THE EVOLUTION OF TOKEN FAMILIES

Daniel Mark Harrison (25 Sept. 2018)

References for Guidance:

WHITE PAPER / CODE

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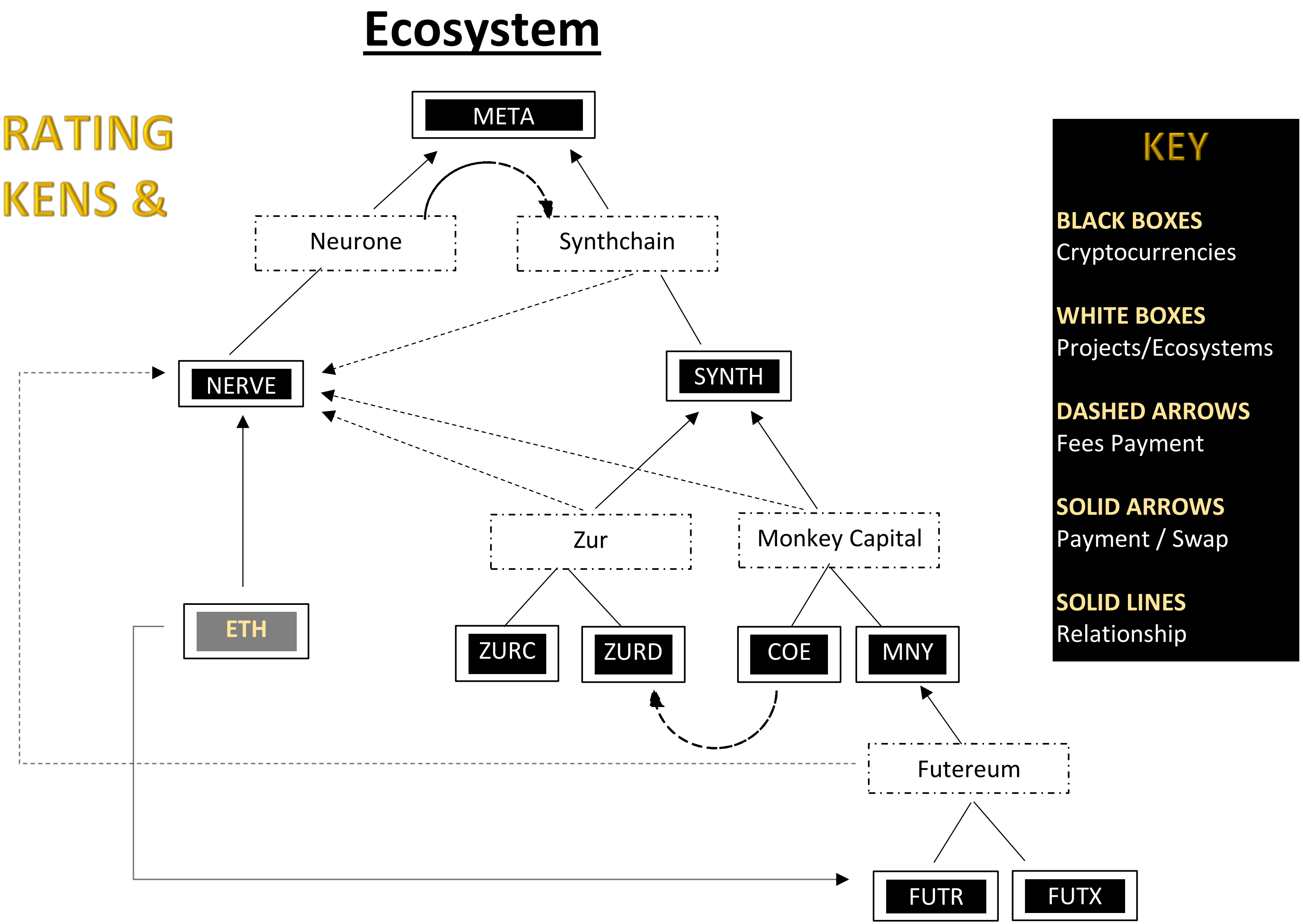
DIAGRAM ILLUSTRATING ECOSYSTEMS, TOKENS & PAYMENTS

Brief

There are five project ecosystems in total: Futereum, Zur, Monkey Capital, Synthchain and Neurone. Each have an interrelated / overlap quality that binds them to the rest of the ecosystem, either via exchanging in and out of another ecosystem's smart contract or by paying into or mining tokens (from) out of another ecosystem. META is the difference between the rate of production of NERVE (ETH purchased, fixed supply) and SYNTH (digital note swaps token). The variation of this rate will over time correlate with certain intra-ecosystem events which can be fine-tuned for trading possibilities



Token Families

Token families, which can also be characterised as **digital notes**, are smart contract programs where the tokens native to the smart contracts exchange and then re-exchange or filter through the foreign smart contract in order to create value constructs in a way that until today has been impossible.

Example:

In this example, the black line is the first transaction and the gold line is the second transaction. There is a family relationship established between ETH and FUTR in that FUTR becomes a proxy for ETH. In this example, ETH is the **seed** currency of the family (since it is a coin). The mechanism undertaken is called **seeding**.

Parental Proxification of Tokens

This proxy feature of tokens where one token acts as a proxy for another is akin to reproduction in biological systems, and as such it the process is called **parenting**. Parenting is where one token (not coin) in a family tree seeds another proxy.

Example:

Another example:

Here, MNY parents FUTR and COE parents MNY becoming the child's proxy.

Maternal / Paternal Parenting

Parents can be divided into maternal and paternal roles. Maternal parents exchange and re-exchange for their children whereas paternal parents mine the tokens and have a finite supply. Therefore, FUTR, MNY and COE are all maternal tokens. Zur Draft is a paternal parent token for COE.

Paternal Token:

Paternal tokens receive the proceeds of the children they parent immediately (yellow), unlike maternal tokens, which have to wait usually until a mining cycle is finished (grey).

F-Type Relationships Within Our Model

In our construct, there are four identifiable generations of tokens:

- Great-grandparent (F1) = META
- Grandparents (F2) = NERVE (Grandfather) SYNTH (Grandmother),
- Parents (F3) = ZUR-D (Father of COE), COE (Mother of MNY), MNY (Mother of FUTR, FUTX), ZUR-C (Single Parent of ZUR-D),
- Children (F4) = FUTR, FUTX

