

Libre-currency for sustainable social change

Une monnaie Libre pour des innovations sociales soutenables

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Abstract

Libre-as-freedom currency proposes a monetary design respecting the four economic freedoms (as the four principles of Libre software) defined by Stéphane Laborde in “**The Relative Theory of Money**”¹.

1. Freedom of choice of currencies and accounting methodologies;
2. Freedom to access resources;
3. Freedom to produce;
4. Freedom to exchange and determine prices.

Libre-currency proposes a self-issuance, or co-creation of units by the people of the monetary system for the people. Calculated on a mathematical equation with **three variables: number of human members alive, their average lifespan and monetary mass**, it ensures symmetry on space and time. As no material value is absolute in space and time, Libre-currency is rooted on **our unique common value among humans on Earth: being alive on Earth!**

Symmetry in space: at a time T, everyone wherever he is, co-creates its part of money at the same amount. **Symmetry in time:** an old generation could not co-issue more than the next, and the next more than the former. Therefore it's sustainable as it's valuable for everyone everywhere; no one can deprive others even next generations. Respect, innocuity and sovereignty are embedded in the DNA of Libre-currency, as every human member is an equal co-creator of the currency, independently of its production, unconditionally of its status. People are **co-producing their universal dividend** because they are humans alive. Organizations can also be part of the monetary system but they aren't co-issuing units, only trading.

As Bitcoin, Libre-currency algorithm generates monetary units. But unlike data mining, here **algorithm relies on the three variables**; unlike proof-of-work, it's people's **proof-of-life** that determines recurrent and periodical creation of units (per day, week, month...). Thus each human member's wallet increases evenly according to the universal dividend co-created. Then members,

¹ Version 2.718 <http://en.trm.creationmonetaire.info/>

human or organizations, can use their units to sell and buy among them as any currency. A **blockchain** ledger records either recurrent issuances or transactions exchanges.

According to experimentations, issuing money with Libre-currency creates **favourable conditions to behave toward social changes and sustainability**, as it's intrinsically fair, abundant, transparent and decentralised. People are responsible, equal and free, and Libre-currency insures durability and reliability.

Moreover each monetary community self-manages its Libre-currency. The only needs are a way to regularly validate that people are alive meaning having a "proof-of-life" mechanism (e.g. through web-of-trust-certification process) and a Libre-currency-algorithm-blockchain. Yet Libre-currency is only solving monetary issuance, other mechanisms have to be set by the members (prices, taxes, finances, marketplaces...).

Three experimentations have been done (MONEY M, OPEN-UDC, UCOIN now DUNITER), three software are developed (CESIUM web, SAKIA client, XXX android) and three Implementations are running (MONEY M pioneer C2C, REAL-NET open worldwide B2B2C2C, SOUS local B2B2C). More are coming...

Game "Trading Floor" (or its fork Ğeconomicus) is comparing Free-currency mechanisms with Debt-currency, allowing players to confront quantitative and qualitative outcomes and attitudes change (metrics would be presented). Furthermore players become aware of their own behaviours in their exchanges depending on the currency used.

universal_dividend, symmetry, libre, sustainable, decentralised

Résumé

La monnaie Libre-comme-liberté propose une architecture monétaire respectant les quatre libertés économiques (comme les quatre principes du logiciel Libre) définis par Stéphane Laborde dans "*La théorie relative de la monnaie*"².

Liberté de :

1. choisir ses monnaies et méthodes comptables ;
2. accéder aux ressources ;
3. produire ;
4. échanger et déterminer les prix.

La monnaie Libre propose une auto-émission, ou co-crédation d'unités par les personnes du système monétaire pour ces personnes. Calculée par une équation mathématique à trois variables : nombre de membres humains vivants, leur espérance de vie moyenne et la masse monétaire, elle assure une symétrie dans l'espace et le temps. Comme aucune valeur matérielle n'est absolue dans l'espace et le temps, la monnaie libre est enracinée sur notre valeur unique commune parmi les humains sur Terre : être vivant sur Terre !

La symétrie dans l'espace: à un temps T, tout le monde où qu'il soit co-crée sa part de monnaie du même montant. Symétrie dans le temps : une ancienne génération ne peut pas co-émettre plus que la suivante, et la prochaine plus que la première. Par conséquent, ceci est durable car c'est valable pour tout le monde partout. Personne ne peut priver les autres même les prochaines générations. Le respect, l'innocuité et la souveraineté sont intégrées dans l'ADN de la monnaie Libre, car chaque membre humain est un co-crédateur égal de la monnaie, indépendamment de sa production, inconditionnellement de son statut. Les gens coproduisent leur dividende universel parce qu'ils sont humains en vie. Les organisations peuvent également faire partie du système monétaire, mais elles ne co-émettent pas d'unités, et échangent uniquement.

² Version 2 http://wiki.creationmonetaire.info/images/8/85/TRM_2_0.pdf

Comme Bitcoin, l'algorithme Libre-monnaie génère des unités monétaires. Mais contrairement au minage de données, l'algorithme ici repose sur les trois variables. Contrairement à la preuve de travail, c'est la preuve de vie des gens qui détermine la création récurrente et périodique des unités (par jour, semaine, mois ...). Ainsi, le portefeuille de chaque membre humain augmente uniformément selon le dividende universel co-crée. Ensuite, les membres, individus ou organisations, peuvent utiliser leurs unités pour vendre et acheter parmi eux comme avec n'importe quelle monnaie. Un registre de chaîne de bloc enregistre les émissions récurrentes et les transactions.

Selon les expérimentations, l'émission d'unité avec la monnaie Libre crée des conditions favorables aux comportements vers les changements sociaux et soutenables, car elle est intrinsèquement juste, abondante, transparente et décentralisée. Les personnes sont responsables, égales et libres, et la monnaie Libre assure la durabilité et la fiabilité.

En outre, chaque communauté monétaire gère librement sa monnaie Libre. Les seuls besoins sont un moyen de valider régulièrement que les personnes sont vivantes, ce qui signifie avoir un mécanisme de « preuve de vie » (par exemple, par le biais d'un processus de certification en ligne) et d'un algorithme-chaîne de blocs monnaie Libre. Cependant la monnaie Libre ne résout que l'émission monétaire, plusieurs autres mécanismes doivent être établis par les membres (prix, taxes, finances, marchés...).

Trois expérimentations ont été effectuées (MONEY M, OPEN-UDC, UCOIN maintenant DUNITER), trois logiciels sont développés (CESIUM web, SAKIA client, XXX android) et trois implémentations sont en cours (MONEY M C2C pour pionniers, REAL-NET B2B2C2C ouvert au monde entier, SOUS local B2B2C). Plus arrivent ...

Le jeu "La Corbeille" (ou sa fourche Ğeconomicus) compare les mécanismes de la monnaie libre avec la monnaie dette, ce qui permet aux joueurs de confronter les changements quantitatifs et qualitatifs et les changements d'attitudes (des métriques seront présentés). En outre, les joueurs prennent conscience de leurs comportements dans leurs échanges en fonction de la monnaie utilisée.

dividende_universel, symétrie, libre, soutenable, décentralisé

About the authors

Former software engineer, [Sybille Saint Giron](#)³ designs cooperation to boost Solidarity economy actions. Focusing on establishing *favourable conditions for cooperation* to emerge⁴, she devotes her life awaking, advising, training, coaching groups all over Europe. Four levers are used through [Valeureux](#)⁵ Ngo: human dynamics & collective intelligence; organic governance; alternative currencies and web 3.0.

