

Expanding on Ceremonial Encapsulation: The Case of Financial Innovation

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Abstract: The aim of this paper is to develop a theoretical framework for the study and integration of financial innovation in the institutional structures that support the operation of the monetary system. The background of the analysis comes from original institutional economics (Bush and Tool 2003; Foster [1942] 1981, [1949] 1981; Veblen [1914] 1964, [1889] 1996), the state theory of money (Ingham 2004; Papadopoulos 2009), and a specific account of social ontology based on constitutive and normative rules as well as the notion of collective intentionality (Searle 2005, 2010). The aim is a dynamic framework for the analysis of the institutional evolution of money, whereby institutional change comes from technology, and the state acts both as regulator of the institutional adjustment and guarantor of the stability and the efficiency of the monetary system. In that sense, the framework outlines the context and principles for the government regulation of financial innovation.

Keywords: ceremonial encapsulation, collective intentionality, financial innovation, institutional adjustment, state theory of money

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Technology is considered to be the motor of social development, with technological innovation being the cause that disrupts the social equilibrium leading to change and progress. Especially for institutionalism, technological innovation is “of prime importance in driving social progress” (Atkinson 20004, 459). One can simply define technology as the fulfillment of human purpose (Arthur 2007, 276), and in the case of money this purpose is the fulfillment of its functions – primarily as a standard of abstract value and consequently as means of payment, store of value, and abode of purchasing power.¹ The identity constituting functions of money remains unchanged,

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¹ A more specific definition that describes technology in terms of organization is offered by Clayton M. Christensen, where technology is defined as “the processes by which an organization transforms labor, capital, materials, and information into products and services of greater value. All firms have technologies” (Christensen 1997, xiii).

but the rules and devices that are used for their fulfillment evolve through time, following technological innovation and changes in the socioeconomic environment. The interplay between the identity constituting functions of money and the devices that are used to support its operation – including the pertinent regulatory framework – provides the mechanism for the evolution of money.

Theories of money tend to overlook the importance of technological progress. Mainstream economics, in particular, reduces technological progress to total factor productivity (TFP) analysis. TFP analysis ignores the historical, institutional, and technological causes that are shaping the new configurations of money, as well as their consequences that do not register in production changes. More importantly, neoclassical economics tends to underplay the impact of technological innovation, focusing instead on continuity and comparative statics analysis. Money, for commodity theorists, remains essentially unchanged, and technological innovation is considered only very marginally in the operation of the monetary system. The failure to anticipate the economic importance of the ongoing ICT revolution is indicative of the limitations of this approach.² Money, in this theoretical framework, is neutral and operates as a means of exchange not affected by social and technological progress. The limits of this analysis are manifest in the poverty of the debate about money that was triggered by the emergence of “electronic money” in the early 1990s,³ and also in the relative indifference toward bitcoin (a recent open source and peer-to-peer “virtual currency”) in economic literature.⁴

The proposed analysis of institutional adjustment of the monetary system combines social ontology (Searle 1995, 2005, 2010) with the state theory of money (Ingham 2004; Papadopoulos 2009), and original institutional economics (Bush 1987; Bush and Tool 2003; Foster [1942] 1981, [1949] 1981; Veblen [1914] 1964, [1889] 1996). The key in understanding the evolution of money is in the relation between the rules, particularly normative rules, dictating the admissible courses of action for the fulfillment of the functions of money, and the technological possibilities to facilitate such action. Social constitution is the prerequisite of social significance and

² According to the neoclassical analysis, technology changes continuously, but without any revolutionary breaks. The total factor productivity of the 1980s and early 1990s – the peak time of the ICT revolution – has been slowing down. Consequently, ICT was not really an important economic phenomenon. Representative of this misguided analysis are the works of Jack E. Triplett (1999) and Robert J. Gordon (2000). For a comprehensive critique, as well as an alternative analysis of technological change, see Richard G. Lipsey, Kenneth I. Carlaw, and Clifford T. Becker (2005).