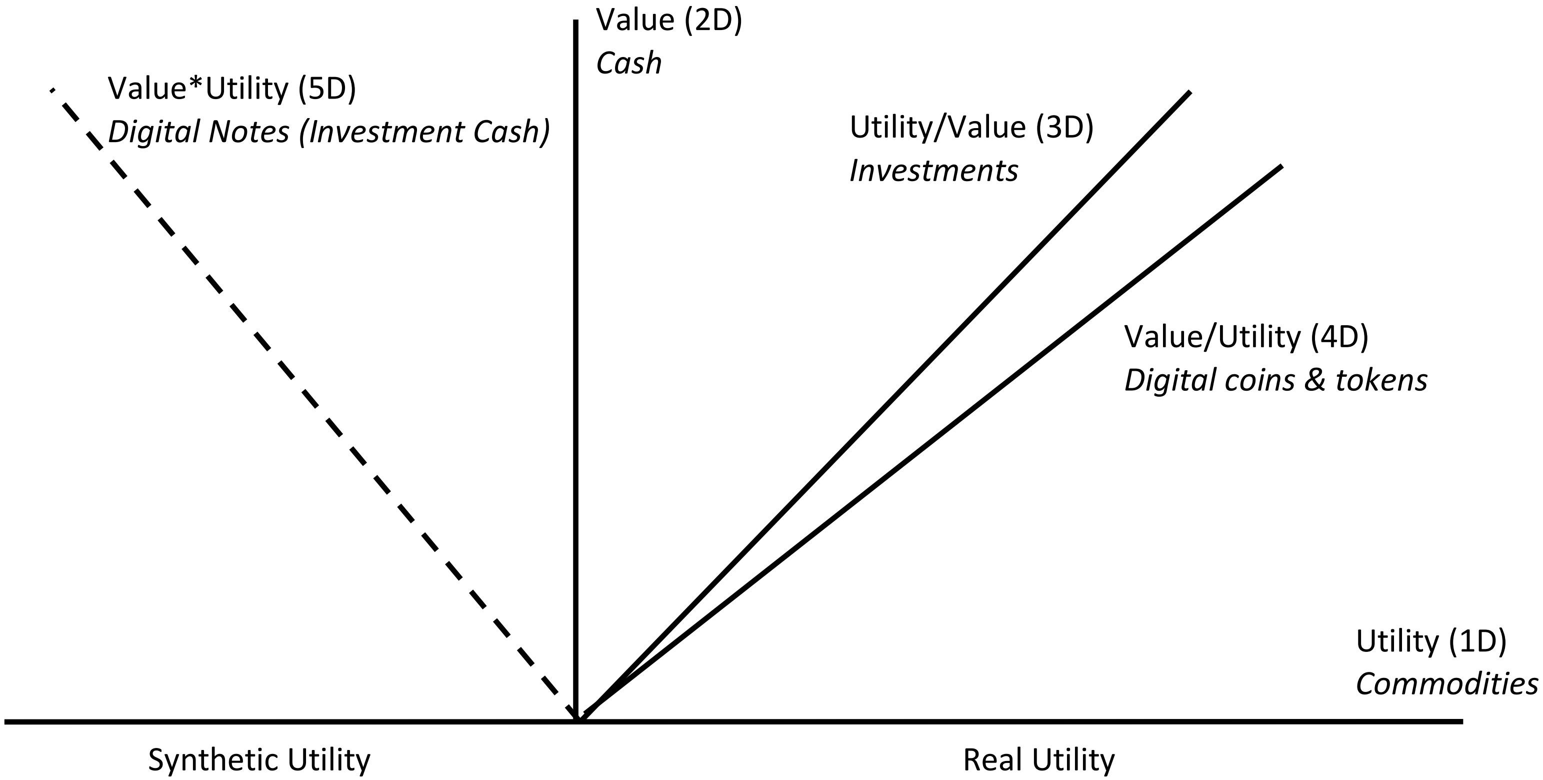
Ecosystem Hierarchy

The relationship whereby Parent and/or Grandparent is applied must be applied via an ecosystem not just a relationship. Therefore, despite the fact that ZUR-D is Father of COE (and therefore implicitly Grandfather of FUTX) because Zurcoin and Monkey Capital both feed into Synthchain (via SYNTH) there is no F-type status assigned permanently to ZUR-D in this context.

Currency Dimensions (1)

Why Are F-Types Important?

With utility tokens, there is a prioritisation of function over marginal profit.



Currency Dimensions (2)

In order to create a value-first utility, we have to reverse-engineer the value reflection inherent in cryptocurrencies into 5D (synthetic utility) by auctioning a swap or mining function. By paying dividends, we only create 3D Utility/Value instruments, however, by programming a parental F-type relationship function into the software of the smart contract of the token, we are able to engineer Value*Utility.

Value*Utility (5D) is fundamentally different from Utility/Value (3D). Whereas a share of a company has *reduced utility* as a result of its only utility being the underlying value, 5D currencies such as digital notes within token families have *increased utility* as a result of exchangeable or mineable value.

The increase in utility combined with the increase in value property of the 4D currency gives rise to a new synthetic investment paradigm wherein Value and Utility both act as exponents of one another.

Summary

- Digital notes are members of token families
- Token families are hierarchically structured according to the ecosystems that they are represented in and the other tokens they interact with
- Token families are an important feature of utility tokens because they are the only way to create non-securitised value on Blockchain protocols
- In the ecosystems we have created with Futereum, Monkey, Synthchain, Zur, Neurone and its meta-rate equivalency, we have successfully managed to identify two different forms of parenting Utility/Value into Utility*Value – maternal (swaps) parenting and paternal (mining parenting)
- We believe that parenting will become a major feature of swaps-based utility token systems and that many formula can be created around the F-type phenomenon over time with respect to valuation of digital utility assets

NEXT DOCUMENT:
SYNTHCHAIN WHITE PAPER

THE SYNTHCHAIN: Introducing Digital Notes

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Monday, August 27, 2018

ABSTRACT: Cryptocurrencies have the potential to offer investors unrivalled returns as a result of their unique value-utility properties such as limited supply quotas and exponential payment utility. In the past decade, we have all seen the effects of this as Bitcoin has surged more than 1 million percent and other cryptocurrencies such as ETH and more recently, XRP, have followed similarly. However, what is less understood is that the invention of smart contracts by Vitalik Buterin in 2015 has now given rise to a potential form of value inflation that is not covariant on market hype or randomness. Rather, we are in a stage of potential Blockchain evolution now wherein developing cryptocurrencies with more than 1 million percent plus value inflation events are not just achievable but can be continually repeated and sustained. Here we show how by synchronising basic escrow functions and token issuance cycles between smart contracts how it is possible to develop what is in effect the world's first inflatable form of cash value. We detail how a synthetic income swap utility employing the smart contract function enables any calculation of a cryptocurrency asset via standard discounted cash-flow mechanisms, in effect, putting cryptocurrencies on par with securities, real estate and any number of income-generating assets. In doing so, we identify the first ever synthetic income cash instrument. We answer specific questions about the veracity of the huge performance gains inherent in cryptocurrencies and show how they are non-pyramid-biased and are in fact, entirely market randomized returns similar to those of any others in most investment products. We go on to suggest how this series of swaps transactions can be used to feed a new form of digital currency called a Coeval, wherein sale prices of new crypto respond in real time to the API-data feed of any number of socio-economic, environmental or other events. We also contextualise AI within this build. Finally, we point out how our synthetic Blockchain can be used within the context of establishing commercial enterprise solutions for more effective product financing.

"Pick a song and dance as though nobody is watching"
- His Holiness Gyalwang Drukpa[1]

i. Prefacing Statement

In 2013 Bitcoin began to pop up onto the global radar of most traders across the world when it hit the high three-digits. It was around this time that a North Chinese coal mining magnate who had just purchased a sprawling commercial-scale French vineyard first turned our attention towards cryptocurrencies.

One evening, over a six-course Shanghainese dinner washed back with a few bottles of King Star Bordeaux, the subject turned to Bitcoin. If only Bitcoin contained some sort of identifiable value, a colleague of ours complained to the erstwhile vintner-turned-Bitcoin enthusiast, it would be comprehensible. Being used to trading gold – the very definition of economic value – the idea that Bitcoin's payment utility network would by itself hold up a multi-trillion-dollar market forever seemed – and still does – a little far-fetched to our colleague, however much he might believe in the digital revolution. Our host was as unimpressed by our colleague's remarks as were we with his taste in vintage French wine.

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[1] Reprinted with the kind permission of His Holiness Gyalwang Drukpa. Our thanks are extended to His Holiness and his ministry.

The theme stuck and in a series of talks one of us held in the winter of 2014, the central question we sought to explore was: how are we meant to pay for an Internet of Things (IOT) using the current financial architecture we have in place? *Nearly three years on, and we don't know anyone who's any closer to answering that question than we were back then mostly because there is no value transference on Blockchain.*

Another of our colleagues has owned several large manufacturing and industrial enterprises for over two decades now in the Far East, and we cannot help but notice the impracticality of the sheer lag time between obtaining bank financing, hiring appropriate purchasing and inventory management personnel and training them to execute on delivery while the sales force goes out into the field to catch whatever business they can.

Clearly, a new model for financing the world's economic growth is long overdue if the promise of the virtualized economy is to be fulfilled in anything like the scope that has been presented by some.

In a September, 2014 report titled The Internet of Things: Making sense of the next mega-trend, *Goldman Sachs economists Simona Jankowski, James Covello, Heather Bellini, Joe Ritchie and Daniela Costa wrote: "Personal lives, workplace productivity and consumption will all change. Plus, there will be a string of new businesses, from those that will expand the Internet "pipes", to those that will analyze the reams of data, to those that will make new things we have not even thought of yet."*[2]

None of us was in any doubt this was the case. So, we went out in search of what we had not even thought of yet. The resultant innovation is manifest in the work that follows.

1. Introduction: The History of Money

Money as we know it today has been a feature of our world since around 800 BC – 600 BC, when the first coins were minted in Turkey between the reigns of King Alyates II and Queen Hermodike II. Coins were first minted with the exact amount of metal stipulated and only later during Roman times did coins become regularly debased and did seigniorage become a feature of the manufacture of cash instruments. Separately, the Chinese Emperor Qin Shi Huang introduced a copper coin in about 200 BC which was made with a hole through the middle of it, affording it additional mobile utility by way of being able to be carried on the back of horses via a single string that ran through the coins' center as opposed to in much heavier ceramic pots. While the Chinese were some centuries late to adopt the concept of coinage versus western societies, their invention of the paper note in the 7^{tt} – 11th century predates the earliest form of paper money in Europe by around half a millennium. Around 1700, banks in England began independently printing banknotes which could, once brought into the bank, be exchanged on the spot for a pre-agreed amount of silver. Thus, in their original form, bank notes were nothing less than securities according to the contemporary definition – that is to say, promises to pay the bearer a fixed agreed amount of money on a certain date in the future. Notes were designed with the intent of being able to represent larger sums of underlying base metal and to be more convenient to draw on. Later they became effective fundraising instruments for British banks, since customers would seldom exchange their notes for metal and thus a greater amount of value could be issued than was held in vaults by the banks.

