

The Iconomy of Creative Currencies in the City of Knowledge: a Transmonetary Approach

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Abstract

In this paper we, we begin by exploring the theoretical implications of a non-naturalistic, iconic perception of Money as both media and technological artifact embedded with affection. From Marx to Weber but also Simondon, Deleuze and Derrida, we discuss the future of Money from a conceptual and logical perspective taking digital emancipation as the new value frontier for human development. Based on the Simondonian approach to “transduction”, we advance a new concept of “transmonetization” or a “transmonetary approach to the iconomy of creative currencies designed to leverage the knowledge production and sharing process in contemporary networked economies.

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1. Iconomics

After two decades of internet propaganda, the political and economic issues underlying the advocacy of technological convergence as a gateway to freedom of expression and economic emancipation are still much neglected, despite the evidences to the contrary (especially after the 2008 global financial crash) such as the prevailing of global surveillance and data “snooping” for the benefit of business interests, the emergence of the “precariat” (Standing, 2014) and other perverse effects of “being digital” such as the crowding out of relevant offline activities in the time distribution of citizens, their political propensities and identities.

This paper examines the allure of digital currencies as part of the new economic effects of digital convergence on the periphery of the capitalist system as Brazil became a major global consumption space and financial hub in the aftermath of privatization of its telecommunication sector, infrastructures and key social policies (such as education).

We view currencies as framed by Iconomics, an emerging interdisciplinary research program, along the path suggested by Joseph Stiglitz since the emergence of information as demanding a new scientific paradigm in economics as well as following the lead of more historicist and hermeneutic approaches to social, technological and monetary realities.

A key, practical issue in the emerging field of iconomics relates to social currencies viewed from the periphery of the global capitalist system as a long term policy geared towards the emergence of a participatory culture led by digital innovation and social emancipation.

What are the social protagonists of the new digital participatory framework? What are the effects on the geopolitical economy of places of memory, culture and knowledge? To what extent are still valid some of the most relevant approaches to local development policies such as industrial clustering, triple helix development and creative industries if the digital co-evolution does not relate to the foundations of value, wealth and sustainability?

The economic perspective acknowledges the “relational turn” in economic geography that has shifted our focus from structure to agency to “processes of technological appropriation”.

What is the role of popular and activist cultures in the promotion of the convergent/participatory ideology which would apparently lead us beyond the “either/or” mindframe, opening paths to autonomy, emancipation, creative production and wealth distribution? What are the limits to citizen-based currencies and exchanges leveraged by ICTs? How is the definition of money itself liable to these affects, images and values?

Is the MIT utopia confirmed by the geography of internet domination and corporate control of telecommunication and financial infrastructures? Who is appropriating the income and wealth creation flows in a world of supposedly lower barriers to entrepreneurship, empowerment and creative entrepreneurship?

The contradictory nature of the digital icon economy is already evident at the core of innovation-based metaphors, narratives and paradigms.

The productive power of connectivity and entrepreneurship discourses at both the Center and the periphery of the global economic system is at stake. What does it mean to be digital at the margins of transnational flows?

Is the State still a relevant player in the post-global experience? What are the new roles for academic research and university networks in the promotion of a new political economy of culture and knowledge sharing?

These issues show up clearly on the agenda of the Oxford Internet Institute, for instance, in their most recent Call for Papers bearing on the fascination associated to entrepreneurship and the diffusion of technologies of connectivity (the Internet, mobile phones, and Web-enabled devices, gamification, smart cities).

The global media (such as The Economist), development agencies and a new generation of global investors focus on “sweeping development gains”, “transformation” “technological leapfrogging”, the “data revolution” or “acceleration” driven by entrepreneurs and the spread of ICTs. Is this a real process that cuts through the world growth stagnation and monetary volatility? Are financial, monetary and fiscal frameworks irrelevant on the edge of these innovations?

Is the youth actually benefiting from these convergent technologies via new jobs, “start-up-ism”, “artivism” and a new “street” and “public square” politics that would result in a global political “Digital Spring”?

2. Creative Currencies

There is a particularity to the economic notion of creative currencies in the context of complementary and social currencies. This creativity is an index of an affective connection, required for any currency to be effective. The very essence of the digital economy, that is, its “propensity to virtualize”, creates the field of opportunities for a digital Keynesianism of sorts. Except that the multiplier and accelerator now reach and transform not only the financial estimation of cash flows but any object, body or media prone to virtualization (for instance, as in gamification of interfaces and patterns).

It is true that by nature every alternative currency is creative in at least one sense: by producing detours in the flow of money, shifting the possibilities to transact, altering the meaning of monetary relations within a group and between this group and the rest of the system, a currency or a time bank are creative, meaning that they alter the economic, and most importantly, the social landscape. They develop clusters of divergent economies, thus creating a new sense of possibility for value.