Being aware of the Inadequacy of current monetary systems, she has explored alternatives to exchange and acknowledge wealth especially the non-baked. She has created and spreads "[The Trading Floor](#)"⁶ an awareness money game that is also used to test monetary innovations. Libre-currency has gained audience thanks to the Trading Floor game as it has made real the proposition. She has designed [Wezer](#)⁷, an open-source ERP for P2P, which allows exchange in any currency and connection to legal accountancy and project management. She is now

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⁴ Thesis « *How to develop cooperation in your team?* » MBA « Human Dynamics and Development of Organisations », Université Evry-Insead, 2003-05

⁵ <http://valeureux.org/>

⁶ <http://www.valeureux.org/blog/produits/les-jeux/le-jeu-de-la-corbeille/>

⁷ <http://www.valeureux.org/blog/wezer-2/>

nourishing [The Credit Commons](http://creditcommons.net/)⁸ project to allow inter-exchange among several local exchanges group.

From arts to the Internet, to carpentry and antiques, [Carole Fabre](https://fr.linkedin.com/in/carolefabre/fr)⁹ has always favoured encounter and curiosity, to make links, to meet others, and to support initiatives. In 2006, she moved towards virtual communities management. Expert trainer in collaborative work, participative and contributory web, in the spirit of the free as in free software, she teaches people on social and ethical web. Since 2009, she became interested in the concept of basic income and advocated the idea. In 2013, she co-founded the [MFRB](http://revenuebase.info/)¹⁰ (French Movement for Basic Income).

She rapidly realized the required change of perspective in the economic and social spheres, such as notion of "common goods" or free currencies, a new system of universal dividend measurement to organize our exchanges.

[TEDxBordeaux - Revenu de Vie](#)¹¹, [TEDx - renversant](#)¹², blog¹³

⁸ <http://creditcommons.net/>

⁹ <https://fr.linkedin.com/in/carolefabre/fr>

¹⁰ Mouvement Français pour le Revenu de Base <http://revenuebase.info/>

¹¹ <https://www.youtube.com/watch?v=1L5wEOpiUfA>

¹² <https://www.youtube.com/watch?v=nRrDVkaUjek>

¹³ <https://www.reglesdejeux.com/>

Table of contents

Theoretical foundations	7
Libre-currency, an application proposal	9
No resource and no production as the basis of value	10
A currency for humans by humans	10
Issuance features	11
Convergence mechanism	12
Quantitative and Relative	12
How to implement the Libre currency?	13
Experimentations	14
Monnaie M	14
Duniter	16
Let's get at each other: behaviours and values	21
Ĝeonomicus game	21
A libre value?	23
Conclusion	27
References	29

Article

*"The state of civilization that has prevailed throughout Europe, is as unjust in its principle, as it is horrid in its effects; and it is the consciousness of this, and the apprehension that such a state cannot continue when once investigation begins in any country, that makes the possessors of property dread every idea of a revolution. It is the hazard and not the principle of revolutions that retards their progress. This being the case, **it is necessary as well for the protection of property, as for the sake of justice and humanity, to form a system that, whilst it preserves one part of society from wretchedness, shall secure the other from depredation.**" Thomas Paine¹⁴, 1795*

Thomas Paine is the precursor of universal and unconditional basic income and yet from the French Revolution. English and actor of American revolution, he was elected as an MP in northern France during the French revolution. He had seen the effects of natural life among the Indians in North America where there was no poverty, and no civilization. From this, he thought that civilization had brought many benefits but also many calamities, poverty and misery. It was therefore necessary redress and justice and this in monetary form.

His small book *"From Agrarian Justice"*¹⁵ established the fundamentals of basic income from a sort of royalty converted into currency on land ownership at the time of inheritance.

Thomas Paine had also an acute awareness of the passage of generations and the effects of one on the other. In his other book, *"Human rights"*¹⁶, he exposes among others that **"every century, each generation should have the same freedom to act, in all cases, as ages and generations which preceded. The vanity and presumption of wanting to govern beyond the grave is the most ridiculous and most unbearable of all tyrannies"**.

From these two assumptions, the right to live in dignity and the right not to encroach on future generations, Stephane Laborde was largely inspired for his *"Relative Theory of Money"*.

This paper introduces the foundations of this theory, current applications, means to understand through a game, and the first necessary revolution in thought and then in practice, in order to adopt this new currency called "Libre".

¹⁴ page 18 <http://piketty.pse.ens.fr/files/Paine1795.pdf>

¹⁵ *"Agrarian Justice"*, Thomas Paine, 1797

¹⁶ *"Rights of Man"*, Thomas Paine, 1791

Theoretical foundations

The currency “Libre-as-freedom” is respectful of the four economic freedoms defined by Stéphane Laborde in “The Relative Theory of Money”¹⁷.

They make a general reference to the four freedoms of Free¹⁸ Software.

1. Freedom to choose currencies and accounting methods;
2. freedom of access to resources;
3. freedom to produce;
4. freedom to trade and to determine prices.

Our current monetary systems do not meet these four freedoms:

Freedom / Currency	Choosing currencies and accounting methods	Accessing resources	Producing	Exchanging and define prices
€uro	Mandatory national legal tender	Unequal distance from the issuance source	Most people must produce to get units	Yes Prices by the market Falsified by the QE of central banking
\$dollars	Mandatory national and international legal tender	Unequal distance from the issuance source	Most people must produce to get units	Yes Prices by the market Falsified by the QE of central banking
SOL Violette	Voluntary adoption	Unequal distance from the issuance source	Everyone must produce €uros to get units	Reduced by the charter Prices by the €uros market
LETS	Voluntary adoption	equal distance from the issuance source	to compensate exchanges	Reduced by the Charter prices on time / €uro

¹⁷ Version 2.718 <http://en.trm.creationmonetaire.info/>

¹⁸ According to *Free Software Foundation*

1. The freedom to run the program as you wish, for any purpose
2. The freedom to study how the program works, and change it so it does your computing as you wish (freedom 1). Access to the source code is a precondition for this.
3. The freedom to redistribute copies so you can help your neighbor
4. The freedom to distribute copies of your modified versions to others freedom. By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.

How could a currency satisfy these four freedoms?