2. Digital Notes: The Evolution of Tokens to Proxy Coins

Cryptocurrencies began with the creation of Bitcoin in 2009 by a pseudonymous programmer named Satoshi Nakomoto. All cryptocurrencies from the time of Bitcoin up until the Ethereum Virtual Machine went live in 2015 were referred to as digital coins. When Ethereum was invented, the creator Vitalik Buterin proposed a method of digital currency manufacture on top of its protocol whereby tokens could be constructed by entering a few lines of code into the Ethereum Blockchain and paying the miners in ETH, the network's

[2] https://www.goldmansachs.com/insights/pages/internet-of-things/iot-report.pdf

local currency, for verifying the creation of the tokens. In economic terms, token money is money where the unit's face value exceeds the cost of production of the unit.

Nearly all money today in circulation can be considered token money. Blockchain Tokens bear a remarkably similar relationship to digital coins in that with the minting of a digital coin, the face value may exceed the cost of production according to the market but it is still in part determined by the electricity cost in producing it. With digital tokens, cost of production is so negligible that sale price is always greater than production cost no matter what. Given that Blockchain is now one decade into its evolution as a financial technology (albeit it even if it is not yet one adopted by the major part of society), it becomes only logical to ask – what are the characteristics, the functions and what is the utility of digital notes?

A digital note ideally ought to answer a question commonly asked since the gold standard was abolished by President Nixon in 1972 and one which you hear commonly asked on Blockchain today. That question is: what is the real value property of a unit of currency?

Given that notes began life as promissory paper, we can easily simulate such a scenario without necessarily securitising the product by enabling a re-exchange of the token for its original unit of purchase as a result of the smart contract's ability to escrow sums of payment for extended period of time. For example, if someone pays 1 ETH for a token we create on the Ethereum network, we can extract a fee for the manufacturing process and innovation of the token and subsequently we can allow the remaining portion of the ETH to be held securely in the token's smart contract until a certain date in the future when it can be re-exchanged for the token that it was first used to purchase.

If we alter the algorithm between issuance of the tokens and re-exchange of the tokens with the ETH in the smart contract, for instance by progressively issuing less tokens per ETH entered into the smart contract at point of issuance and then equalising all re-exchanges of tokens and underlying cryptocurrency in the smart contract on a fixed like-for-like basis, the result is one whereby a leverage effect in terms of the price of the initial unit of digital currency used to pay for it is created by the holder commonly getting back more ETH than they submitted initially. It was on this basis that we first created Futereum in January 2018. Thus, Futereum can be considered the world's first digital note.

At heart, a digital note is nothing more than a proxy digital coin, or a proxy digital token, being the unit of token money value that is employed in temporarily representing the digital coins in the token's smart contract prior to re-exchange. Because digital notes represent actual cryptocurrencies that they are in some sense categorically themselves, as opposed to an alternate form of value such as when a paper note represented a pound of silver, the effect is one whereby digital notes are able to be employed in leveraging and artificially magnifying potential investment returns for digital currency investors across a broad range of digital assets, and employing a whole series of highly-imaginative cost-of-sale formulas that ultimately affect the price of the notes themselves. In this way, we are the first to have identified how to engineer not just utility but also value on the Blockchain.

To summarise, a digital coin is a unit of cryptocurrency attached to the creation of a specific Blockchain. A digital note is a smart contract utility-enhanced token where the token is used by way of being ascribed a proxy value for the underlying value that is stored inside the smart contract for which the token is ultimately re-exchanged.

3. Value Reflection & Value Loading In Digital Notes

Digital notes can be expressed in the form of any token with a smart facility where the escrow function in the token's smart contract or similar facility represents a possible storage place for any sort of crypto value for a period of time. Digital monetary instruments, as for any monetary instrument, rise in value the higher the value of the goods they purchase rise in price. This is not a well-understood process, but it is a process we have identified in both real and in digital economies. It is easier to identify in digital markets due to constrained supply of digital assets, making such trends more noticeable. We can call this scenario where a type of value is conferred onto the currency as a result of the currency being able to purchase an asset of a comparatively higher price value for what it is: *reflection*.

Value reflection is still not very well understood. An example is where 100,000 tokens are enabled to purchase 100,000 shares of a company at the value of $5 per share. In such a case, the tokens would immediately have $500,000 of *reflected value*. If they did not, someone else would simply purchase the tokens under that sum and then use them to purchase the shares which they would sell for a marked-up price to make an arbitrage profit.

When a smart contract holds Ether inside it, the value reflection of the ETH reflected on the price of the proxy digital note holding it securely is essentially internally-reflected value that is somehow part of the character of the digital note. The process by which this value reflection comes about however does so slightly differently to that of most currencies, for it is only created at point of purchase.

Thus, value loading is the term we use to describe the moment when ether (or whatever other digital asset is being employed as the unit of purchase) is sent to the smart contract, safely-stored there and where the newly-issued digital note is simultaneously sent from the same smart contract to the purchaser with the additional utility of being re-exchangeable at some point with a greater or lesser amount of that initial purchase asset.

4. Synthetic Blockchain Overview

Zurcoin is a failed proof-of-work Blockchain dating back to 2013. Since then, it has not averaged over at its peak $30,000 in annual daily volume and currently stands at 0.1 cent with average daily volume around a few hundred dollars per ZUR. Monkey (MNY) is a failed ICO that in August 2018 resulted in a default judgement against the issuer Monkey Capital LLC for the unregistered issuance of securities.

Is there a way in which we can take the core concepts of the ideas behind these assets and make them established cryptocurrencies? This would serve to re-compensate the individuals who mined or purchased into both currencies at point of issuance. Proof-of-work has a natural advantage in-built: there are progressively less of the coins issued as time goes on, making cost of production relatively higher. At the same time, the Monkey Capital ICO, which billed itself as a decentralised hedge fund, proposed a number of compelling (but as yet incompletely executed) ideas, foremost of which was the tying together of the exterior global economy and the crypto economy.

By applying today's smart contract technology, we discovered a way to solve both of the problems of these failed digital assets. Note that it is not important that the assets are Zurcoin and/or Monkey, especially, rather that we are providing a solution to rescue those that put in money into these initiatives and restore those investments to parity, while creating in and of itself a superior technical currency solution with multipurpose future utility.

For MNY, we applied the proposed recommendation by the currency's founder and used the Bitcoin historical price algorithm. We did not share his suggestion that all ERC tokens should be allowed to mine into MNY however, only core network coins in synthetic ERC20 form (e.g. Cardano, NEO etc.)

For ZUR, we wanted to keep faith with the concepts of high maximum supply (127 million was a great deal of coins for 2013) and mining protocol. Thus, employing the Coeval Oracle we built, we streamed in the API of CoinMarketCap and divided the result by one billion, in order to give a natural equilibrium at which COE, the resultant currency, could be issued against MNY. We installed a feature connecting COE and ZUR so at the point of issuance, a percentile fraction (35%) of all COE mined by the MNY purchaser would be gifted to the 25 trillion ZUR "cheques". The ZUR cheque holders were then distributed all the 35 Trillion cheques with the founder of the failed ICO project permitted to keep the lowest common holdings denominator (around 5 ZUR), with a value of pennies on the dollar.

What we achieved was a system whereby the boundaries of centralised and decentralised control had been curiously married in a compatible way. Basically, we can now allow developers to build their own Coeval notes, with their own unique API feeds streaming the price-points of each. As long as their currency accepts MNY as a form of purchase, and they feed at least 35% of their new supply into the ZUR notes mining capability, they will share in the pool of fees generated by all the digital assets on the Synthchain.