³ The idea that money was “disappearing” can be found in Peter Henderson, Jr., (1987), Joel Kurtzman (1993), Elinor H. Solomon (1999). A complete account and rejection of the end of the money thesis can be found in Geoffrey Ingham (2004) and Michel Aglietta (2002).

⁴ The conversation among economists on the meaning and consequences of bitcoin is still at the early stages. The discussion tends to abstract from the technological and social specificity of bitcoin and to address very general questions regarding the status of bitcoin currency: Is it money? The importance of this innovation is obscured by the discussion of such peripheral issues as money laundering, speculation, and fashion (see, for example, Evans 2014; Maurer, Nelms and Swartz 2012; Stokes 2013). As with “electronic money,” economic literature misses the point because it does not address the central question regarding how technological and institutional characteristics of a medium of payment can transform the monetary system as a whole.

action (Searle 1995, 2010), but technological capabilities (in similar fashion to natural necessities) provide the set of alternative courses of action, and consequently the institutional arrangements available to fulfill the functions of money.⁵ Technological innovation can expand these possibilities by providing alternative configurations for the constitutive and normative rules which give rise to money. These rules, when adopted, can alter its institutional configuration. The state, through its institutions, is in the center of this process by enacting the necessary constitutive and normative rules for the integration of technological innovation in the monetary system, and by inspiring the necessary collective intentionality.⁶

Technological devices that are used in the context of the institution of money, or of any institution for that matter, need to be socially constituted and regulated in order to acquire social significance and efficacy.⁷ A credit card, if one is to examine a specific case of technological innovation in payments, can only be used as a payment device in virtue of its social status as a credit card in the same fashion as a banknote is valuable because it is collectively accepted as representing money. The technical characteristics of this (or any) device suggest the possible uses, but they do not automatically carry any social meaning. The admissible use of a credit card is defined by normative rules, and its social significance depends on constitutive rules that ascribe to it social status as a credit card. These rules are legislated by the appropriate political authority and need to be supported by collective intentionality. Normative rules can only dictate a course of use that is consistent with the technical characteristics, such as, for example, who is allowed to issue such devices, the credit limits, the protocol of use in payment, and the system for resolution of disputes. Still, normative rules cannot sanction courses of action that supersede the technical standards of such payment media. For example, these rules cannot require that card based payments be used on the internet, when the available technology cannot support this possibility. The normative rules indicate exactly which of the technically possible types of action are admissible, socially significant, and useful. The introduction of credit cards is suggestive of the multifaceted character of financial innovation. Credit cards rely on a complex institutional structure to acquire social and economic efficiency. At the same time, they represent an innovation in the market for payment services, competing with other means of payment, including cash. As a result, the market for payments transforms and the variety and pricing of services

⁵ According to Geoffrey Hodgson, “the set of possible rules can be enlarged by technological and other institutional developments,” one example being the way that “the technology of writing makes feasible the rule that a valid contract on paper must be signed” (Hodgson 2006, 4).

⁶ “Collective intentionality arises when an individual attributes an intention to the group in which he or she belongs while holding that intention and believing that other group members hold it, too” Hodgson (2006, 5). According to Searle (2010), collective intentionality is the precondition of social constitution and social existence since it provides the meaning of social facts and prescribes the admissible types of behavior that follow from these social facts.

⁷ “While it is entirely possible for human behavior to exhibit random characteristics, institutionalists argue that all behavior within a community is ultimately subject to social prescriptions or proscriptions. This is especially true of all problem-solving (purposive) behavior. The community at large has a stake in the manner in which its tools and its intelligence are brought to bear on its life processes” (Tool 2000, 127).

change, thus altering the overall structure of the payments industry, including the regulatory framework of its operation.

The proposed analysis of technology and innovation is continuation of the analysis of money as institution (Papadopoulos 2009). As long as money is defined in terms of institutional rules, the impact of technology on these rules can and should be considered. The interdependence between the functions of money, the technological possibilities for their fulfillment, the constitutive rules that give rise to their status, the normative rules that regulate their performance, and the behavior that fulfills them, places technology within the analysis of the evolution of monetary institutions and the market for services in the financial sector.

