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{ working on the monetary systems of the future }

Presentation by

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{ our vision }

We see a future where money will once again be diverse, with many different issuers, with a variety of credit relationships, where people will take an active interest in the type of money they wish to use.

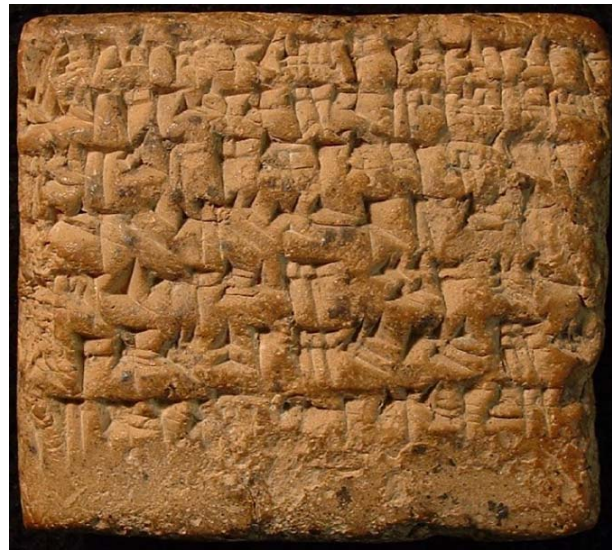
Our aim is to provide the tools to achieve that vision.

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{ money before central banks }

[1] **Money** \approx **credit** – esp. when banking develops

Late Babylonian receipt for payment of silver



The Banking Law Journal, May 1913

WHAT IS MONEY?

BY A. MITCHELL INNES.

Credit is the purchasing power so often mentioned in economic works as being one of the principal attributes of money, and, as I shall try to show, **credit and credit alone is money.** Credit and not gold or silver is the one property which all men seek, the acquisition of which is the aim and object of all commerce.

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{ money before central banks }

- [1] **Money** \approx **credit** – esp. during periods of thriving commerce

- [2] **Many monies** circulated – therefore *need for optimisation*,
i.e. choosing the “least expensive” to pay with in a given situation

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A Mitchell-Innes, "What is Money?", The Banking Law Journal, May 1913

//385// Throughout the feudal period the right of coinage belonged not alone to the king but was also an appanage of feudal overlordship, so that in France there were beside the royal monies, **eighty different coinages**, issued by barons and ecclesiastics, each entirely independent of the other, and differing as to weights, denominations, alloys and types. There were, at the same time, more than **twenty different monetary systems**. Each system had as its unit the *livre*, with its subdivisions, the sol and the denier, but the value of the livre varied in different parts of the country and each different livre had its distinguishing title, such as *livre parisis*, *livre tournois*, *livre estevenante*, etc. And not only did the value of each one of these twenty or more *livres* differ from all the others, but **the relationship between them varied from time to time**. Thus the *livre de tern* was in the first half of the thirteenth

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A Mitchell-Innes, "What is Money?", The Banking Law Journal, May 1913

We now come to the most characteristic feature of the finance or feudal France and the one which has apparently given rise to the unfounded accusations of historians regarding the debasement of the coinage. The coins were not marked with a face value, and were known by various names, such as Gros Tournois, Blanc à la Couronne, Petit Parisis, etc. They were issued at arbitrary values, and **when the king was in want of money, he "mua sa monnaie," as the phrase was, that is to say, he decreed a reduction of the nominal value of the coins.** This was a perfectly well recognized method of taxation acquiesced in by the people, who only complained when the process was repeated too often, just as they complained of any other system of taxation which the king abused. How this system of taxation worked will be explained later on. The important thing to bear in mind for the present is the fact—abundantly proved by modern researches—that **the alterations in the value of the coins did not affect prices.**

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A Mitchell-Innes, “The Credit Theory of Money”, The Banking Law Journal, 1914 (Dec/Jan)

In France not so long ago, not only were there many different monetary units, all called by the same name of *livre*, but these livres – or such of them as were used by the government – were again often classified into *forte monnaie* and *faible monnaie*, **the government money being *faible***. This distinction implied that the government money was of less value than bank money, or, in technical language, was depreciated in terms of bank money, so that the bankers refused, in spite of the legal tender laws, to accept a *livre* of credit on the government as an equivalent of a *livre* of credit on a bank.

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A Mitchell-Innes, What is Money?, The Banking Law Journal, May 1913

grasp any of the phenomena of money. Hard, too, is it to realize that in America to-day, there are in any given place **many different dollars in use**, for the fact is not so apparent in our days as it was in former times. Let us **suppose that I take to my banker in, say, New Orleans, a number of sight drafts** of the same nominal value, one on the Sub-Treasury, one on another well-known bank in the city, one on an obscure tradesman in the suburbs, one on a well-known bank in New York, and one on a reputable merchant in Chicago. For the draft on the Sub-Treasury and for that on the bank in the city, my banker will probably give me a credit for exactly the nominal value, but the others will all be exchanged at different prices. **For the draft on the New York bank I might get more than the stated amount**, for that of the New York merchant, I should probably get less, while for that on the obscure tradesman, my

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{ money before central banks }

- [1] **Money** \approx **credit** – esp. during periods of thriving commerce
- [2] **Many monies** circulated – therefore *need for optimisation*,
i.e. choosing the “least expensive” to pay with in a given situation
- [3] **Commerce was often based on P2P credit** – therefore *need for clearing*

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local credit systems & clearing (1)

A few centuries ago, most trade in small communities was done on credit, which required much less actual money than cash transactions. This can be modelled by the issue of tokens.