Freedom	Application characteristics
Choosing currencies and accounting methods	<ul style="list-style-type: none"> • voluntary adoption • customizable accountability
Accessing resources	<ul style="list-style-type: none"> • equal issuance for all members • equal use for all members <p><i>Anyone is at an equal distance from the money resource, issuance is symmetrical to facilitate the access to other resources.</i></p>
Producing	<ul style="list-style-type: none"> • Issuance not correlated to any production <p><i>Usage without control of exchanged production.</i></p> <p><i>Individual members co-produce the dividend only because they are alive on Earth and are free to produce.</i></p>
Exchanging and defining prices	<ul style="list-style-type: none"> • free exchanges between members • free prices between Member <p><i>Individuals and groups exchange what they wish following current para-monetary rules.</i></p> <p><i>Not intrinsically backed to any scale of values (see below).</i></p>

For these four freedoms to remain sustainable and do not penalize future generations, **time symmetry** should be added. Unfortunately, very few current monetary innovations take into account this essential quality. Equal issuance for all must be also for future members, and so time symmetry is added to issuance symmetry. **“Anyone is equidistant to the source, at any time.”**

Moreover, the equality quality must be applied to space so that **“Anyone is equidistant to the source, at any place and time”**. This is the **symmetry in space**.

Stéphane Laborde names it the **“Principle of economical relativity”**:

“The RTM is based on the principle of economic relativity, which establishes that any human being defines a legitimate referential to estimate and produce any type of economical value, known or unknown by others.

In other words, there are no absolute economical value, no human being who is legitimate to define what is valuable or non valuable for other human beings, neither in space (between human beings alive at current time), neither in time (between human being distant in time).”¹⁹

¹⁹ Version 2.718 <http://en.trm.creationmonetaire.info/>

Libre-currency, an application proposal

Because they understand the essential characteristic to establish a “Libre” money, application proposal have emerged one by one. We are presenting in this paper the one of Stéphane Laborde because it is the most developed.

Its intention was to offer a mechanism for **an exchange money, libre, fair and sustainable**.

The selected mean is **a principle of equidistant monetary issuance** (from the issuance source) where the units are co-produced by the people of the monetary community, without any proof neither any control of production. The units are then exchanged by the members, as they wish.

This proposal only contains **issuance of the money itself**. All other rules and features must be developed freely between members, according to the contexts. So here we are not talking about: payment systems, marketplaces, taxes, subprimes, funding, savings, regulations.



Equidistance to the issuance source can be symbolized by a dome fountain where everyone around are regularly sprayed out.



Here, at the opposite, the current system where some are closer than the others from the source..

Thus, this is a source of egalitarian unconditional and universal abundance of units to exchange the resources. This is a **universal and unconditional dividend**, by monetary issuance, and not like most universal basic income proposals by the redistribution of taxes.

The dividend is a percentage of the total monetary mass and not a share of wealth ; it is a simply a co-issuance of a mean of exchange.

No resource and no production as the basis of value

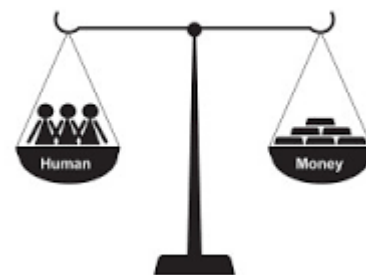
This money, like most, does not have any intrinsic value (it cannot be eaten) but neither is it based on any mercantile value.

Money is not based on any production because consequently, the “freedom to produce (3)” would be violated since it includes the right not to produce !

Also, to guarantee the right to access resources (2nd freedom) the money must not be based on any resource where access is not equal, universal and unconditional. Yet, what is a constant value, yesterday and tomorrow, here and there, to which the money could refer ?

After months of meditation, Stéphane got an Eureka: “human life on Earth!”

From here possibilities open...



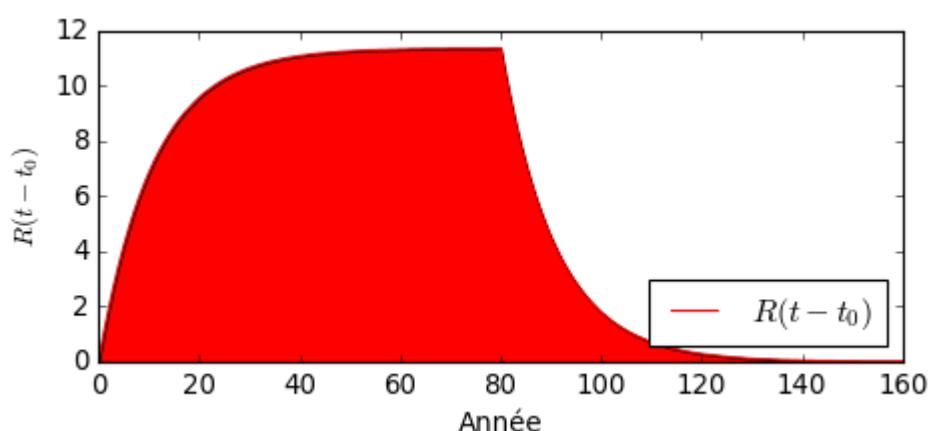
A currency for humans by humans

Only living individuals and members are issuing monetary units by the simple fact of being alive on earth at that time.

Organizations can also join the monetary community but they do not co-create units. All members can exchange ie sell or buy. Those not currency co-creators must sell to have units in order to buy.

Agents	Issuing	Usage
Individuals	co-creators	currencies wallet exchanges (sale, purchase)
Organizations	NO	currencies wallet exchanges (sale, purchase)
Monetary Community	new instance or a group in a wide community	rules in addition to the issuance itself

Graphic on monetary share generated by an individual during and after his departure (in relative)



This regulated and non Fiat mechanism creates sparingly and with a mid-life convergence that regulates money owning gaps.

Convergence mechanism

After a half life of participation in the monetary system, the amount of money created by one individual must converge to the current average of currency per person. This constitutes the convergence point of the temporal symmetry. This implies a second equation $M(t) / M(t + ev / 2) = 1 / (ev / 2)$, making individuals of 1/2 life expectancy seeing the old currency $M(t)$ no longer weigh in the economy with respect to the currency updated $M(t + ev / 2)$ in the same time ratio $1 / (ev / 2)$.

Quantitative and Relative

Here, as in all currencies, two standards can be used to count: the Quantitative and the Relative. In quantitative euros it's direct units and in relative for instance we can count in percentage of RSA²². Each co-creator of the Libre currency created 1 DU in relative and $c (M / N)$ in quantitative DU.

²² RSA is the french minimum social subsidiary (450€ per month)

How to implement the Libre currency?

In order to implement a Libre currency, it is first necessary to accept a paradigm shift about the reference value of a currency. The fact that the Libre currency is neither based on any goods nor on any production proof is uncomfortable for our habits. The co-issuance of money without effort, but only by the mere fact of being alive is quite unsettling and questions the anathema "suffer for gaining its life" permeating Western societies for millenaries.

This shift in consciousness must also include the concept of price since Libre money is not correlated to any value scale, prices are free. In the perspective of a basic income, basic needs might be met if members set the prices of these resources accordingly. The concept of time can intervene to set a price, since the amount of co-created units is associated with a given period (see below).

A technological infrastructure is required to implement a Libre currency.

The essential requirements are:

- list and number of living individual members, and therefore identification, proof of life
 - can be a P2P webtrust, a legal identity ...
- list and details of co-creators accounts and wallets
- calculating new units emission
 - manual or "mining" on proof of life
- transactions ledger (and regular issuances)
 - an accounting book, a spreadsheet, a database or a blockchain.