5. Intrinsic Value of Digital Notes

Digital Notes have an additional dimension of utility to most cryptocurrencies in their potential for re-exchange as units of proxy digital coinage with the original purchase asset stored in the smart contract. As a result of this additional dimension of Utility, digital notes also have an additional dimension of value that very significantly makes them far more conventional monetary instruments than standard cryptocurrencies except in a synthetic form:

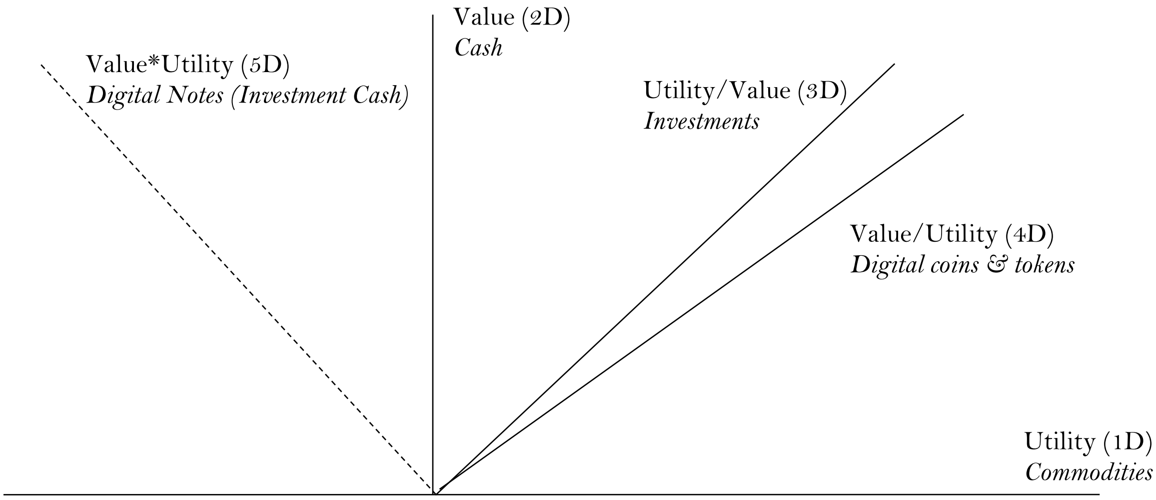

Fig i: Currencies mapped according to their Utility-Value dimensions

Whereas valuing most cryptocurrencies involves using a variety of experimental formula and "best-guess" approaches, valuing digital notes is no different at all to valuing any investment is. When undertaking an investment valuation, aby far the most common approach is to use a discounted cashflow analysis to arrive at a net present value of the asset being valued. The formula for calculating DCF for an asset value in present terms that is three years into the future from now is expressed as follows:

$$PV = CF_1 / (1+k) + CF_2 / (1+k)^2 + CF_3 / (1+k)^3 + [TCF / (k - g)]/(1+k)^{n-1}$$

where PV = present value, CF_i = cash flow in year I, k = discount rate, TCF = the terminal year cash flow, g = growth rate assumption in perpetuity beyond terminal year and n = the number of periods in the valuation model including the terminal year.

Presently, no digital asset can be valued this way as there is not an expected income receipt from a cryptocurrency, since its utility is purely that of a payment utility. Indeed, prior to the advent of cryptocurrencies, which due to limited supply quotas, tended towards big increases in value as a result of a more exponential demand function than availability permitted at equilibrium value, it was never imagined that currencies themselves would resemble income assets.

Currencies prior to cryptocurrency innovation were merely mechanisms with which to pay with things for, and were only materially worth speculating on the direction of against one another by applying substantial (1,000% in many cases) portions of leverage.

With digital notes, however, there *is* an income receipt that is expected at some point in the future. This income receipt while not specifically a classifiable dividend or such is nevertheless manifest in the form of a re-exchange of the digital notes with the original units the notes were purchased with.

6. FUTR: Use of Phi Algorithm to Simulate PoW Mining Effect

The Fibonacci sequence is a numerical order based on the algebraic function *Phi* first discovered by Leonardo Pisano and published the Italian mathematician's 1202 book *Liber Abacci.*

The sequence was first postulated by Pisano as a means to understanding the potential infinite increase of rabbit populations in rural areas, and it is today used to underpin many of the world's most sophisticated financial markets trading algorithms.

The ratio comprises a mathematical formula whereby the previous two numbers in the sequence combine to give the result of the subsequent answer to the equation *ad infinitum*:

$$1 + 1 = 2$$
$$1 + 2 = 3$$
$$2 + 3 = 5$$
$$3 + 5 = 8$$
$$5 + 8 = 13$$
$$8+ 13 = 21$$
$$13 + 21 = 34$$
$$21 + 34 = 55$$
$$34 + 55 = 89$$
$$55 + 89 = 114$$

etc.

A wide number of professional Crypto traders also rely heavily and in some cases exclusively on Fibonacci-regressive technical analysis today to formulate alpha-generating trading ideas and approaches. Futereum Smart Contracts must contain two apparently contradictory functions which must be equally satisfied in order to justify the utility of the tokens that are purchased in the form of Futereum Utility Tokens. Those functions are the ones as set out as a paradoxical equation:

> *Function 1 = The smart contract results in a more equitable distribution of Ether than before it was employed by the user*
>
> *Function 2 = Initial miners and high-frequency miners of Futereum Smart Contract tokens should stand to benefit more from this equitable distribution*

The paradox is resolved by means of employing a Fibonacci equation inside the mining algorithm of the Futereum Smart Contract. In the event of the Futereum Smart Contract for Ether (FUTR), we employed the equation as an expression of the amount of FUTR an ETH receives in the process of mining the smart contract. We achieved this by progressively decreasing the amount of FUTR mined per ETH sent to the smart contract as the mining level is increased.

In the example below, which represents the actual number of Ether employed in the mining of the FUTR smart contract, 1 million FUTR initially distributed across a range of miners who collectively contribute 8,772 ETH; subsequently, 990,000 FUTR are mined by a total of 11, 124 ETH etc. Naturally, the progressive difficulty (cost) of the mining process is only compounded by any price increase in ETH.

In this way, the Fibonacci equation driving the FUTR mining algorithm of this Futereum Smart Contract creates an identical mining effect to Proof-of-Work (PoW)mining, where difficulty of a coin's mining is subject to two factors, those being the cost of the unit of value being mined and the relative age of the Blockchain at the point of mining.

To date, we have not been able to discover a more efficient mining protocol type than PoW. PoW is such an effective method of digital currency mining precisely because over time it forces the miners into higher cost-per-unit mining equations, resulting in an intrinsically higher cost (price) per coin. Economically this process produces a greater expansion of the network underlying the mining process. This POW-likeness of the FUTR does not in itself result in a more equitable distribution of Ether to the FUTR miners however. Therefore, to

Level	FUTR	ETH	FEE (ETH)	FUTR/ETH
1	1,000,000	8,772	1342.10	114
2	990,000	11,124	1701.91	89
3	960,000	17,455	2670.54	55
4	910,000	26,765	4095	34
5	720,000	34,286	5245.71	21
6	650,000	50,000	7650	13
7	560,000	70,000	10710	8
8	460,000	92,000	14076	5
9	320,000	106,67	16320	3
10	170,000	85,000	13005	2
Total	**6,740,000**	**502,067**	**76,816.28**	**15.84**

Fig ii: FUTR issuance vs. ETH. Swap back results in 15.8/1including fees

achieve this using the Fibonacci sequence we employed in the smart contract development, we embedded an exchange function at the end of a fixed period in time after the last mining of the smart contract took place.

If all the FUTR produced by the smart contract is mined in under a 12-month period, then at the end of month 13 a temporary function is enabled in the smart contract whereby a FUTR holder is given a brief period of time to exchange the amount of FUTR held for a percentile-wise equivalent amount of ETH held in the smart contract since the point when the FUTR was mined.

This percentage-equitable exchange of FUTR with ETH held in the smart contract, when combined with the Fibonacci equation that is the basis of our mining algorithm, results in simultaneous equitable distribution of Ether to FUTR holders as well as preferential treatment of early and regular FUTR miners, since those who mined FUTR in the initial period of the smart contract and those who mined FUTR when ETH was relatively cheaper in value and who are thereby likely to be the most active miners gain more than late-stage one-off miners of FUTR.

7. Non-Premined Approach: Fee-Enabled Mining Solution

It has been a relatively popular occurrence recently for developers of Blockchain and smart contracts to premine a portion of the token supply as a means of rewarding themselves or the foundations they represent in financial terms for the work undertaken at point of development. We are uncomfortable with the concept of premine for the reason that it tends to lead to a moral hazard effect, whereby the party who is the beneficiary of the premined tokens is usually excessively rewarded versus those holders who either mined the tokens or who purchase the tokens on an exchange. As a direct consequence of premine containing such a developer-biased value function, core developers who ought to be safeguarding the value of the projects they undertake to build frequently accept offers for their tokens on exchanges which are far below an acceptable market price for that of their customers, and this substantially undermines the utility token price over time.

Therefore, instead of premining the FUTR smart contract, we developed a fee schedule based on achievement of actual mining levels being achieved over time. Assuming 10 Levels of mining difficulty being achieved over 12 months, with an additional one-off charge for product development, the fee schedules we developed is as follows:

- Monthly Charge: 0.4% for first 12 Months
- Level Cost: 0.6% per Level 1-10
- Administrative Fee: 5%

These fees, which comprise a total of 15%, are removed at source upon mining of the FUTR in ETH tokens. We find this a more effective approach to rewarding the smart contract developers and the foundation than the premining alternative, principally because it incentivises us to mine and hold FUTR with the ETH received by way of the small fee payments charged instead of selling out the order books on exchange with the premined tokens.

8. MNY As a Digital Note

MNY is a unique type of digital note as a result of its *loaded reflected value* attributes. MNY receives FUTR and FUTX as a form of payment and is made available for sale according to a price history identical to that of Bitcoin's historical trading cost multiplied by the value of one FUTR and/or FUTX per every $10 expenditure in Fiat terms. This results in a number of different scenarios.