As it goes, some forms of currency claim to be extremely creative, namely cryptocurrencies, most of all bitcoin, that purports to consist in a self-engendering currency of pure code that raises from the sheer spending of energy (i.e. electricity) by means of chains of command beyond human control.

But it is still necessary to stress and develop in further detail what it is that makes for the creative character of currencies as we conceive it. Indeed the very project of populating the

world

with complementary currencies implies the creation of entire forms of language that express values that pertain to people in their common existence.

Yet the most relevant feature from our standpoint is that these people relate in diverse ways, which means that value itself is diverse; and currencies can indeed express this diversity, inasmuch as they communicate and give meaning to expressions of value, i.e. they confer social significance over singular manifestations of a valuating relation.

Take the notion of time banks, which link the values of people's labour, for example personal services, to the value of the labour of others, which might be needed sometime, in a relation of projected and virtual wants, to which projected and virtual gestures correspond in actuality, through the availability of one's labour-time.

Take regional complementary currencies, which bind neighbour to neighbour through small-scale commerce, giving actual density to a notion of community that could perfectly well have remained merely virtual. Take once again cryptocurrencies, which foster the establishment of global communities of people with a like mind about the need to overcome big financial institutions and central banks in their power to control the flux of money – and, most importantly, financial instruments, interest, debt.

The common aspect of these initiatives, which we wish to bring to the fore, is essentially communicative (and thus, affective), inasmuch as they reorient and reorganize meanings in a collective field.

This is why we should evoke a rather disturbing but provocative sentence, as Diogenes Laërtius reports it having been told Diogenes the Cynic by an oracle – this sentence has been picked up by Foucault and later on also by Michael Hardt: “deface the money”, “parakharatein to nomisma”, sometimes also translated as “falsify the currency”.

This is obviously not a call to counterfeit actual money, but rather to understand that any form of money only works as such because it comes with a face, or rather it is a face, the visible form of a certain force; this is the force of valuation, which is of collective nature, even if ultimately it is subsumed under the face of the king, or a god, or the creditor – ultimate instances of value determination.

This is also not meant literally, as in the “heads” of a coin, but by the simple fact that when we use money, we know where its value comes from and which force it is that guarantees its continued value, and how far this force is willing to go to make sure this value, its own value, is reiterated.

To deface money in this sense is to point a finger at this force, and then bypass it, or overcome it, or act in its interstices. How to do this, and why, are the first questions we need to ask. It is very important to remember that we have been long operating over a limited understanding of the nature of money – as if money were, in its essence, a commercial instrument that allows for independent individuals to trade among themselves with discrete goods, seen as commodities. “The oil which renders the wheels [of commerce] more smooth and easy”, as Hume would have it.

This definition, convenient as it may be for economic analysis, doesn't help us beyond this field and has been under heavy fire from anthropologists and sociologists, at least since Marcel Mauss' seminal essay, *On Gift*.

Mauss identifies the origins of money in sacred objects and emblems of clans that changed hands during ceremonies and festivals, most notably, of course, the potlatch. And it was during these festivals, as a side feature, that a smaller event would take place, which is the *kula*, the exchange of use values, i.e., goods, mediated by valuable objects, but much less valuable than those exchanged among kings and priests.

Actual, daily commerce, even when it is organized in a way that resembles modern-day markets – and in most non-modern societies that is not the case – are dependent on the certainty that higher transactions, with a whole different set of significations and values, are taking place, so as to define the common ground in which this particular, commercial, relation can occur.

Now to the nodal questions: are we allowed to draw a parallel between this non-modern, non-capitalist relation between higher and lower transactions, transcendent and commercial values, and modern-day economies?

Could we identify the larger ceremonies with the financial transactions that, today, take place among big actors, investment banks, governments, funds, and the smaller *kula* to the everyday economic life in which people work, buy and sell, save and invest, produce and consume?

Could we do the same referring to the age of the gold standard, in which the great majority of economic actors – normal people, that is – never actually saw a coin made of gold or even silver? If so, would this be yet another meaning for the famous Gresham's Law, according to which bad money draws away good money, while the latter hides in the big player's chest as a reserve of value – the one that actually is worth something?

This is possible in at least one sense, which is that of the generation of a common, social meaning, grounding value throughout the social fabric. Which brings us back to our problem of how to “deface” money – only to “reface” it in multiple faces – and also to our problem of currencies as creative, or better yet: as the field of creation, i.e. invention. If we recognize that much of the economic meaning that takes form monetarily is derived from a transcendent instance of high finance, then this is where the faces of the money to be defaced take form.