Then in a second time, to use the money it should be set up:

- Payment system
- Market place to find Offers and Wants
- Groups management
- Tax and allowances system
- Financing and savings system
- other desired regulations.

Experimentations

Mainly two major experiments emerged after the RTM, Monnaie M and Duniter, the most advanced and now operational, the generator of libre crypto-money.

Monnaie M²³

Its founder, Mérome, explains:

"It is an experiment created in May 2013 to promote

- *Complementary currencies*
- *Local Exchange Systems (LETS)*
- *Basic income*

And more generally to popularize the functioning and rôle of a money.

The founding principles:

- *Each user opens an account that is credited with an amount of 50 "M".*
- *A unit of M = 1 euro, at the start of the experiment.*
- *One account per postal address and telephone number in the blank register (to avoid the multi-accounts). Verified by month (at the beginning).*
- *An interface to bring buyers and sellers together in a marketplace, like "LeBonCoin" or "PriceMinister". Sellers are noted by the buyers and thus have a "reputation".*
- *When a buyer buys, its account is debited. The account of the seller is credited when the buyer confirmed the good reception and noted the seller.*
- *Shipping Cost are charged to the seller. A vendor who sells an X product for 10 M, receives 10 M on his account, if the buyer has requested a shipment, he pays his shipping to the Post Office in euros. In other words, the seller engages and invests in the system. This gives value to money by the confidence he gives to the system. In my opinion, it is a central point.*
- *Every months, a basic income is distributed to all users following the compatible formaly of the Relative Theory of Money : 0.8% of total monetary mass divided by the number of users*
- *A forum linked to the site to allow a democratic evolution of the system.*

The site is developed in PHP / MySql and self-hosted on a server that is located at the developer's, who received temporary advice from some people. For the theoretical part, he relied on the RTM of Stéphane Laborde, who participated in the beta testing phase and advised on the amount of basic income.

To date, 763 users are registered and share 62 075 M, ie a little more than 80 M each (start at 50M).

Basic income is distributed monthly and is calculated as follows:

*DU = upper round (0.8% * total money supply / nb of users)*

²³ <http://merome.net/monnaiem>

This calculation is fitting the RTM and based on a life expectancy of 80 years, guaranteeing an equal access to money across generations.

503 transactions were carried out by 190 different buyers and 90 different sellers from the beginning.

About one hundred transactions took place in 2016.

The limits of the experimentation:

- *No community of developers, so difficulties to make everything work together. If the author disappears or decides to cut everything, there is nothing left*
- *Appearance of the site which has not evolved and which is rudimentary and obsolete, unattractive.*
- *Low investment by users who do not submit enough ads to make the concept attractive.*
- *The sellers are penalized because the shipping costs are at their charge (in euros). This does not incentives to deposit ad.*

The positive things:

- *A lot of people have probably discovered the basic income, or have experienced it for the first time here. It was a kind of the goal: to make popular education on the subject. "*

Links

<https://merome.net/blog/index.php?post/2011/09/03/Money-for-nothing>

<https://merome.net/blog/index.php?post/2013/01/21/Les-secrets-de-la-monnaie>

[https://merome.net/blog/index.php?post/2013/01/16 / Currency-M](https://merome.net/blog/index.php?post/2013/01/16/Currency-M)

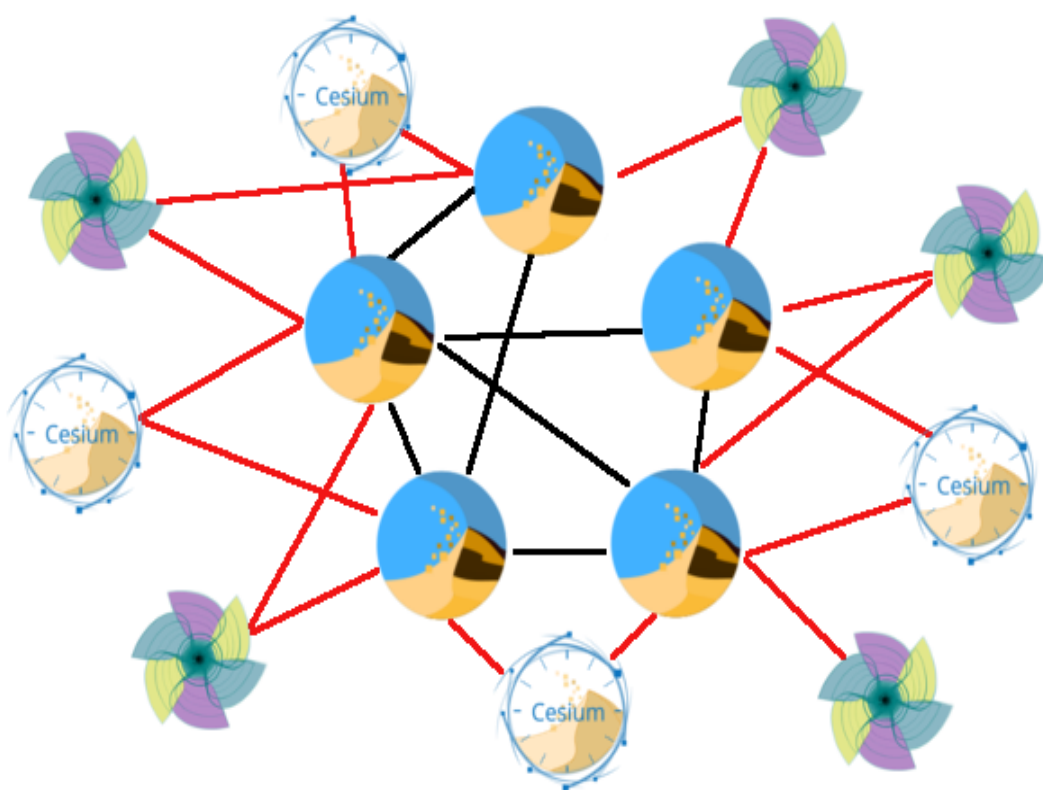
<https://merome.net/index/>

<https://merome.net/monnaieM/ReglementMonnaieM.pdf>

Duniter²⁴

Moul explains here the history and applications of Duniter

"Duniter is a cryptographic money project whose aim is to implement free software that creates libre money in the sense of the relative theory of money. These libre currencies will allow the establishment of an equivalent of the basic income by monetary creation: the universal dividend or UD. The Duniter project, originally named uCoin²⁵, was started in June 2013 by Cédric Moreau, aka cgeek. This project is based on the work of the relative theory of money, RTM, developed by Stéphane Laborde, alias Ğaluel. Duniter inherited the operating principles of the OpenUDC²⁶ project. This project initiated by Jean-Jacques Brucker alias JBAR²⁷ in November 2011 is not as advanced as the Duniter project and does not know the same pace of development. OpenUDC is written in C language and is based on the lighttpd web server and on OpenPGP for the management of the web of trust."



Duniter network architecture with nodes in the center and clients in the periphery.