Banking, Governance, and Progress

Evolutionary analysis of the monetary system is very much defined by the meaning of progress. Following the definition of technology as fulfillment of human purpose (Arthur 2007), I measure the progress of monetary institutions by their growing capacities to serve the fulfillment of the functions of money, primarily as an abstract standard of value and as a means of payment, store of value, abode of purchasing power, means of exchange, and by the reduction of cost for supporting these functions. I then evaluate institutional progress based on the relative stability of prices that underlies the sound operation of money as standard and store of value, as well as the payment system's efficient operation that is connected with the function of money as means of exchange or payment.

W. Scott Frame and Lawrence J. White define a financial innovation as "something new that reduces costs, reduces risks or provides an improved product/service/instrument that better satisfies participants demands. Financial innovations can be grouped as new products (e.g., adjustable rate mortgages, exchange traded index funds), new services (e.g., online securities trading, internet banking), new 'production' processes (e.g., electronic record-keeping for securities, credit scoring), or new organizational forms (e.g., a new type of electronic exchange for securities, internet only banks)" (Frame and White 2004, 118). Financial innovation may well be treated as exogenous, representing a shock to the institutional equilibrium, and leading the transformation of the monetary system. Still, in order to be able to develop a framework to analyze the contribution of financial innovations in the monetary system, whatever their origin and form, one needs to consider the agents who decide about the introduction of financial innovation in the system, and especially the motivation and interest of these agents. Institutional change, as economists have argued, is often only the unintended consequence of the maximizing behavior by self-regarding agents, and not the intended outcome of agents' pursuing institutional adjustment. The state, and institutions that represent it – especially the central bank – regulate the monetary system, and will remain in the center of my analysis here, which draws from the state theory of money as well as from original institutional economics. Commercial banks are also important in the process of institutional adjustment of the monetary system. Banks may lack the legislative

function of state institutions, but the banking industry is the origin of technological innovation relating to the operation of finance and payments. Actually, it is often commercial banks and their efforts to maximize revenues and profits – or, in some cases, to defend their revenues and profits against competition from potential incumbents – that support the research, development, and implementation of financial innovation. The sound functioning, as well as the progress of the monetary system, can be understood as the shared enterprise of banks and state institutions – a project that serves the public, on which both banks and governments rely for their continued operation. Individual maximization, as well as banks and governments, are motivated by their own interests that often involve rent-seeking – an activity that is not necessarily aligned with the operational goals of the monetary system.

The privilege of issuing currency held by the state can create a flow of revenue, which is described as seigniorage – a term that is related to the traditional procedure of coinage functioning under a silver or gold standard. In this context, a coin is simply a piece of precious metal, the weight and fineness of which is guaranteed by the authority, in the name of which it is minted and whose symbol it carries. A mint operates on the basis of the following principle: Bullion is brought to the mint, assayed, refined, and struck into coins. The bearers receive in return coins equal to the value of the metal brought in, minus a deduction (seigniorage) for the service of the mint (Chown 1994, 10). Seigniorage is a duty levied on the coining of money for covering the costs of minting, and for allowing some revenue to the authority that issues the currency. The abandonment of a commodity standard – gold and silver – did terminate coinage, but not the income from seigniorage. The issue of paper currency can function as an interest-free loan drawn from the public, which is only being repaid in the future via taxation. The revenue from the issue of paper currency can exceed the traditional seigniorage revenue from minting coins, considering the constant growth of money supply (to keep the pace with the growth of the productive basis of the economy). Seigniorage is a form of taxation, which remains one of the main concerns of the government in the management of the monetary system, a concern that often competes with the considerations about the efficiency of the monetary system.