These values come to be collective and get to circulate as a result of their assuming the form of images, that is, their iconic character.

That is how they are “faces” (inter-faces) that can be “defaced” and “refaced” in multiple manners – just as the images of value can be multiple.

In her book *Image, Icon, Economy*, the Art Historian Marie-José Mondzain demonstrates how the circulation of Byzantine icons had an important economic role in keeping the unity of the empire in the 13th Century, by offering a common, but malleable ground for different social sectors and spread-out territories to relate to imperial and religious power. In the opposite end of the same phenomenon, Viviana Zelizer demonstrates in many works, most notably *The Purchase of Intimacy*, how even contemporary national money, which is supposedly of an

ute level of abstraction, is ear-marked to represent the roles of genders, classes, ages, and other forms of social difference.

The face of money, its image character, its iconic mode of functioning, has many levels, relating both to the transcendent forms of finance – its “potlatch” aspect, the gold bars in Fort Knox, the indexes in Wall Street, the constant flow of bonds and debentures, and to its most immanent day-to-day common aspects of salaries, commerce, allowances, mortgages.

These are connected through a series of instruments that confirm the image of money’s transcendent face: contracts, with interests, debts, obligations.

This is why the possibility to create new forms of currency, which are of course new circuits by which values flow, implies the establishment of diverse faces for diverse monies, faces that are images of values in their diversity.

This is not to say that one could simply create a table of values, with their corresponding faces, their corresponding currencies, and what the proportion would be in which they relate to each other and can be exchanged into each other.

Something of this sort would only correspond to a different form of categorically chopping the reality of value production, which is no different, though in a different scale, to what we can see in relation to national currencies and exchange rates.

The whole point is to accompany the emergence of values with the emergence of corresponding images, which are the iconic vectors of the values themselves. This corresponds of course to the emergence of the collective character with which they will reveal their own forms of value.

For example, to step aside from the excessively economic distinction between use value and exchange value, let us come back to Walter Benjamin’s distinction between cult value and exposition value: each value in this case is the value of its own cult and its own exposition, which is one of the reasons why it is so difficult to make art and culture actually fit into the regular monetary system of values with its transcendent face.

This is why this gesture by which the monetary forms are refaced calls for an exploration of currencies as a creative force.

Complementary currencies offer a possibility to create a whole new set of images by which we can interpret and make circulate the values that we produce as communities, corresponding to different forms of exposition and therefore, of communication, beyond the mere idea of commerce as an exchange of goods: commerce is always also a statement on value, on an agreed, i.e. produced, equivalence.

The creative aspect of this process is the fact that the images that operate in this social field can be generated immanently and transform into one another, inverting and even subverting the face of the transcendent currency that actually belongs to a different level of value creation and circulation – and, as we often see, and are seeing now, also destruction.

This point brings us to the issue of the technical character of currencies. The generation of images is, after all, the first level of creation, and by extension, technical invention. It is the case of prototypes, stereotypes, models, schemes, and so on.

Money creation takes advantage of and derives from the technical possibilities of the social configuration in which it takes place. This is true of the transcendent, financial, governmental monetary forms, from the sacred objects of the potlatch to the gold standard and to state debt held by the global banking system, and it is just as true of alternative monetary forms.

Creating monetary forms in times of digital technology has its own particularities, given the tremendous power and perils of algorithms and block-chains.

This is the age of high frequency trading, of mobile payments and of cryptocurrencies: images of perfected transactions, immediate flows of cash and untouchable strings of codified money, impermeable to human intervention.

To what extent do these modalities express the creative possibilities of currencies? How different are they from digital versions of the already existent and well known transcendent image of money, that of the financial system and central banks?

Are they affirming once again the face of dominant money form or are they defacing money to give it in indefinite diversity of potential faces?

The purpose of the creative currencies project is to explore these questions and the possibilities opened by the new forms of communication and invention that come with digital technologies.

3. City of Knowledge

The City of Knowledge was founded in 1999 and acts as a multistakeholder association based at the University of São Paulo which strongly emphasizes Information and Communication Technologies (ICTs) as a strategic factor for economic development in the knowledge era. The project was selected after a Call for Projects issued by the Institute of Advanced Studies at the University of São Paulo.

The City of Knowledge is a civic intelligence project and a forum for open audiovisual digital businesses in Brazil. The City's mission is to promote, position, represent and defend in the public sphere the public interests mediating projects that engage companies, social entities and individual users involved in activities, relations and businesses by electronic means with a strong emphasis on information and knowledge processing for public problem-solving.

Its main goal is to encourage digital emancipation as a strategy for development and modernization of socio-economic, political and cultural relations, focusing on the sustainability and competitiveness of audiovisual digital business models.