<u>Local transaction chain</u>	A	B	C
A buys from B for #10		A# 10	
B buys from C for #8		A# 10	B# 8
C buys from A for #12	C# 12	A# 10	B# 8

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local credit systems & clearing (2)

Debts were cleared from time to time, often during the seasonal fairs. These were largely “circular economies” so residual debits and credits tended to be small. They were carried over or settled with money.

<u>Clearing of debts</u>	A	B	C
Initial holdings (assets)	C# 12	A# 10	B# 8
Tokens issued (liabilities)	A# 10	B# 8	C# 12
Difference	2 CR	2 CR	4 DB

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{ money in the central bank era }

[1] Today, **money creation is done almost exclusively by banks**. By making loans, banks take the credit of individuals, companies and public sector bodies and convert it into bank credit, or bank money, for a fee.

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{ money in the central bank era }

[1] Today, **money creation is done almost exclusively by banks**. By making loans, banks take the credit of individuals, companies and public sector bodies and convert it into bank credit, or bank money, for a fee.

[2] There is **only one type of money**, for example the Euro in the Eurozone, despite a variety of issuers, and tends to hide the tensions in the money system.

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the backing of money : one source of tensions in the money system

Money originating from private sector debt :

- > backed by a **promise to work**, to provide goods and services
- > we call this “productive money”

Money originating from public sector debt:

- > backed by a **promise to tax**
- > we call this “unproductive money” if issued in excess
- > creates an illusion of wealth: “the more government money there is in circulation, the poorer we are” (Mitchell-Innes)

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{ the future of money? }

*Imagine a system where many types of money and many types of credits coexist,
and any two users, or any group of users, can choose how to use them...*

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{ key platform features }

- > Users can define their own credit relationships, what money and credit they accept, and on what terms.
- > Optimal payment path computed automatically for all payments.
- > Ability to create new currencies, linked to financial assets or other external data.
- > Library of predefined smart contracts for typical use cases (local currency, local credit exchange, ...) that can easily be set up and configured.
- > Ability to create custom contracts - although an audit may be required.
- > Access to fiat currencies and other financial instruments via gateways (banks)

{ Accepting credit for final settlement }

Let's take user Radu who is configuring his account. First, he specifies which credits he accepts for final settlement – ie without further conditions.

- > Accepts and AA+ rated bank credit in EUR (that is Euro fiat money)
- > Accepts bitcoin, but total holdings not to exceed the equivalent of EUR 2,500.
- > Accepts local currency Beki at a discount of 3%, but total holding not to exceed Beki 1,000.

{ **Accepting credit : credit communities** }

Radu is actually the CEO of an SME, he has applied to join a local interco credit system and has been accepted with a credit line of EUR 10,000. By joining the system, he agrees to its rules, which could for example be:

- > Every member must grant as much credit as he receives
- > There is a fee of 0.1% for each transaction, to go into a default guarantee account
- > Monthly clearing of balances on the last day of each quarter, with debit balances exceeding EUR 5,000 payable in EUR fiat
- > ...

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{ Accepting credit : custom contract }

Radu often does business with “Widgets & Co”, so he agrees to accepting their credit under the following conditions:

- > Currency: EUR only
- > Credit line of EUR 10,000, but only if the total exposure of Widgets does not exceed EUR 50,000
- > The credit is free for 30 days, after which a 5% pro-rata interest applies
- > The credit must be cleared within 90 days, or settled in EUR fiat at that time
- > Radu also accepts credit conversion to the tune of EUR 5,000, as long as his own available credit lines exceed EUR 20,000
- > These conditions remain valid as long as Widgets accepts Radu’s credit on the same terms

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{ credit conversion }

Say A and C have no credit link, but A is trusted by B, who in turn is trusted by C:

$A \rightarrow B \rightarrow C$

In order to pay C, A might use his trust relationship with B like this:

<u>Credit conversion via token exchange</u>	A	B	C
A exchanges tokens with B	B# 10	A# 10.3	
A buys from C using B's tokens		A# 10.3	B# 10

This is equivalent to B agreeing to have his credit attached to A's token – in this case for a price.

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{ optimal payment path }

Let's again consider a situation where A wishes to purchase goods or services from C, but this time there are different ways of doing so, for example:

$A \rightarrow C$; $A \rightarrow B1 \rightarrow B2 \rightarrow C$; $A \rightarrow B3 \rightarrow C$

Depending on the conditions of each credit relationship, and possibly also on other factors (e.g. when does A expect to settle the debit balance?) one of these paths may be more favourable than the others.

In our system, finding that optimal path will be fully automated.

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{ technology }

- > Accessible online or via smartphone.
- > Semi-private blockchain with smart contracts.
- > Nodes will be run by project participants.
- > Resource-intensive computations (such as finding optimal payment paths, and the clearing of debits and credits) are expected to run off-blockchain, with the resulting transactions verified and validated on the blockchain.
- > A public blockchain will be used to record signatures of blocks of transactions.
- > Later on: APIs

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{ use cases }

- + inter- and intra-company credit systems, to reduce reliance on bank financing
- + partial alternatives to micro-credit systems
- + jump-starting local economies for the world's “underbanked”
- + quickly set up alternative money/credit systems during crises (cf. Greece &c)
- + local currencies
- + and whatever applications users can come up with.

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{the human factor }

For at least 95% of homo sapiens' 200,000 year history, humans have lived in small groups of at most 150 people. Anthropologists believe that these societies were generally characterised by cooperation and mutual trust.

The past 10,000 years have seen tremendous advances in civilisation, but at a cost.

Neither anonymity, nor working in large groups, seems to be natural to us as a species.

So let's end on a wildly optimistic note:

That by making money more personal, for example through p2p credit relationships, we might contribute to the development of more civilised monetary systems.

Sometimes the tools we have at our disposal can change the way we act!

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Thank you!

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