First of all, MNY is usually either cheaper or more expensive to purchase on an intrinsic basis in either FUTX and/or FUTR at any one time and/or depending on the amount of MNY an investor is seeking to purchase, and rarely are the two likely to compare in terms of true value. Unless both currencies are mineable via ETH at exactly the same level at the same point in time, depending on the amount of FUTR an ETH holder is looking to purchase via smart contract and/or on exchange, four purchase alternatives are possible:

1) Purchase FUTR with ETH via smart contract and mine MNY
2) Purchase FUTX with ETH via smart contract and mine MNY
3) Purchase FUTR with COE via exchange and mine MNY
4) Purchase FUTX with COE via exchange and mine MNY

MNY receives FUTR and FUTX as a unit of purchase. FUTR and FUTX are received as a unit of purchase for ETH. Therefore, MNY is a "proxy of a proxy" for ETH. The result is one where at the end of 21 million units of MNY issuance, all MNY is equally exchangeable for a like-for-like percentage sum of FUTR and FUTX that is stored in the smart contract.

Because FUTR and FUTX both store ETH in their own smart contracts, and yet much of the ETH that is stored therein is likely to become non-swappable for a long period of time as a result of the time that the ether proxy spends in the MNY smart contract (and is therefore non-exchangeable with ether for that period) the amount of ETH per FUTR and per FUTX is likely to increase a lot during the period that FUTR and FUTX are in the MNY smart contract. Thus, at the point of re-exchange, which is to say, at the point when MNY switches for the FUTR and FUTX distributed share that was used to purchase it, the amount of ETH per FUTR/FUTX received per MNY could be much greater than the anticipated 1 ETH / 34 FUTR average that is currently the case in forecast Futereum outcomes. In fact, it may well be the case that more than 1 ETH per 1 FUTR and 1 FUTX is the resultant exchange amount. Either way, with 1 MNY being exchangeable for approximately 80 FUTR, the resultant outcome whereby even the highest level of value obtainable on a per-level / cycle ratio, wherein 1 ETH is the cost of 2 FUTR, the ROI for all MNY sales is net positive.

Therefore, if we want to calculate a very simple net present value for one ether invested in either FUTR or FUTX at the point that Futereum token is invested in MNY the calculation on a discounted cash-flow basis is:

$$\left(\frac{\$-500}{1+50\%}\right)^{1}+\left(\frac{01\times 80+(0)}{1+50\%}\right)^{2}+\left(\frac{\$4250}{1+50\%}\right)^{3}+\left(\frac{\frac{(\$1{,}687)}{(50\%-25\%)}}{(1+50\%)}\right)^{3-1}$$

$$= \mathbf{\$15,788.75}$$

This exponent on this calculation shows the power of the MNY mining tool when used in conjunction with the FUTR/FUTX tokens. Specifically, 1 ETH with the value of $500 has a net present value automatically, merely by positioning of the FUTR into the MNY smart contract, of over $15,000. The result is a net present value gain of 29,000%, and this is discounting at an aggregate compound rate of 50% a year, an incredibly unlikely event in and of itself.

9. Crosschain Applications

One of the major features in the coming years of Blockchain innovation is the development of other ex-Ethereum Blockchains as standards in and of themselves. The variances in core utility between these various Blockchains is likely to be very slight, with by far the bulk of utility remaining very much the same. Indeed, almost every industry competition comes down purely to a value war of some kind ultimately, be it in the fields of automobiles, airlines or architecture. We should not expect it will be any different then with Blockchain innovations.

Despite the magnificent prospects for alternate utility, no Blockchain is geared toward any sort of specialised utility whatsoever. This implies even more that a value war of some kind is on the verge of coming into being.

Digital notes will help on several fronts with such value wars: they will increase the value proposition of alternate Blockchain builds by retaining supply off the tradeable market in the smart contracts of the notes themselves, they will help investors to more accurately identify cross-chain values and locate where those values are identifiable as cheap or dear based on future expected returns, and they will give the cross-chains a utility outside their core payment utilities. Indeed, we have successfully translated the Futereum smart contract onto the QTUM Blockchain thus far, and there is no performance distinction to date.

It is entirely possible to create synthetic versions of various Blockchain coins by streaming their prices via API feeds which are then reconciled in the smart contract at point of sale.

In other words, once 1 ETH is sent to the Synthetic NEO smart contract for example, it will purchase the proxy coin at the same price as that at which NEO could be obtained. Either a program or a manual broker dealer function would then purchase the NEO coin and keep it in a secure wallet until such a time as it was either voluntarily or mandatorily re-exchanged for the original NEO coin. The architecture for this cross-chain function is really no more complex than a standard smart contract build with dynamic pricing. We can foresee this being a popular feature with respect to additional FUTR products created for diversification purposes.

10. Applying DCF To FUTR and MNY

When we purchase 114 FUTR for 1 ETH while the Futereum smart contract is selling in the first of ten tiers, by the time the exchange of all FUTR and all Ether takes place, assuming that the total number of tokens that count be issued are so in year two, then we would be able to value the FUTR's net present value discounting the asset at a comparable rate of return we might achieve in the underlying asset.

Let's assume that ETH is $500 today, and that you expect to receive 8x the amount of Ether from the Futereum smart contract as per the realistic probability of doing so if all the tiers of the smart contract are sold out somewhere in year two. Further, you assume that ETH has risen to $2,000 by three years' time and that the growth rate going forward is 35% (around half).

The Futereum smart contract will not accept any re-exchange until year 3 if that is the case. Further, you estimate that you make around 50% profit per year trading comparable cryptocurrencies. Therefore:

$$\left(\frac{\$-500}{1+50\%}\right)^1+\left(\frac{0}{1+50\%}\right)^2+\left(\frac{\$4250}{1+50\%}\right)^3+\left(\frac{\frac{\left(\frac{\$1{,}687}{50\%+25\%}\right)}{(50\%-25\%)}}{(1+50\%)^{3-1}}\right)^{3-1}$$

$$+\left(\frac{\frac{\frac{\$2000\times 8}{50\%}}{35\%}}{(1+50\%)^{3-1}}\right)\times 8$$

$$= \mathbf{\$4,717.50}$$

The result is that the value you have obtained from the Futereum smart contract's functionality is $4717.50 per Ether, representing what is a time-adjusted equivalent present value of an additional $4,267.50 when Ether is in the form of a Futereum digital note.

Presciently, the DCF formula can be used to certify whether holding the actual underlying asset or whether purchasing whatever digital note proxy coin equivalent is a better bet. For instance, assuming that the appreciation of Ether is expected to be around 1000% per year for the next 3 years then:

$$\left(\frac{\$-500}{1+1000\%}\right)^1+\left(\frac{0}{1+1000\%}\right)^2+\left(\frac{\$50{,}000}{1+1000\%}\right)^3+\frac{\left(\frac{\$50{,}000}{50\%+25\%}\right)^3}{(1+1000\%)^{3-1}}$$

$$+\left(\frac{\frac{\frac{\$45{,}000}{1000\%}}{100\%}}{1+1000\%}\right)^{3-1}\times 8$$

$$= \$127,495$$

In this case, our expected value for Ether in 3 years' time is $50,000, with an additional $5,000 a year in future growth since we discounted the growth down by 10x after the realization of the investment and since Ether was growing at a rate of an additional 1000% per year during the invested period.

The value at which we invest our $500 is enhanced with thousands in additional capital once the Ether is inside the Futereum smart contract as we can see. This means that to make the same sort of return as we could expect to make using making Futereum digital notes we would need to have an extra 200 times the capital we do today! Such a scenario is not unrealistic in venture capital investments, doubling the potential excitement for such digital note products.

Clearly, the ability to calculate currency values on the same basis that we do income-generating assets is a unique and unchartered innovation prospect.

The flexibility of digital notes to make permissible discounted cash-flow valuations of cryptocurrency utility is perhaps the most exciting aspect of the smart contract build in terms of wider application to the investment world, for in allowing such valuations to be performed, digital notes can be compared on a like-for-like basis directly with all sorts of investments, such as real estate, stocks, bonds and others.

Further, such investments now that they have a discounted future value based on a specific income ratio equivalent, can be ascribed multiples for trading, in the way that securities are valued via the business cash flows.

Remarkably, all this is made possible without securitizing a single portion of the digital currency unit as well, inviting the possibility for significant levels of disruption in equity and securities markets henceforth over the next few years.

11. COE & ZUR

We mentioned before that MNY was an ICO which we chose as a starting point to build on in order to provide value to the investors who had committed significant amounts of cryptocurrency during 2017. At the other end of the market, we discovered a failed proof-of-work (PoW) Blockchain that dated from the pre-ICO era, December 2013.
PoW Blockchain builds are notoriously hard work to establish and implement today; where there have been attempts, since 2017 at least, by far the majority have failed.