The City of Knowledge is open to creative connections to on-line retail; international telecommunication companies; global hardware manufactureres; software and technology companies; Internet portals; traditional law firms and consulting companies; leading

companies in all economic sectors as well as emerging leaders in the civic sector and academia. The City actively pursues further, complementary support via material or immaterial resources among its constituency.

Since 2003, the “City of Knowledge” research group has done theoretical, empirical and applied research related to complementary currencies and financial innovation in the knowledge society. This project aims at the extension of gameplay (or “gamification”) to monetary economics and investment finance, organizing vast support from e-commerce players in Brazil and globally so as to foster local creative development initiatives associated to the issuance, management and distribution of intangible assets tagged as complementary or social currencies.

These tokens of intellectual, artistic or civic motivations will be used by the “citizens of knowledge” as credits or digital “badges” for circulation of products, services and knowledge in digital networks connected to the internet of objects and networked systems.

Public, private, non-profit and individual, entrepreneurial agents will be able to cooperate and compete in this habitat of innovation which will affect manufacture, environment and culture in Brazil and globally.

New forms of digital intermediation and peer-to-peer knowledge sharing will lead the University of São Paulo and its partners in the City of Knowledge to the next frontier of value and development theory, requiring the development of new applied sciences such as Iconomics and the networking of heterogeneous actors capable of building up co-evolutionary paths in the spirit of the “triple helix” paradigm (active civic action on the part of the government, the markets and different areas of society).

A number of faculties, laboratories and research groups at the University of São Paulo as well as public, private and academic partners in different areas of the planet are joining the City of Knowledge in the creation of this new “IMF” (Imaginary Money Fund).

Advanced engineering, innovative finance and a core of humanistic values preside over this ambitious project that has been in the making for the last 10 years, after being selected by the Institute of Advanced Studies as a leading project in information and communication technologies leveraged by citizenship and human rights.

USP and the partners of the “City of Knowledge” are committed to cooperate in the design, technical development, practical implementation, reporting and assessment of creative currencies as units of account and means of payment for transactions involving games for change, creative economic activities, educational and training credits as well as new forms of risk and credit rating digitally synched to big data related to learning.

The “City of Knowledge” project at USP is now at the stage of accelerating spin-off led to the creation of a spin-off start-ups and new projects as a hub for the “Youth Portal”, an initiative sponsored by the Municipal Secretary of Human Rights and Citizenship of São Paulo.

Acting as a digital emancipation hub, the “City” acts as curator for content, technology and monetization of the Youth Portal.

There are immense challenges in order to coordinate the creation and management of intellectual property associated to the project as well as digital certification of partners and their transactions, constitution of funding strategies and offers to the public.

The “City” evolves into becoming a “real” iconomy, as an “incubator-accelerator-inspirator” of social and creative enterprises, projects and content, with non-profit as well as for-profit start-ups clustering for local and global development.

The underlying educational process will be sponsored through educational campaigns with the support of the University of São Paulo and branded “City of Knowledge” under the curatorship of economist, sociologist and professor Gilson Schwartz.

This project was recognized among the “Top 30” of the Development Gateway Award in 2006 and has been awarded the National Project Prize by the Ministry of Culture of Brazil (2009-2010), the PRIME-FINEP Award in 2009 and sponsorship by BNDES, Volkswagen Foundation, AMD Foundation, Mozilla Foundation and the Framework Program 7 of the European Union (2009-2012).

Educational campaigns will focus on the creation of local, community-led and peer-to-peer complementary currencies associated to learning practices, problem-solving and activism.

The educational campaign will offer the opportunity for large-scale, online learning of content producing activities, functioning as a virtual incubator of digital audiovisual content and new business models.

This “melting pot” or “innovation habitat” of local communities connected to the web and self-organized for the creation of expressive content will promote an innovative and collectively designed network of intangible assets such as learning time, knowledge sharing, inter-grades cooperation in schools, action-learning and action-research, netnography and small business creation/incubation.

The creative incubator environment is already fostering microbranding, new local P2P projects, open source game and software development and a fair trade culture expressed in the distribution of information systems under different licenses (not only public or “creative commons”).

The big data associated to the functioning of this socio-cultural monetary system is going to feed new market intelligence and consumer trends. The sharing of this information may also lead to new public policies as well as democratize local finance, credit and entrepreneurship from a very early age.

In order to tag the initiatives connected to this incubation of knowledge an content spaces, creative currencies (educational credits) will be issued by the City of Knowledge, with the support of companies and social entities of all sizes that wish to contribute to a sustainable digital development of an open society in Brazil.