"Duniter inherits its network architecture from OpenUDC. As far as I know, these are the only two networks with a node-client architecture. This architecture is a combination of the two commonly used network architectures, namely client-server and peer-to-peer architectures. The Duniter

²⁴ <http://duniter.org>

²⁵ <https://fr.duniter.org/ucoin-rename-duniter>

²⁶ <http://www.openudc.org/>

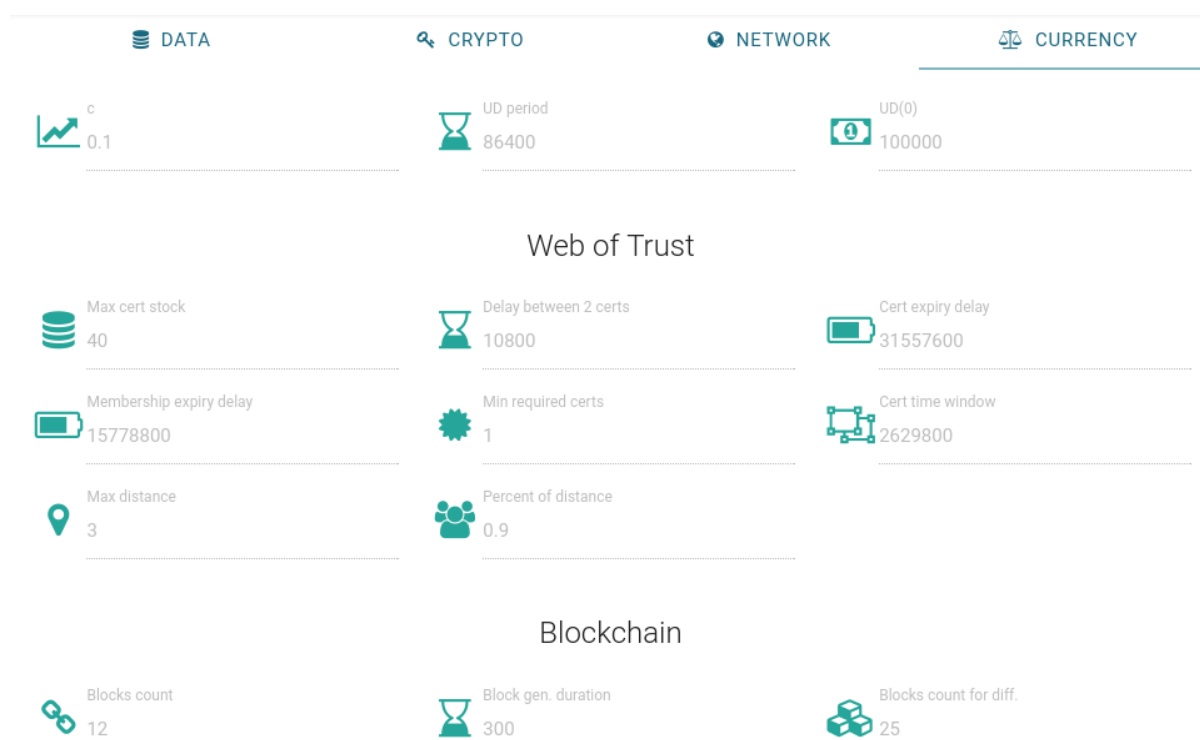
²⁷ <https://github.com/Open-UDC/thttpgpd/graphs/contributors>

network therefore consists of nodes and clients. The nodes are busy writing in blockchain and clients issue transactions and certifications.

The architecture of Bitcoin is entirely peer-to-peer and consists only of nodes. We find ourselves, absurdly, with all the history (today representing more than 110 GB_{Go}²⁸) on our mobile or on our desktop. The recent creation of Bitcoin²⁹ clients makes it moves toward an architecture of node-client form.

The architecture of Duniter, on the other hand, preserves the peer-to-peer aspect because any member of the network can have a server with a node that will commit blocks in the chain of blocks and thus participate in the decentralization of the network as well as its robustness. It is also possible to participate in the currency without having to administer a server. In summary, this architecture distinguishes well the different roles clients and nodes, and makes it available to anyone.

The functioning of Duniter is as follows. When a client issues a transaction or a certification, this information is shared among all nodes and then put on hold. Then, for this information to be written into the blockchain, the nodes must first calculate their proof of work (proof of work, PoW)."



Each node has a personalized proof of work that decreases over time, allowing them to add a block. As soon as a block is added, their difficulty increases, putting them in a decentralized waiting list. The block chain is the entity common to all nodes that allows decentralization and prevents the forgery of transactions and certifications.

²⁸ <https://blockchain.info/charts/blocks-size>

²⁹ https://en.bitcoin.it/wiki/Thin_Client_Security

The creation of blocks is not as in the Bitcoin, in which it is the race to computing power and in-fine to the waste of energy and resources. The identification of the members makes possible a personalized difficulty. Thus, nodes with very different computing powers will have the same chance of writing blocks.

Remuniter³⁰ is a system of remuneration of block generators. To do this, a public key receives donations and remuniter redistributes it to the block generators. They are paid for the task of securing the currency. This operation makes it possible to remunerate the block generators without issuing new money. Like the cryptographic mining currencies that are no longer de facto libre currencies.

Transactions are made from sources, in the case of Duniter it is about creating money through universal dividends. These UD's are co-created by each member and are added in the blocks of the chain by the nodes at a time interval defined by the parameters of the currency.