Commercial banks are defined by their ability to receive deposits. In that capacity, they function as intermediaries in the monetary system, both between borrowers and depositors, and also between the authority that issues money and the public that uses it. The banking industry is entrusted with the monitoring of borrowers and loan contracts, at the same time as it is the conduit through which currency reaches the market, and with its deposit liabilities forming the majority of the money supply. Commercial banks cover the costs of their operations and profit from financial intermediation primarily by, first, charging interest on the loans they supply (a rate of interest that is considerably higher than the one they give for the deposit they receive) and, second, by charging fees for their services. Since they need to keep only a fraction of the money that is deposited by the public as reserves, so as to allow them to face possible requests of withdrawals, banks can create new deposits through their lending operations which, in turn, provide the basis for further loans

and deposits through the mechanism of the credit multiplier.⁸ Financial innovation is introduced to improve efficiency in the management of liquidity, assets, liabilities, and capital adequacy management in an effort to minimize costs and increase profitability by extending the possibilities of money creation via the credit multiplier.

Financial innovation can have a positive effect on the overall performance of the monetary system, but the interests of the banking industry that innovates, the state authority that regulates, and society as a whole, are not always aligned with the collective interest of society. Banks and governments use their position in the monetary system to pursue their own interests and to extract rents. The progressive institutional adjustment of money is a process of negotiation and compromise between the available institutional arrangements, sanctioned by technology, the interests of the government and commercial banks, and the greater concern about the efficiency of the monetary system. Original institutional economics has developed a framework for analyzing the introduction of technological innovation in the established institutional structure, which includes considerations about improving the overall institutional performance and the self-interest of stake-holders in the process of institutional adjustment. Such a framework can also be used for analyzing financial innovation, its regulation by the state, and its subsidiary institutions, such as the government and the central bank.

Technological Innovation and Ceremonial Encapsulation

Original institutional economics places technological innovation in the center of its theory of institutional change (Bush and Tool 2003; Foster [1942] 1981, [1949] 1981; Tool 1986, 2000; Tool and Samuels 1989; Veblen [1914] 1964, [1889] 1996), at the same time as it tries to avoid a simple-minded technological determinism. Thorstein Veblen was one of the first economists to systematically analyze the interplay between institutions and the transformative power of technological innovation. In his effort to construct a theoretical framework for the analysis of institutional change, Veblen introduced a dichotomy between “instrumental” and “ceremonial” values, against which a possible technological adjustment can be appraised (Waller 1982, 757). The two systems of valuation are antagonistic at the same time as they coexist, embedded in the institutional structure. Ceremonial values mirror the power relations, the distribution of status, and the invidious interests that define the institutional structure. Ceremonial considerations give rise to a system of “sufficient reason” (Tool 2000, 55) for the acceptance of institutional rules, and are connected with invidious consumption and the dominance of the leisure class (Veblen [1914] 1964). Instrumental values are directed toward the application of knowledge for the solution of specific social problems. If ceremonial values are the bastion of the *status quo* and

⁸ The credit multiplier is a mathematical expression of the relationship between the monetary base and money supply. It defines the supply of money generated by commercial bank through their lending operations. When a bank gives a loan, it creates new deposits. The money creating power of commercial banks is made possible by the fractional reserve system under which banks are required to keep on call as reserves only a fraction of their deposits.

social hierarchy, instrumental thinking is the voice of progress and “instrumental efficiency” (Tool 2000, 60). In the monetary system, ceremonial values defend the privileges and rents of banks and the state, while instrumental values drive the efficient operations of the monetary system.