At the City of Knowledge, curators and supervisors will be involved in the creative monetary council that will organize, as an e-marketplace, the supply of currency and credit associated to the knowledge creation and sharing campaign.

Those “spending” knowledge currency locally, wisely or aiming at sustainable and intelligent flows of occupation, employment, revenue and return on investments, will be digitally certified by the network of universities, educational schools, private companies, public and third sector entities associated to the project.

According to the strength of the supporting network, these certified credits will be traded for goods, services and other assets. In short, creative currencies are a form of “play money” associated to a mass incentive to learning, civic action and entrepreneurship in the creative economy.

What is the problem the City of Knowledge Economy project seeks to address?

“Too much credit for the poor to consume crap”, this is the prevailing “development” policy as advocated by the mainstream governmental and economic establishment.

The bottleneck: no funding for knowledge-creation in a fast developing “bottom-of-the-pyramid” mass market – consumption-led growth is unsustainable, consumption with declining knowledge assets creation is even worse.

As the Brazilian economy stabilized from a fiscal, monetary and financial perspective, the government has been incapable of setting up an agenda for the Knowledge Society.

On the other hand, the research that led to the development of the creative currencies project has been funded by the Presidency of Brazil as part of the digital inclusion agenda of the early 21st century and has been awarded numerous prizes and sponsorships by public entities such as the Ministry of Culture, Ministry of Science and Technology, Receita Federal and the Development Gateway Award.

What will the project accomplish?

We hope to foster higher informal and open enrollment indices in knowledge creating processes among the poor and also among the economic elite (not yet technical elite), leveraging the communicational infrastructure of digital, open networks so as to:

- Implement educational campaigns associating wealth creation to knowledge access,
- Intensify the democratization of hardware, software and design spaces in audiovisual markets (digital TV, m-commerce, tablets, game consoles, cell phones, etc.),
- Promote the highest possible exchange flows between knowledge currency and other forms of credit (microcredit, innovation funds, venture capitalists, angels, mutual credit, intelligent real maintenance, smart cities, P2P security and surveillance, etc.), so a sustainable ecology between pro bono and profitable, non-proprietary and proprietary emerges and is measurable via digital certification of the mobile units of account and means of payment associated to education and culture,

- Develop theoretical as well as institutional and global support for the democratic and self-regulated paradigm, valuing the rationality of individual choice given the best and most sustainable incentives without fiscal losses and imbalances, with intense participation of the private sector and non-profits, local and global,
- Network with research-action opportunities for intangible assets in the knowledge economy,
- Approach economic actors and associations, civil society, educational networks and public policy-makers committed to an open society with a sustainable digital development agenda, so as to advocate knowledge as a course of value, wealth and employment for democratic societies.

4. Conclusion: A World of Innovation and Sustainability Helix (WISH) Come True

As governments inject billions into private labs and research universities, the challenge for economic development is to convert these investments into paths towards sustainable projects that can innovate and create value and jobs in the long-term, mostly in what has been usually named “creative economics”.

The “City of Knowledge” research group at the University of S.Paulo (USP) has partnered with the Technology and Sustainable Innovation Research Center (PGT) at the Faculty of Economics, Business Management and Accounting (FEA-USP) to formulate a research program geared towards this vision of economic development. It is the WISH – World Innovation and Sustainability Helix Research Program.

The PGT/City of Knowledge proposal research is now in its third year of implementation, facing the challenge of converting this injection of funding, a one-time windfall revenue offered by the University’s Office of Research, into a new global cooperation platform. The policy-concept of a Virtual Knowledge Iconomy (VIKI) is at the center-stage of this innovative approach to human development in urban areas.

The main strategy for turning science and technology into local economic growth has been research parks and incubators. At their heart, these were real estate plays, using low-cost land to create a low-cost home with easy access to research universities for technology-driven firms. In the 1980s, the emphasis shifted from attracting corporate branch plants and offices to creating and growing new startup firms. Instead of just subsidizing land, incubators provided everything from seed funding to bookkeeping for their tenants.

The thinking was two-fold: dating companies was a zero-sum game playing regions off against each other, and growing firms locally would be more sticky and likely to produce secondary benefits. Essentially, this was the Silicon Valley model, seeking to create a rich regional mix of mobile labor, entrepreneurs and clusters of firms. Almost universally, incubators have been positioned around universities, in the hope of leveraging their research and talent.

Research parks and incubators, however, are starting to show their age as an economic development tool. Shifts in the way research and innovation happen are leaving them behind,

and pioneering new models of collaboration that will require us to forge new models leveraged by digital literacy, networking capacity and imaginative roadmapping for research and development. The next generation of innovation-based economic development must address a dramatically different world from the one in which research parks and incubators were born and thrived.