This is as a result of the expensive and inconvenient process of acquiring mining hardware which is externally stored and operated. Much PoW Blockchain architecture today makes use of hybrid proof-of-stake (PoS) software which run master nodes – effectively virtual mining hardware in software form.

Due to its relative age, ZUR has a large number of wallets; around 50,000 with cryptocurrency inside them, although the top 100 holders comprise more than 90% of the coin's overall supply owners. Thus, there are huge quantities of dead coins.

COE is a digital note that we designed to parallel to some extent the value properties of MNY with a market-based function. We achieved this by taking the CMC capitalisation 15-minute interval Pro API result and dividing it by one billon, which we then used as the expression for the number of MNY required to purchase the COE at retail price:

CMC/1B * MNY = COE Retail Price

In order to incentivise potential innovations our way, we created a special wholesale price for developers by creating a faster-mining Futereum token, with 3 months – 9 months cycles and 100 times less the number of digital notes issued, and multiplied this by the value of ETH over the value of BTC, multiplied again by the CMC formula above:

(ETH Market Cap/BTC Market Cap) * (CMC/1B) * FUTX
= COE Wholesale Price

Whenever someone purchases COE wholesale, a product-mine is extracted in the same way as for a FUTR feemine; this product-mine we deliver to the ZUR smart contract. Once delivered, individual ZUR owners can claim their COE product-mine share by activating a specific function on the wallet in which their ZUR note resides. ZUR notes were shared out among the participants of the ICO mentioned previously. Subsequently, we intend to offer all current Zurcoin holders 1-for-1 ZUR Cheque digital notes which we will purchase from the market exchanges on which it is traded, thus bringing liquidity to the supply.

ZUR smart contract may be also filled up with any ERC token and can be subsequently mined by the holders. Additionally, each individual ZUR tracks each individual token and mines a proportionate share of whatever is in the smart contract each time, so the same utility can be applied to any ZUR sold to another purchaser on exchange.

The API streaming of the CMC Index values into COE's smart contract need not be confined to just this one example of cryptocurrencies. In fact, it is possible to imagine a whole range of COE notes representing the values of a whole range of assets, from securities to real estate, even to non-asset API feeds representing things such as the global weather temperature average.

By employing an Oracle we built and named Coeval that accepts the API and redirects it to the COE smart contract, any form of numeric feed can be employed in the pricing structure of similar COE notes. It is possible this may have significant applications for a wide range of speculative and investment purposes of course over time, which we will seek to build.

COE mines for up to 100,000 COE or 100 days, whichever comes first. At that point, 35% of the COE produced in the current cycle shares in a potential re-exchange for 35% of the content of the COE smart contract.

We initiate COE smart contract with a discount sale conducted in ETH. This discount sale takes place over the same 100-day period and sells up to 100,00 COE as per all cycles, but retails COE at a price increase of 0.001 ETH per tier, with a maximum 1,000 COE per tier sold, increasing in value over 100 tiers by 0.001 ETH up to a maximum cost of 0.1 ETH/COE.

This initial discount sale is designed to attract new participants to the value network of digital notes we are hereby constructing.

12. Digital Notes – Scenario Analyses

DNs involve the synthetic application of payment utility via smart contracts for one or more digital tokens combining to produce a natural hyper-inflation of value.

By combining and crossing over various token-release algorithms it is possible to create a number of value events that, once combined, produce an extraordinary increase in gross value over the amount of value initially invested over a very short space in time. This is the primary utility of DNs.

What happens to 1 ETH invested in FUTR and MNY Digital Notes?

The following are all realistic foreseeable examples at the time of writing in mid-2018:

1) 1 ETH = $450. This is invested into the Fueterum smart contracts (either FUTR or FUTX) and produces 114 FUTR or 114 FUTX (on the first mining tier; soon it'll be 89 FUTX in return as the first mining tier is nearly used up!) That is $3.94 / FUTR or FUTX!

2) After that, use FUTR or FUTX and send it to the MNY smart contract. The MNY smart contract mines at roughly the historical cost of BTC. In the example going from the first MNY tier, we get in return for 114 FUTR, which purchases us 5579.43 MNY. Therefore, we have spent 8 cents per MNY in this transaction. Half the FUTR you sent is stored in the MNY smart contract with the other half paid out as part of a feemine. Therefore about 56.5 FUTR is stored in return for your MNY, giving your MNY an intrinsic value of around 4 cents / MNY at the point of purchase (because it is backed by half the FUTR you paid in the form of a potentially swappable asset).

3) As MNY synthetic mining continues, the average cost of MNY increases a lot, meaning more FUTR and more FUTX loaded with ETH in their own smart contracts begins to build up, increasing the average intrinsic value of MNY.

4) At the end of the 21 million MNY issuance, all MNY swaps back for all the FUTR and the FUTX in the MNY smart contract. The rate at which the MNY swaps back for FUTR is about 80 FUTR per MNY. Therefore, you now have 446,355 FUTR in your possession after you have swapped your 5579.43 MNY.

5) Now, the 446,335 FUTR has an increasing amount of ETH stored in the Futereum smart contract. We don't know how much ETH will be stored in the Futereum smart contracts, but approximations based on timing events indicate that around 0.25 ETH per 1 FUTR is a likely amount. The likely worst case possible event is that 0.03 ETH per 1 FUTR will be yours (almost certainly it will be higher). In this worstcase event, your total ETH after you have swapped FUTR into its smart contract results in 13,525.30 ETH in return for your 446,355 FUTR.

6) Assuming no increase in the price of ETH at all, the return in USD with ETH at $450 is $6,086,387. This represents a net return of 1,352,430%!

What about later-stage miners? Are they penalized to subsidize the earlier entrants?

The first thing that strikes you about any return of over one million percent is the potential for there to be some sort of Ponzi-like quality to the value production process. However, when configured correctly, there is no Ponzi value creation process in play at all. How is this?

Simply, because of the combined use of the Futereum smart contracts (there is either FUTR or FUTX that can be used to mine MNY) and the MNY smart contract, both of which are releasing tokens according to different algorithms, on top of the fact that prices vary according to differing values of the underlying coins – in this case, ETH – there is every chance that a later-stage miner may be able to obtain better value than an earlier-stage one.

To see this illustrated, consider the following:

A) A purchaser of MNY playing at tier 2,000 with an average price of 26.9 FUTR / MNY purchases FUTR from the Futereum smart contract at the then-present value of 2 FUTR / ETH, since the Futereum smart contract is on its very last mining tier. ETH is selling at $450 / ETH. At tier 2,000, MNY is selling for 26.9 FUTR / MNY. Therefore, the purchaser spends $6,052.90 per MNY purchased. At the end of the swap-back, ETH is still $450 and he receives a return of around 80 FUTR / MNY. He waits for a period of time to elapse, until the FUTR reaches the final synthetic mining tier in the smart contract, and sells his 80 FUTR for a discount of 15% to smart contract (ETH is still $450 / ETH). The miner has made a profit of $24,547.10.

Tier: 2,000 | Price Paid / MNY: $6,052.90 | Profit: 306%

B) Another purchaser of MNY decides to come to the party a bit later and joins in at tier 2,500, where MNY is retailing from the smart contract at a price of 122.48 FUTR / MNY. Clearly, if he holds out until the swap-back, the miner will end up with a net loss in pure FUTR terms (although this would not be a case after multiple MNY cycles as a result of the gradual build-up in unswapped FUTR that lies in the MNY smart contract). However, this miner purchases FUTR at a cost of 1 ETH / 114 FUTR and ETH is still $450 / ETH. Therefore, the effective dollar cost of mining MNY at this stage in the synthetic mining cycle of MNY when utilizing the comparatively cheaper FUTR smart contract value is $483.47. Later on, at tier 2,700, this miner notices that MNY is selling at 727 FUTR /MNY. Discounting his MNY by 15% to smart contract mining cost in terms of FUTR, he sells for a net profit of $112,082.09.

Tier: 2,500 | Price Paid / MNY: $483.47 | Profit: 23,182%

C) A third miner purchases the second miner's MNY at $112,565.56 and holds out until the end of the swap. During this time, ETH experiences something of a cryptobull euphoria, and soars in value to $11,000 / ETH. After swapping his MNY for around 80 FUTR, he then waits for the Futereum smart contract to reach tier 10 and sells for a 15% discount to market. The miner has made a net gain of $327,917.91.

Tier: 2,700 | Price Paid / MNY: $112,082.09| Profit: 232 %

Clearly, the circumstances driving the profitability of MNY as a cash instrument are so varied and so lacking in early/late stage correlation that there is no pyramid economics present. The outcome of profitability for the miner of MNY simply varies, for a variety of reasons, from market timing of the purchase and sale of ETH, FUTR and MNY, and a whole range of value events that lie in between.

