENGES

Integrated Model

Its usefulness as a scenario-seeding tool needs further exploration

More applications of the models together are needed
What applications of this integrated model can you imagine?
THANKS!

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