Even the most successful parks are now confronting the need to reinvent themselves for the next fifty years. They are provoking a strategic discussion with peers around the world about the role of place in tomorrow's networks of innovation. The WISH project is based on interviews with experts in innovation and entrepreneurship, scientific collaboration, university research management and urban design and development so that to identify trends that will challenge our existing models for technology-based economic development in coming years. Some preliminary propositions are being tested:

The Biomedical Supremacy. If the 20th century was defined by physics and electronics, the 21st century will be defined by biology and biomedical clusters according to a very different set of rules than IT industries did.

Networked Science. Science is becoming globalized, which means that local clusters cannot exist in isolated modes. To succeed they need to be connected to other innovation hubs, using technologies such as cloud computing networks leveraged by creative P2P strategies.

They Work Together. Young scientists pioneer massively collaborative work styles. The institutional foundations of science will be shaken, from journals to patents to university research.

Lightweight Innovation. The helix for innovation should favor lightweight and open innovation strategies. The inevitable disconnect means a need for new systems that can take raw breakthroughs and prepare them for commercialization.

The Persistence of Place in the Net. While science is taking full advantage of the web, place is important for the creative collaborative work that can't be virtualized. But the way young innovators use space will be more dynamic, ad hoc and flexible.

Universities of the Future. Leading research universities treat intellectual property like corporations of yesterday, while the most innovative companies are opening up and becoming more like yesterday's universities. As universities shift roles from ivory tower to economic engine to creative hubs, fundamental flaws in technology transfer mechanisms will become all too clear and the cultural ethos of academia will be questioned.

The trends described are global trends, which means there is little that economic policymakers in any one community can do to regulate the speed or scope of how they play out. But there is one more important trend, the growth of regional approaches to technology-based economic development.

We are just beginning to see the outlines of this approach, which involves many partners – research parks, large research-driven companies, startups, universities, investors and professionals – working together to develop virtual knowledge economies (“vikis”).

These creative knowledge production/sharing networks consist of a number of elements, some formal/explicit and other informal/tacit such as research partnerships between universities and companies, social networks of entrepreneurs, professionals and amateurs, investor cliques and clubs and virtual networks and their members both inside and outside the local environment.

Virtual knowledge iconomies (vikis) are different from clusters, because they aren't limited to a single industry, and companies aren't necessarily the most important pieces. In a sense, for vikis, firms are but one way for the network to express its needs and forge icons related to what technologies ought to be commercially developed (such as the "smart city" icon, or the "creative industries" icon and so on and so forth).

For instance, when enough people in Silicon Valley begin experimenting with a new technology, inevitably a whole array of firms launch to develop it further. Firms emerge from the virtual iconic ecosystem, not the other way around.

The strength of Virtual knowledge iconomies (vikis) is that they can adapt faster than national systems, which are dictated by federal politics, and they can scale up successful local enterprises and start-ups much more effectively than individual research parks or municipalities. This is one reason why major policy think tanks are all advocating that federal research grants be targeted to regional and even local partnerships of federal labs, universities, companies and entrepreneurs with a global perspective.

What is our WISH?

The challenge of building virtual knowledge iconomies is enormous, and will not be accomplished without significant, sustained and coordinated investment and effort by every level of government over the next decade. But individual agencies and organizations can start to prepare for, and the foundations for future growth by taking steps today:

Get Foresight. Start a conversation in your community, and connect it to others on a global scale, about the long-term opportunities and threats to technology-based development.

Map Networks. The most interesting things going on in your university happen within the very institution, but we probably haven't measured them. Map the pipelines of people, ideas and money moving through. When we talk about these networks, we can be specific about what they are and what they do as well as how they can evolve as virtual knowledge iconomies (vikis).

Sell Community. The attractiveness of successful Virtual knowledge iconomies (vikis) like Silicon Valley is the community and social and business networks therein. Find success stories (including the bold failures!) and connect them to your local strengths and assets.

Flexibility. If anything defines success to today's economic climate, it's flexibility, resilience and agility. Global partnerships provide more choices when designing programs and create buffers to rapid economic shifts. Instead of new buildings, think about how to make technology spaces mobile, temporary, open and accessible. Why should incubators only be for startups and not students or artists? Be flexible, even if that means not being permanent.

rsities. Universities are likely to remain the hub of all successful virtual knowledge economies (vikis), but that doesn't mean they can't be equal partners. As their importance in economic development grows over the next decade and beyond, they have the potential to place their interests above the local vested interests.