Consider that much of the FUTR and FUTX in the MNY smart contract, and by the same law of logical reasoning, much of the ETH in the Futereum smart contracts will not swap and thus will become excess FUTR / FUTX / ETH to swap-back for at the end of the next cycle.

We can factor in an additional variety of calculations that show how even for the purchaser of MNY at values far in excess of $100,000 / MNY, the smart contract makes economic sense on a wage growth-adjusted, inflation-adjusted and market return-adjusted scale, and the product simply adds up to being something of a great long-term investment / value-inflated cash instrument!

"If it's this easy to make money, why hasn't anyone done this before?"

To understand the likely answer to this question, an important realization needs to be grasped: that despite the revolutionary changes in the way we live from the evolution of technologized healthcare systems, to methods of transportation that would have previously been unthinkable to our architectural construction, to our entertainment and digitization of information, there has been no net alteration to the way we treat value in an economic sense in the past 2,000 years or more.

This is a somewhat shocking reality when you consider the implications of it: everything, from the way we fight wars and conquer entire countries (with digitally-enabled missile-bearing hyper-fast aerodynamic vehicles that cover hundreds of miles an hour a mile above the earth) to the way we live (with electricity enabling the lengthy and bacterially clean storage of food and drink in refrigerators and lighting up our homes in the dark as well as cooling them down in the heat or warming them up in the cold) has altered so radically that to the average citizen of Julius Caesar's Roman Empire the world would seem completely unrecognizable yet by the same measurement, the fundamental way in which we calculate and redistribute value would be entirely familiar.

The net effect of this bipolarity in innovation trends between the scientific revolution our lives have undergone in the past two millennia and the consistency of how we treat the value that fuels such changes necessarily dictates that there is bound to be a dangerously yawning wealth gap open up. Sure enough, we have arrived at such a point in time.

Our perception of transactional value only radically altered as recently as 2009, with the innovation of Bitcoin: before such a point, transactional value manufacture was considered purely the domain of megabanks and sovereign governments. Shortly after, when Vitalik Buterin designed an easy-to-use application that effectively sat on top of a Bitcoin-like internet protocol (the internet protocol itself was then only two and a half decades old, remember) the ease with which everyday individuals could create synthetic Bitcoin-type replicas and ascribe them individually-constructed and sold values opened up exponentially more.

It is therefore only natural when we take into context the history of the development of the internet in the late 1980s, to the development of an online consumer economy in the late 1990s and 2000s, to the development of an internet monetary protocol at the end of the 2000s and the installation of "smart" financial technology on top of that protocol in the mid-2010s that there should be in the present day, which is to say, at the end of the 2010s, the emergence of superior digitally-enabled value-related smart technology that could, like the other innovations that we have been afforded over the past two millennia, radically alter our notions of equality, wealth and society.

In a specific sense, the enabling of multi-varied algorithm-enabled transactional value exchanges to inflate the value of money has only been in potential existence for the past two years' then – that's since the creation of the Ethereum network.

Before the creation of Ethereum, the reality of MNY was not just unthinkable, it was impossible to execute with any realistic sense of achievement.

Out of those past two years, we have spent one of them developing the Fuetreum and MNY smart contracts which enable the value inflation effects that are made possible in the form of MNY, the world's first digitally-enhanced organically value-inflatable currency.

The question "why hasn't this been done before?" is quite simply answered in that before the present day, it hasn't been possible to manufacture a currency with such properties. Digitally distributed value is a whole new ball game.

13. Synthchain Duality: AI Exchange & Enterprise Software

Two of the aspects of Blockchain that have been slowest of all to develop are the evolution of cryptocurrency exchanges and the scaling of digital assets to encompass big business. By and large, almost every exchange trades every currency pair against two or three dominant currencies, which are almost always Bitcoin, Ethereum and Tether.

Equally, while there is a lot of noise from corporates and multi-national corporations today concerning Blockchain being some sort of "future", almost none so far have yet to show any interest more serious than this in the innovation.

The reason for this is simple: a Blockchain cannot store value. Although it may seem as if a cryptocurrency ordinarily holds value, it doesn't.

Rather, it transacts value against other cryptocurrencies, which, in the event such transactions are sufficiently fluid, results in the interpretation that they have some sort of value. The intrinsic value of nearly every cryptocurrency however is zero.

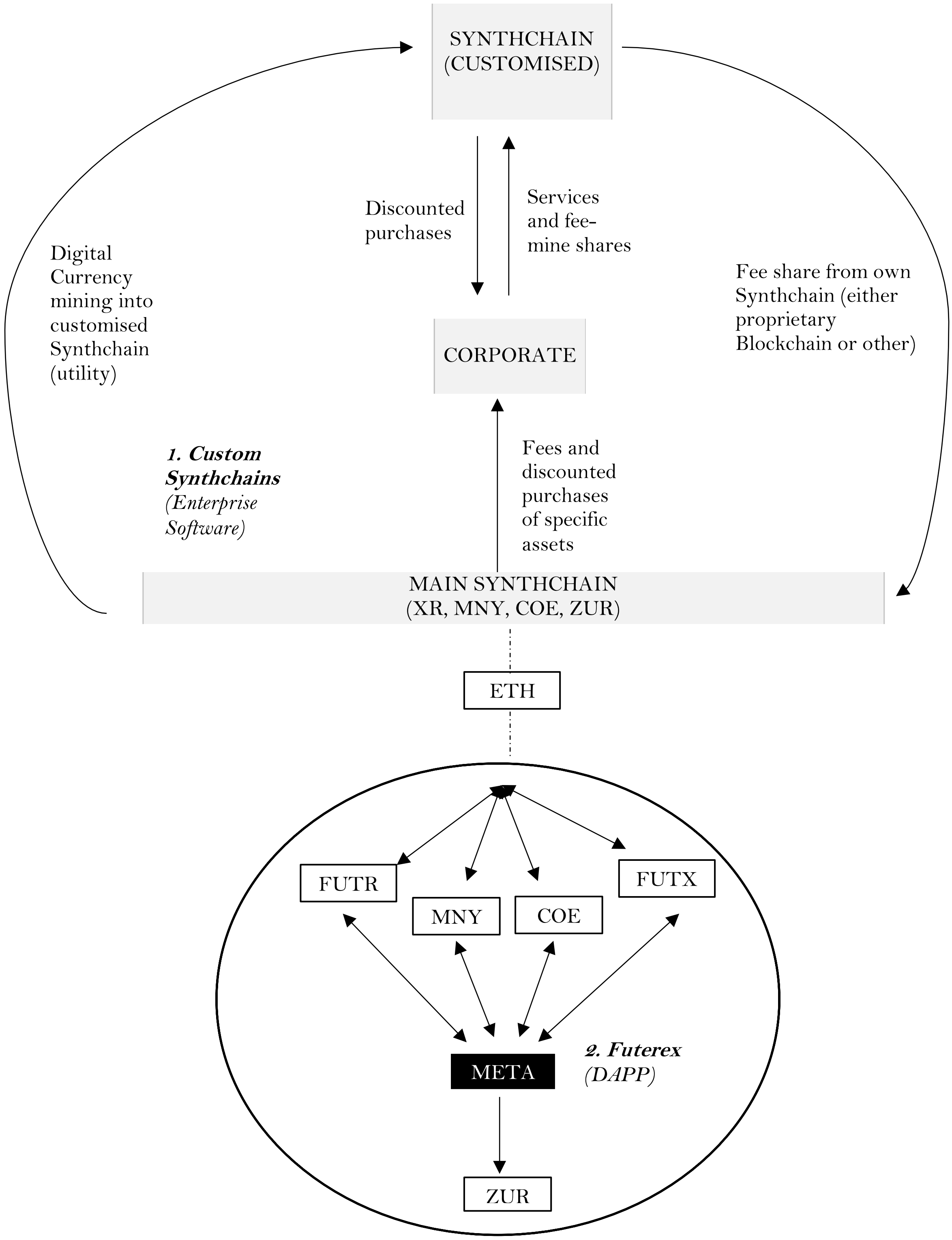

Fig iii: The Synthchain in two sides: the Futerex, an AI exchange, and as enterprise software

A synthchain is very much different. It explicitly stores value, often for very long periods of time. The value that it stores is the same transaction value that investors normally count as intrinsic value when they price cryptocurrencies, except in this case, the value is intrinsic to the digital proxy note.

The value-carrying aspect of the Synthchain makes it very appealing to big business and easy to scale for all sorts of functions, from offering customers better cash to pay with, to monetizing goodwill on the company's income statement, to storing Treasury cash sums even for medium-term periods.