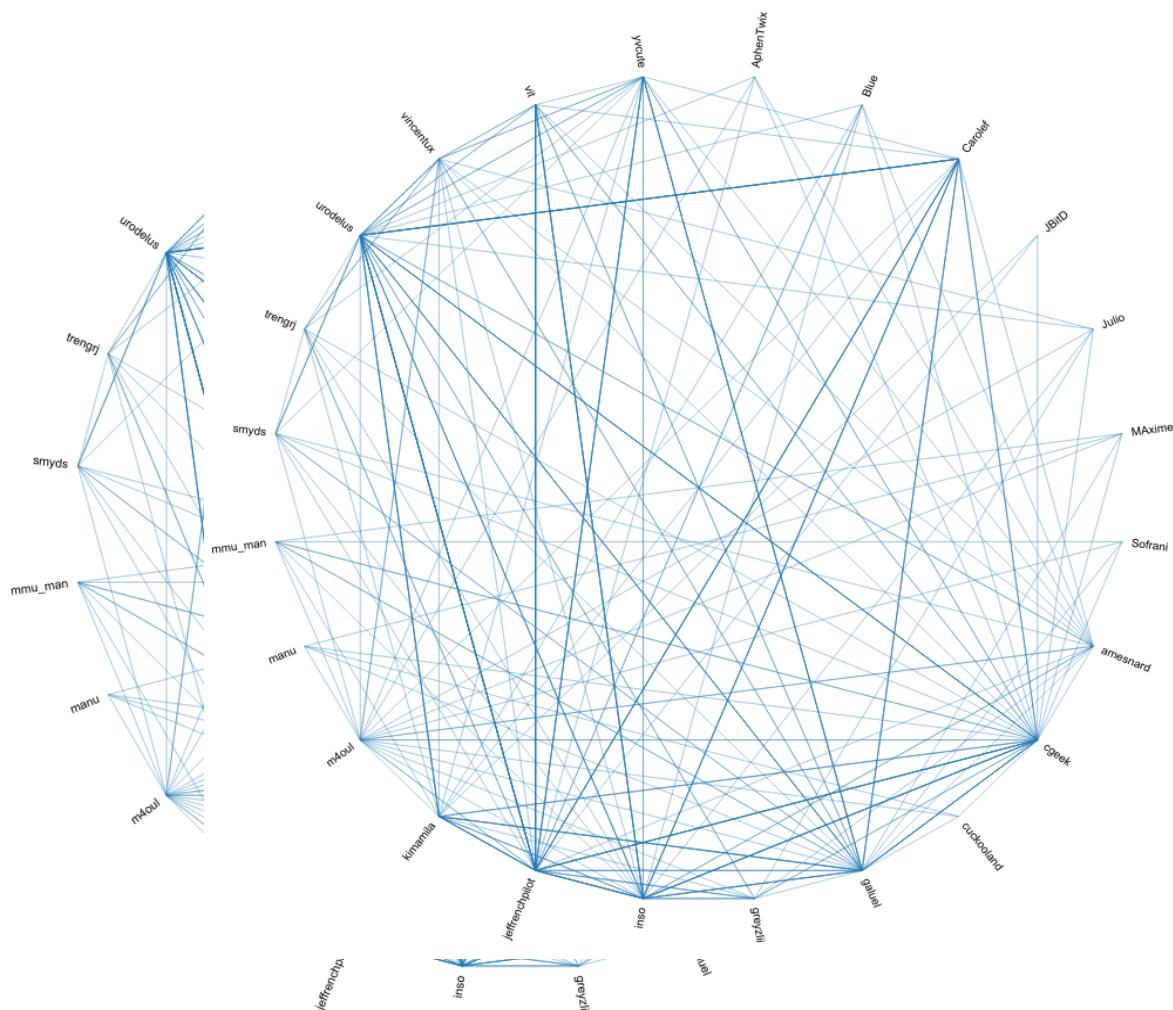
The web of trust (WoT), based on the principle of decentralization, was put in place to prevent an individual from receiving several UD's. Membership allows you to create UD's, certify identities and write blocks. The current requirements for membership are to have a minimum number of certifications. Certifications have a limited lifespan. This allows, in the event that a member dies or wishes to leave the community that he does not produce UD any longer. These parameters are configurable at the launch of the currency.

The second version of the Duniter DUP protocol added an additional requirement to be a member. Identity must be at a minimum distance from all members of the community. In addition, a stock of certifications is set up. An interval of time is required between two certifications to be entered in the common register. These parameters are tested in the Test Net currency.

In libre currency Ğ1, it is necessary to be a member, to have five certifications and to be at a distance of five certifications steps from all members of the community. It is possible to issue a maximum of 100 certifications. These conditions create a web of trust with an average of sixteen million members. Duniter allows to set up several libre currencies with which it will be possible to make exchanges between them. Certifications expire after two years. Certifications from the same member are validated at least once every five days."

³⁰ <https://github.com/duniter/remuniter>

Méta Brouzouf test currency Global webtrust in June 2015.



Méta Brouzouf test currency Global webtrust with identities at distance 3 from Moul



The Meta Brouzouf test currency, launched on January 22, 2014, had an average of about twenty members and not more than thirty at a time. More than a hundred people tested the currency. It ran for more than a year, which represents more than 350 years since every day represents one year. Its chain of blocks reached more than 52,500 blocks. This test currency let us evolve the softwares.

It was expected that this currency would crash when the value of the stored money supply stored in a variable of type int reaches the maximum possible value. The money supply reached more than $50 \cdot 10^{18}$ Meta Brouzouf.

Another test currency using the second version of the Dunitier protocol has been launched. It was called Test Net. Then, test currency Ĝtest."

And finally the first production-ready currency was born on March 8, 2017 at 16h32 UTC + 1, it is Ĝ1!

It is too early to get feedback, but what we already know is that it is very important to be vigilant about certifications in order to avoid having double accounts that could impact currency.

Persons wishing to join the experiment must read and approve this license <https://dunitier.org/fr/wiki/devenir-membre>

In Mayenne, a collective of alternative currencies, created the SOU, for local exchanges. Le Sou is fully connected to Ĝ1. Here is their website with all their news

[Http://www.le-sou.org/](http://www.le-sou.org/)

<http://www.le-sou.org/>

Twice a year there are Libre Money Meetings organized by the sympathizers of the project. Starting in 2012 with two people, they now count more than 100 people and it is exponential. The next ones will take place in Le Havre.

[Http://rml9-lehavre.tk/](http://rml9-lehavre.tk/)

Two days are still devoted to technical subjects and two days to the general public, with the game Ĝeconomicus, a game of which we will explain the rules in the following part and see how a structure can influence our behavior in currency exchange.

Let's get at each other: behaviours and values

Ĝeonomicus game

The game Ĝeonomicus is a Sybille Saint Giron and Stéphane Laborde fork (2014) of [The Trading Floor game](#)³¹ designed by Sybille and Matthew Slater in 2012 to experiment and test monetary systems.

To adapt to the RTM, time has been implemented in the game, with a life expectancy of 80 years.

We mainly test direct swap, debt currency and Libre money, but on the basis of the game principle, any monetary system can be played.



Having animated several games, one perceives that the players who debrief after the game, say, that the behaviours during the exchanges are not the same.

To create value in this game, one must make squares with cards, and at each square combined, players receive a candy, or a value card (new game). The number of created values and currency units of each player is counted at the end of the game.

A priori, what appears from most games is that there are as many values created in debt-money as in Libre money, or even a little more in Libre money. But the feeling of the players and the animators are very different between the two rounds.

With barter, swap one card against another, the game is blocked very quickly and very few values are created. Ĝeonomicus