In recent years, a number of concepts have been proposed for modeling the transformation processes in university-industry-government relations. From "national systems of innovation" (Lundvall 1992; Nelson 1993) to the "triple helix" approach that evolved integrating knowledge management, network morphologies and industrial clustering perspectives, governance issues have always been an underlying challenge to the understanding as well as to the management of innovation systems. More recently, this governance challenge in triple helix models has been further complicated by the emergence of fuzzy innovation processes deeply entangled into ever more complex and internationalized innovation processes and sustainability requisites.

Recently, the debate over the Triple Helix model has focused on the question of whether there is a fourth helix or more (Etzkowitz; Zhou, 2006; Leydesdorff, 2011). Various candidates have been suggested, such as labor, venture capital, the informal sector and civil society (Etzkowitz; Zhou, 2006). However, some authors argue that introduction of a new helix might cause a triadic model to lose its creative dynamic.

However, innovation, involving changes in the physical and social environment, inevitably raises issues of sustainability, the ability to meet, "(...) the needs of the present without compromising the ability of future generations to meet their needs." (Etzkowitz; Zhou, 2006). Thus, an expanded model is required to incorporate a critical dimension, such as sustainability. To resolve this paradox, Etzkowitz (one of the creators of the Triple Helix Model) and Zhou proposed a Sustainability Triple Helix of university-public-government as a complement to the Innovation Triple Helix of university-industry-government, thereby introducing a missing element into the model, while retaining the dynamic properties of a *tertius gaudens*. i.e.. the capacity of each party to instigate innovation in case the interaction between the other two becomes stuck for any reason.

To produce even more innovation within the evolutionary cycle of the triple helix innovation model is the main goal of the WISH project, with the ensuing priority to the formulation of public policies and effective mentoring to entrepreneurs, policymakers and citizens in their strategic roadmapping and positioning in face of the challenging world-scale innovation and sustainability helix (the WISH).

This metainnovation model expands upon the triple helix innovation paradigm in three main respects:

Use of development "vectors" rather than "factors",

Digital globalization as the translocal, transdisciplinary and transmediatic "triple axis" of the world society, thus conveying the emergence of an ICONOMY as the vortex of all vectors,

The emergence of the "play" vector, that is to say, the importance of dematerialization processes, especially in the communications realm (culture, education, science, technology

and

entrepreneurialism – the basket of intangible assets and services or iconic and ludic, immersive and deeply cultural “bias” of the knowledge society).

The latter is dependent on the economy of attention, the motivational or iconic “affective demand” along with the traditional economic “effective demand”. The actual entertaining and playable dimension of goods, services and objects which exist only as interactive, immersive and intelligent “memes” determined by cultural and behavioral patterns of communication. This process is convergent with the emerging internet of objects and interconnected systems (IoT) and the “gamefication” of social and economic processes intensively served by global digital networks).

Moreover, a methodological implication of this “networked helix” model is that each vector, actually operating as world networking process or “vector”, sums up to a macro-iconic representation of the global network as an “actor-network”, open to emergent forms of organizational culture and innovation, expanding the “images” of the organization (Gareth Morgan) into the next level, that of the WISH (a world-scale innovation and sustainability helix).

Last, but not least, the networked helix framework must be applied to its own image as well, so that the connections among the three vectors (manufacture, habitats and iconomic “bias”) via the expansion of the digital infrastructure and governance is a key transversal factor of production that must be translated into specific effects and affects.

A new science is needed in order to tackle the different roadmaps for the interaction among manufacture, habitats and the basket of intangible assets and services which are embedded with more information and knowledge processing/memory/innovation capabilities in the 21st century. In this new historical arrangement of economic development, production, society and environment are the vectors to be growingly connected, this is the crux of the new triple helix.

Compared to the classical triple helix, there is a clear shift towards the vectorial forces that actually shape human development rather than a sectoral taxonomy (public, private, academic, etc.). The evolving frontiers of material and intellectual property, regulation, governance and accountability practices that correspond to the changing connections among production (manufacture), society (socio-demographics of territories and sustainable human development) and the “knowledge economy”, a dematerialized sphere with cooperative-collaborative dynamics that are aptly described as “gamefication”.

The emergence of public policies geared by gamefication (the “Games for Change” global network is an example, as well as the research project with BNDES on the future of the games industry in Brazil, attributed to PGT/USP) also opens up conceptual as well as applied horizons.

The WISH research project will explore and expand the triple helix research, development and innovation agendas with a firm commitment to the role of the University in the co-creation, acceleration and inspiration for innovative and sustainable habitats and bias with a long term mission of enhancing human development on a local, regional, national, international and world well-being.