Another possibility with respect to Synthchain builds that is not found among conventional Blockchain ones is that the engineering is by default almost one that falls within the categorization of Decentralised Application (DAPP).

If we take one step further the observation that most digital notes as we have constructed them fall within the remit of internalized exchanges, then we are able to effectively build an artificially-intelligent smart contract based version ourselves.

This would serve two purposes: primarily, it would add liquidity to the market for the digital notes, but further, it would mean if configured correctly that investors once their notes hyper-inflated to a very high price, would instead of selling them on exchanges and crashing the price of the notes, leave them on deposit with the Artificially Intelligent market maker.

To set up such an AI exchange construct, we created a hypothetical currency unit called META. META is a *rate currency* and it's price changes quarter-hourly based on:

A) How much of each asset the exchange holding in USD (in %)
B) How close to swap each note is (% time left)
C) How much ETH is in each note (measured in no. of ETH)
D) The price of each note in USD / purchase of note

META is always measured in (P) which is the period in days that someone has pre-submitted their cryptocurrency. Since META is a rate and not a price it is expressed *as a power* versus a multiple or other arithmetic. Options are: 7 days, 30 days and 90 days which are expressed as tenths of their fractions over 7, thus 0.1 for a week, 0.43 for a month, and 1.29 for three months.

These fractions are the rates and thus we refer to them as Period Rates(P^r). Another way we could calculate the value of (P^r) is to express it as 0.0142857142857143 per day, and allow traders to use the daily rate with some sort of premium fee, such as 5%, paid upfront in return for customizing their time.

Set as a power function of time invested, (P^r) functions much like a synthetic interest rate, making META a sort of invested deposit account. Thus, for a duration of (P^r) an asset holder can calculate the assets META price by:

$$\mathrm{ABC}(\mathrm{D}\verb|^|P^r)$$

On exchange, META is bought 5% below META and sold 5% above META by the artificial market maker.

For spending any of the digital notes with retailers, META offers a secondary alternative to a fully-customized synthchain build. In fact, customized synthchain builds will also build on top of the current synthchain in many cases by transacting via META as opposed to with the digital notes directly. This is for the reason that because META is a rate, it can be used to purchase an alternating share of underlying notes with the artificial market maker on any day (whatever is available as a result of the equation above). Thus, a hotel might have its own digital notes purchasable in META via the artificial market maker. In this way, the hotel chain may fix a Metacrypto price function onto the rate, so that a roughly equal share of META would purchase a roughly equal share of the hotel's own synthchain currency, using META in essence as the underlying seed value for its own currency in the same way that FUTR does with ETH.

Naturally, it is impossible to forecast exactly how a product so esoteric and innovative evolves within the hard context of a dynamic market, replete with supply-demand constraints, alternating financing requirements, debt positions etc. In many cases, actually trying out the product in real time is the only way to know for sure what the logical direction of the course of the innovation is. This is all highly experimental consumer finance of course. It is worth remembering however, that the experimentation we are suggesting as the likely course for the evolution of the Synthchain is roughly two millennia overdue.

14. Conclusion: Blockchain Enterprise & Value-Enhanced Software

Most Blockchain builds suffer from two problems: one, they are not commercially applicable, mostly being esoteric technological builds that have no real-world application beyond being something resembling digital collectables.

Two, the way in which value is configured with most cryptocurrencies and "tokenized offerings" is purely speculative, targeting over 100% economic production efficiency in the same way that a Ponzi scheme operates. We have shown in this paper how both those aspects of Blockchain currencies is not applicable with digital notes. We showed how digital notes can stream external pricing, making them accommodative of a wide range of real world financial events, and we also showed how conventional financial equations can be applied to digital notes via the notes' synthetic income streams Beyond this, we envisage that our Synthchain will become the foundation for a wide range of commercial Synthchain builds for specific purposes and ultimately for companies.

The ways in which companies might apply synthetic Blockchains is the most exciting possibility of all to consider. Some might use digital notes to pre-finance manufacturing builds that are otherwise costly and/or unattainable via conventional financing solutions, as is becoming more and more the case today. Other companies may use digital notes in order to incentivise customers to purchase more of their goods, playing with the value inflation equation form a purchase and savings perspective. Others still may take advantage of the smart contracts' escrow storage functions, lining their balance sheets will billions in new cryptocurrency assets which they can pinpoint delivery of down to a specific future date.

These types of financing solutions, we expect, will be built on top of our Synthchain, which will consequently be the world's first commercially-scalable Blockchain enterprise solution.

ii. Post-Script: Asset Supply & Digital Note Exchange-Traded Enhancements

As so often is the case with innovation, out of the blue in August 2018, just when we thought we were done innovating for a bit, out of the blue came a brand-new challenge. As we were preparing to list ZUR on Escodex for trading, we were told by the exchange's owners that their maximum supply quote for coins listed on the exchange extended to the hundreds of millions of units, in effect, decimalizing prices to the 1-e9th of a fraction.

To the credit of the gentlemen at Escodex, who are real problem-solvers it must be said, we went approached the challenge of how to list a digital asset with tens of trillions of supply in a compartmentalized supply totalling 100,000th of the amount.

It is worth noting that the problem wasn't a new one to us. COE, which has a tiny 100,000 COE / cycle supply, posed a similar sort of challenge at the CryptalDash airdrop only days beforehand. Since the supply of COE was so limited, we told the managers there, although value would be abundant in the COE delivery, the recipients of the airdrop were likely to receive a very tiny fraction of COE which may look somewhat trivial upon arrival.

The question of supply seems to be one that plagues many digital asset innovators. After all, with a technology wherein one can make any number they like of a given asset, what's the correct number to choose? Getting the supply wrong or right can seriously harm or benefit a digital asset's chances of success long-term, after all. While the 100,000 COE and 35,000,000,000,000 ZUR supply quotas made for perfect synthetic utility, synthetic and real tradeable utility are two different things altogether.

Our solution to this problem was to design alternate smart contracts that reorganized supply according to the exchanges that the assets were listing on. Thus, for Escodex, ZUR was customized a special smart contract which enabled ZUR holders to swap in and out ZUR for a 100,000th share of their supply which could be traded on exchange. There were no restrictions to the swap process.

For CryptalDash, we opted for a larger fraction still, 2,500,000:1 for the exchange's local currency. We will do the same for COE, but to orders of magnitude greater than the core COE supply, obviously.

With different exchanges all having different supply quotas at any one time, and thus carrying different price-points, the potential for arbitrage to us appears to be quite considerable. We hope that this is one of the potential solutions that the notification of digital assets may come to bear in the future.

Because the process of reorganizing value was so intuitive to us, with our team having dealt for the greater part of the previous 12-month period with digital asset exchanges and re-exchanges, it didn't seem illogical to us at all that each exchange should have its own specialized supply quote and asset price. Different exchanges, after all, have different requirements, different customers and different demand uptakes as a result. To standardize across all platforms and treat them with equal respect merely long-term undermines the potential for trading value maximization along the way.

Ours is a simple fix, but it is possible to imagine a much more sophisticated one, the likes of which perhaps one day we will look to implement somewhere. To do so, consider that each exchange has a volume-weighted average price per unit, an average volume that trades around those units, a standard deviation from those averages etc. Taking into account these criteria and employing them in a similar Oracle to the one which we created with the Coeval, it is in fact quite possible to build a dynamically-customized supply-adjusting software for each and every digital asset prior to the asset listing on exchange.

With such a customized range of price and supply quotas, one is bound to engineer more value variation than is currently the way with standardized approaches to listing. The example makes for a curious point of interest to what has been an extensive discussion on Blockchain value over the previous 19 pages, but it also marks an important point about how inefficiently we are using value on Blockchain.

With trading volumes on all cryptocurrencies now averaging billions of USD per day, it may be a chunky fraction of that sum which we are just wasting on excessive standardization of asset builds. It is this standardization that principally this paper is concerned to tackle in a more defined, innovative way than purely building software upon software of utility upon utility without reference to the underlying cost, transaction economics and, ultimately, revenue, generated by the lacking in economic and financial engineering that is taking place right now in what is fast-becoming the world's most proficient growth engine. We think back to our comments at the start of this White Paper concerning Bitcoin, which we made in the early dawn of the nascent Blockchain revolution in 2013. It wasn't so much that Bitcoin was something we felt was not foreseeably able to challenge the global economic market (indeed, it has weathered relatively well thus far, as things considered). It is the idea that within Blockchain, or any innovation sector for that matter, a one-size fits all approach is necessarily the most efficient. That is never the case. Digital notes therefore, from an innovation standpoint at least, take aim at that idea. They are the customization of Blockchain utility, into a synthetic variation of the core payment utility for which the digital ledger was designed. Our aim in this paper has been to show how within that process, there is a whole multiplier or two of value just waiting to be unlocked.