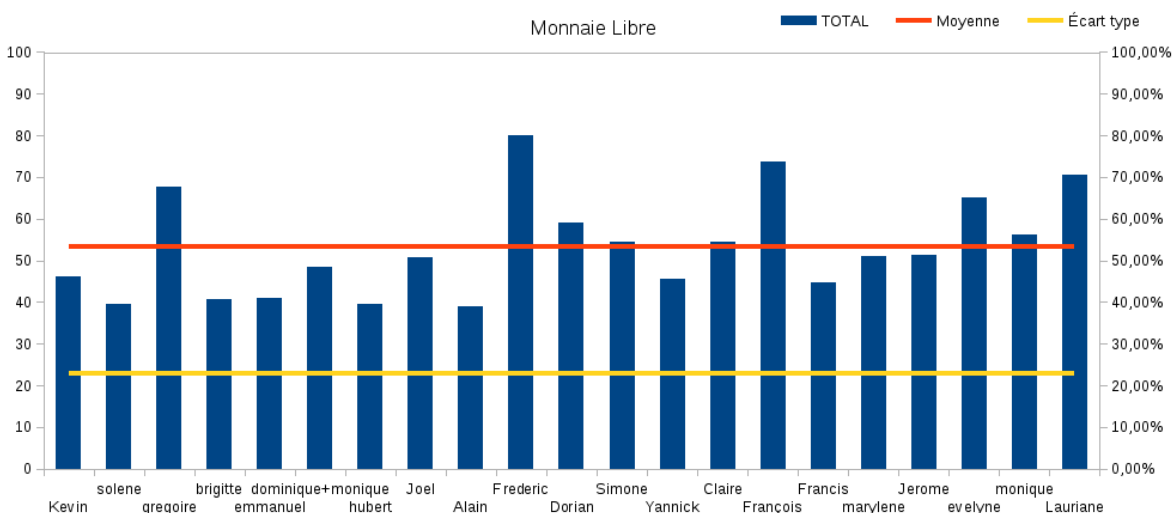
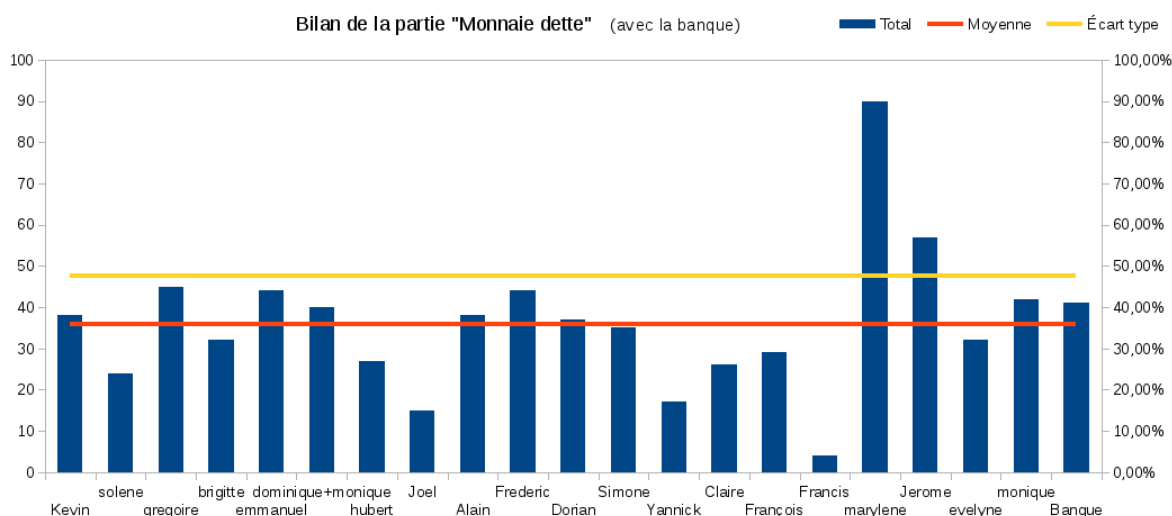
In debt money, everyone is busy with great effervescence and the sound level is very high. There is fierce competition, cheats, robberies, people in prison, etc.

In Libre money, after two or three rounds of play, everyone is calm. Having understood that regularly they co-create their monetary share in the system and that they will not lack of money whatever happens. Exchanges become respectful, cooperations are emerging and the sound level descends several notches.

³¹Trading floor game Played since 2012 all over the world/ <http://www.valeureux.org/blog/le-jeu-de-la-corbaille/>

One of it forks: Geonomicus <http://geonomicus.glibre.org/> and <https://www.youtube.com/playlist?list=PL0UDqLtXevvHY5rAyFtql5931VqYyRaoK>,

The standard deviation of production of the values in % of the average is much lower in Libre money, and we clearly see in the two following tables the large differences in wealth which disappear:



Example of a game report in French: <http://www.le-sou.org/2017/02/10/resultats-du-jeu-Geconomicus-du-3-decembre-2016-a-laval/>

If, therefore, we assume that the structure, the very architecture of money, influences our ways of behaving in our exchanges, then society can be transformed.

And this is where everything will become exciting with the Ğ1 currency that has just started. We will realize if actually we become less voracious with each other.

Let us now take a closer look at how value can be apprehended in this free money ecosystem.

A libre value?

The notion of moral or psychological or ideological value is always a value that is *self-valued*, something that is said to be good or bad. And even if these values diverge, they will be good for some, bad for others. People have values, they have been passed down by the family and the surrounding culture. Companies also have values they put forward for their clients and their staff. All these values are of the order of ideas, opinions and feelings.

Anything related to the monetary transaction of goods or services borrows these psychological and mental notions of value, such as "the price to pay" for example. But the price to pay for bread is not the same as the price to be paid for side effects of a medicine that heals. The cost of an automobile is very different from "it costs me to argue with my enemy", which is a psychological cost, although it also costs me psychologically to buy this car. And even the debt is not only monetary, since we can be in debt to someone who has rendered us service without any coin at stake.

When one says that one is fair, it can refer to the sense of justice, equity, or lack, I am short this month, it lacks currency ... to buy.

This little psychological digression shows us that we are much more involved in ideals in these stories of money than money itself.

No wonder then, that we have difficulty in understanding the concept of basic income, that famous currency that would be given unconditionally and unconditionally from birth to death. It affects our values and the values of work.

The basic income, get us out of the obligation to lose one's life to win it, since the share of money that is due to me in the system, allows me to get out of the imposed value of others, including labor value. Everyone is free to work much or little in exchange for money, and everyone is free to work much or little without money. The universal dividend leaves us the choice of our values about work and the time to devote to it.









But what about price, cost, how are we going to fix the prices of objects and services to exchange, if regularly I have my share of money co-created in the community?

Today, it is said that prices depend on the law of supply and demand, partly certainly, but only in part. The money-creating banks are, for example, very involved in the real estate market in concert with the states, since this concerns taxes and inheritances. Someone who sold his apartment too much below the market price will be suspected of fraud. We are therefore not free to sell at the price we want.









If our behaviour differs depending on the monetary architecture, will we also be able to influence prices differently?

In Libre money one can count in quantitative, monetary units, or in relative terms, as a percentage of the money supply. The DU, Universal Dividend, is a percentage of the monetary mass, a share of the currency.

Here are two images of currency Ğ1 on 14th April 2017, on in quantitative, other in relative.

Monnaie		Toile de confiance	
	Nom de la monnaie	g1 (G1)	 Nombre de membres (N_{actuel})
	Masse monétaire (M_t)	25 820,00 G1	 Variation depuis le dernier DU (ΔN)
	Masse par membre (M_t/N_t)	316,84 G1	 Nombre de certifications requises pour être membre référent
	Dividende universel (DU_t)	10,00 G1 / jour	
	Croissance actuelle (C_{actuel})	3,16 % / jour	
Afficher en unité relative ?			

Quantitative display

Monnaie		Toile de confiance	
	Nom de la monnaie	g1 (DU_{G1})	 Nombre de membres (N_{actuel})
	Masse monétaire (M_t)	2 582,0000 DU_{G1}	 Variation depuis le dernier DU (ΔN)
	Masse par membre (M_t/N_t)	31,6835 DU_{G1}	 Nombre de certifications requises pour être membre référent
	Dividende universel (DU_t)	1 DU_{G1} / jour	
	Croissance actuelle (C_{actuel})	3,16 % / jour	
Afficher en unité relative ?			