This practical deliverable of the WISH project (connecting PGT to strategic hubs and habitats of social and economic innovation at USP and beyond) will in the long term serve not only the purposes of spreading the results of the WISH project but also of organically and gradually transforming the PGT itself into a WISH “machine”, that is to say, a world-scale generator of innovation and sustainability “helices”, connecting its semantic infrastructure to global and local institutions, organizations and citizens willing to become entrepreneurial actors of new development models.

The innovation curve of the WISH research proposal with respect to the classic helix paradigm is thus to move our policies and strategies from sectors and factors into vectors and actors. This will serve both the challenge of contributing to the evolution of a global, universal and accessible helix for human development and advancing its own organizational and coordination capabilities to a much higher level of efficiency, scale and sensitivity to the historical circumstances of Brazil and contemporary society.

Beyond the reports, one of the deliverables of the WISH project is to design and implement this information and knowledge management hub that will be capable of connecting organizations, businesses, public agencies and citizens into roadmapping and project-evaluation procedures that are consistent with WISH findings in the areas of manufacture, socio-environmental and cultural dimensions of human development.

The goal of the WISH research program is to propose a roadmap to the global contemporary integration of innovation and sustainability into new forms of productive transformation in manufacture, environmental and cultural growth and development. Creative currencies express and accelerate the process of WISH becoming a reality.

The still ongoing financial crisis in developed economies presents yet another frontier for the revision not only of monetary conventions but also of university-industry-government relations, insofar as despite the prevailing instability and uncertainty emerging markets may find opportunities to at least partially overcome their legacy of economic dependency, technological backwardness and social imbalances.

There has always been considerable debate over the empirical basis as well as the normative implications of the Triple Helix model, which matured mostly after the mid-90s, at a moment when economic development and global integration peaked, innovation and market liberalization gained momentum and a “flat” world was supposed to flow naturally from the prevailing successes. Information and Communication Technologies (ICTs) seemed poised to unleash the gigantic forces of scientific and technological advancement in favor of an unprecedented expansion of the market economy, stable wage relations and an overwhelming financial intelligence.

This long cycle of postwar industry-led innovation, market-based regulation and individualistic cultural creation and consumption, however, came to a crisis which has been compared to the birth of the modern era while leading the emergence of a world, cosmopolitan society that would see its full completion in a new renaissance.

Since 1997, however, regional crises revealed capitalism to backfire into global war and terror, growing social inequalities as well as uneven international development, division of labor and intellectual property, worrying environmental exhaustion and recurrent credit

boom

-burst cycles that came closer to a systemic crisis after the real estate collapse in the US and the ensuing fiscal implosion of the European monetary project.

For many observers and critics, the realities of the capitalism crisis called for a complete abandonment of market regimes, often in favor of neo-romantic or nihilist calls to arms and further violence, perceived as some sort of “natural” resolution of ever more complex conflicts and self-reinforcing contradictions. Others have pledged a blind faith in the healing properties of open innovation, in and for itself, as if science and technology without proper governance habitats, cultural and spiritual embodiments could magically bring contemporary society into the “21st Century”.

The WISH analytic framework will address the conceptual, political and applied quandaries of reinventing socio-technical development beyond both the neo-romantic and the ultra-technicist evangelisms into a renewed design of triple helix models.

It requires an inter- and trans-disciplinary approach to long term analysis of human development, integrating manufacture processes, environmental concerns and cultural challenges into a very specific form of paradigm change, stressing the urgency of “helix innovation” as sustainable and culturally diverse trajectories.

In short, “helix innovation” is to be framed in terms of governance issues and habitats that are highly dependent on emerging networking and knowledge management patterns, a new role for multinational corporations born out of developing markets (such as the BRICs), environmental challenges which translate into new technological and socio-economic clustering as well as a growing importance of “soft power” (that is, economics of culture, intellectual property and social services).

From a broad, long term developmental perspective, the rational or rather illuminist inspiration for the advancement of science and technology as a founding base of social and economic life has to be reinstated as policy related.

In short, the coming evolution of the triple helix paradigm will center on the governance agenda associated to innovation and environmental sustainability issues, that is, beyond “innovation” in and for itself as a self-regulated process.

The emergence of mid-sized geopolitical nation-states (Brazil, China, India and others in Asia and Latin America) and enterprises will play an unprecedented role in the upcoming design of global integrative processes in manufacture, environmental and cultural development.

The WISH project will provide the roadmap for the new economic and regulatory challenges that lie ahead, contributing with an online, live platform for universities, government agencies, companies and civil society to gradually forge the socially and environmental conundrums of future prosperity and well being.

It will also naturally emphasize the role of the University, especially of USP, in creating conditions to the convergence of new ideas, technologies and visions, helping to connect among knowledge areas and strengthen the relation between academia and the relevant social and cultural environments for sustainable innovation in the world economy.

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