Relative display

The Relative is divided by the Quantitative DU, which is worth "10,00" today. So we have a shift of a comma from Quantitative. The evolution of DU is slow, it will last at least a year before the figures differ.

To understand, let us imagine that the RSA (Income of Active Solidarity in France) which is of the order of 500 euros, becomes the relative unit of measurement, it would become 1. We could then calculate everything with this new unit. For example, a car at 10,000 euros, would be worth 20 RSA.

Being able to display its accounts in relative terms can help to fix prices relative to the DU and to be aware of our potential purchasing power. In other words, what can we buy with our monetary share? Will prices be set according to our needs or not? The current experience will tell us.

The freedom of value implies that each person is free to evaluate as he wants its production. Of course, if we want to find buyers, the law of supply and demand can play in the system and a price adjustment will take place despite us.

An inventor, a creator, or a group, can alone create in his cellar or garage value, without anyone knowing it or no one understands or wants that value. Thanks to the Universal Dividend, these people have the right to live. They will not lack money. Thus the creator or a group of creators can innovate as they wish even if there is no monetary value in return at a moment T. It is quite possible that years and years after these creations, these productions are valued and even if authors have died.


With this monetary architecture we leave the value free of all production.

With Ğ1 currency launched recently, we are entering an exploratory phase of our behavior and our values, both mental and monetary. Not being able to decouple ourselves from the Euro currency at once, we are obliged to still take into account the currency debt. This adaptation phase will be exciting.


The web of trust being thus made, the number of members co-creators of the currency will be very progressive at first, but then quickly exponential. Companies and organizations can already open a wallet and sell in Ğ1 (then or buy).


Discussions begin in this phase of transition, namely how to fix prices and what share of Ğ1 can we accept without impacting our businesses still strongly linked to the Euro.

Already in Nantes a restaurant accepts Ğ1 and the restaurateur wonders what will be the number of menus that he will be able to sell in this currency without harming the durability of his trade.



[Accueil](#)
[Déjeuner](#)
[Dîner](#)






Une cuisine ouverte sur la salle, un comptoir en étain, des murs en pierres, des tables "bistrots", des vins et des plats à l'ardoise...

Etrillum sur le site
des [Tables de Nantes](#)
sur [Restaurants-Nantes](#)
et sur [Vimeo](#)

Etrillum accepte et encourage une
monnaie libre : **Ğ1**



<http://www.etrillum.fr/>

Also in Belgium, a couple proposes nights in Ġ1 and wander about the same questions.

Services



Besoin de calme, de prendre du recul?

Envie de découvrir la nature, de vous initier à la
permaculture?

Marie-Berthe et Frank vous ont préparé un petit appartement au
premier étage de leur maison, à proximité des bois.
Lieu calme avec accès libre au jardin.

<http://www.besoindecalme.be/>

Every company, organization, independent and even individual will be led to think freely about these questions. For the sale of a service, for example a training, this could be calculated as a percentage on the sum in Euros, as 20% in Ġ1 and 80% in Euros. Tax legislation must also be taken into account, since today Ġ 1 has exactly the same obligations as the Bitcoin.

Even though many are impatient for this currency to grow rapidly, it may be preferable for us to go slowly and the web of trust imposes it on us, so that we adjust our ways of doing. And those in their fifties will not even see the effects of generational symmetry at half-life expectancy, that is 40 years. No matter, we rejoice at the present time to live implementing this new way of apprehending and accounting for our exchanges.

Conclusion

The Libre currency based on the "Relative Theory of Money" satisfies the four economic freedoms thus providing favourable conditions for an economy at the service of all and perennial in time.

Freedom to exchange, account and display prices "in the currency" is ensured by free exchanges between members at free prices.

Freedom of evaluation and production of any economic value is sustained by issuance unrelated to any production and by freedom for all to produce or not.

The freedom to use resources is protected by the equidistance of everyone from the source of emission of the currency resource. This symmetry facilitates access to other resources.

This freedom establishes in particular the principle of economic relativity as the essence of its approach, by the mechanism of temporal and spatial symmetry.

Freedom to choose one's monetary system is guaranteed by the voluntary adoption and customization of accounting displays.

The human currency co-creator by its presence on Earth is the basis of the units issuance equations. This gives at the same time a mathematical and objective reliability since the formulas are factual, and a quantum leap!

The exchange currency is "cost nothing" except to be alive.

Philosophically this goes beyond the original sin anathema setting us in a paradigm of a benevolent universe where we do not have to pay to exist, where we receive a "manna" as a means of exchanging with our fellows. The effort will be free, produce, buy, sell, dream, live ... and free communities will be able to organize if they wish to define extra-monetary rules for the Commons, planetary ecology, agriculture, share living, etc.

The various experiments have set up the technological infrastructures necessary for the use of a Libre currency. Monnaie M has opened the way with a basic experiment of exchanges between individuals, Duniter and its cryptocurrency Ğ1 opens the way, with a solid P2P exchanges architecture, on a larger scale.

The variety of complexity and security experienced in the projects makes it possible to better understand the risks and to imagine parades. Security is paramount because a unique identity must be guaranteed throughout a human life for each individual member. This is not easy to secure, and can be done with different technologies and none is perfect to this day. The transaction register must also be protected as in any system.

Adaptability must be ensured to take into account in particular disparities in life expectancy.

Technology too is not enough, it can drift by its constraints, it is necessary to remain vigilant.

Ĝeonomicus game experiences reinforce the hypothesis that a sufficient, transparent and symmetrical currency generates more wealth, more productivity, more cooperation and more well-being.

Today the official currencies have characteristics that lead us to competition, including scarcity, opacity and asymmetry. The debt currency game round is its exact reflection.

Ĝeonomicus allows us to simulate, understand, experiment and thus bring new people into the current monetary community.

We have seen that our behavior differs according to the monetary architecture in the game, we will see in the first phase of exploration of the currency Ĝ1 if this hypothesis is verified and we will also see if we can know how to harmonize our libre values.

The primary benefit of the Libre currency is therefore to provide the favorable conditions, in terms of monetary infrastructure, to the emergence of cooperative behaviors towards more sustainability. Infrastructures, or architectures, influence us, and therefore our currency influences us.

Freedoms satisfied, symmetrical equality of issuance, clarity of rules reinforces sovereignty, the capacity to act, and encourages to stop judging others and their productions. Implementing in a safe technology, trust will have every chance to flourish.

Our intention is to support conditions conducive to healthy and free behaviors.

We are curious to observe the use of this currency in order to answer a few outstanding questions:

Will the effect of the Ĝeonomicus game be seen in the first exploratory phase of Ĝ1?

Are we going to make ourselves poor by putting prices inaccessible?

Are we going to recreate distrust? Or will we allow ourselves to be gentle, cooperative, caring?

Changing money means changing the inegalitarian world. Establishing a basic income is about achieving equity and human dignity. Libre currency is the most elegant and easy-to-implement unconditional basic income. Without governments, politicians, states, and bankers, we can today allow ourselves to live with dignity, freedom and without affecting future generations by our choices of the present.

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