If one recalls the definition of technology as the fulfillment of human purpose (Arthur 2007), one can consider technological change as an expression of “instrumental” values in action and as the cause for their further growth.⁹ Technological progress contributes to the growth of human knowledge which, in turn, has a cumulative effect on society including attitudes, behaviors, tools, and institutions. Original institutional economics argues that the availability of knowledge and its growth, as they are produced by technological progress, have an effect on institutional adjustment, especially because they influence the attitudes toward the established institutional structures and collective beliefs of the community.¹⁰ Technology gets integrated in everyday experiences and encourages a practical awareness of scientific knowledge that can challenge the prevailing ideas about social organization, which often mirror ceremonial concerns. Technology does not only provide new tools, but also alters – sometimes radically – the theories about social existence, including the relationship to social institutions. There is mutuality between the available technological knowledge and attitudes towards social organization. Technological change influences the expectations and beliefs regarding the institutional structure, thereby raising the standards of efficiency used in the evaluation of established institutional arrangements.¹¹ Increased efficacy from the application of novel technologies in one area enhances the optimism that is connected with technological progress and creates further expectations for institutional progress in other fields. As technological knowledge expands and becomes available, there is an incentive to use this knowledge in resolving further

⁹ “In his discussion of the dynamics of institutional change, Veblen speaks of the impact of technology on the institutional structure. Technological processes, he argued, required a matter of fact preoccupation with cause and effect at the exclusion of any consideration of status or power relations. Problem solving in the technological continuum of human experience is inherently dynamic as the solution to one problem (or set of problems) opens up new areas of possibilities of consideration. This has a dislocating effect on the *status quo* of the existing institutional structure” (Bush and Tool 2003, 19).

¹⁰ “Veblen’s conception of ‘cumulative causation’ explains the dynamics of the process that produces ‘progressive’ institutional change. Technological innovation changes the objective circumstances of the community; the new set of circumstances alters the habits of thought and behavior; these new habits of thought and behavior are projected into other areas of the community experience, giving rise to further innovations in the arts and sciences, which in turn, produce new technological innovations in the community’s efforts ‘to turn material things to account.’ Veblen believed that the change in the material circumstances of culture brought about through the introduction of machine technology during the Industrial Revolution conditioned working people to think in terms of cause and effect” (Bush 1987, 1101).

¹¹ “The principle of technological determination is simply that social problems can only be solved by adjusting the institutional structures involved in the problem so as to bring them into instrumentally efficient correlation with the technological aspects of the problems. What is meant by ‘instrumentally efficient correlation’ is that instrumental functions of the institution in question be carried on at a level of efficiency tolerable to the members of the institution in view of the possibilities indicated by those same technological factors” (Foster cited in Tool 2000, 92).

economic and social problems by incorporating new devices and ideas in the institutional structures organizing social interaction. Technology brings with it a new “material culture,”¹² inspired by new technological applications in the social domain and the consequent popularization of science and technology.

Innovation has to be integrated in the institutional structure in order to become socially significant, but only up to the point that it does not create friction with the established system of rules and privileges.¹³ Veblen described the inherent conservatism of social structures toward technological innovation and the constraints that it produces as “ceremonial encapsulation” (Bush 1988, 142-49). Ceremonial encapsulation describes the process of adaptation of technology into already existing institutions. New technology is both enabled and constrained by social rules that ascribe to it social significance and define its domain of application. A tension characterizes the adaptation of the ceremonial to the instrumental system of values. Ceremonial values remain inert, even backward-looking, despite the pull from novel technology toward progress and efficiency. The emphasis on the conservatism of institutional structures, as well as the values that inspire them, provides an important insight in the mechanism of institutional adjustment and socialization of technological innovation. Nevertheless, stressing the conservatism of institutions, as opposed to the progressive influence of technology, neglects the importance of stability and continuity that the social institutions serve. To analyze the dynamics of the social development of money, I should expand on the idea of ceremonial encapsulation by investigating further the different principles that regulate the interplay between technological innovation and institutional adjustment, following Thorstein Veblen, J. Fagg Foster, Paul Dale Bush, and Marc R. Tool.

Expanding Ceremonial Encapsulation

Foster and his students Bush and Tool expanded on Veblen’s theory of institutional adjustment, and particularly on the idea of ceremonial encapsulation. They further analyzed ceremonial encapsulation by interpreting it as three principles:¹⁴ (i) institutional adjustment (or, “technological determination”) describing technology as the primary cause of institutional change; (ii) “recognized interdependence” pointing to the mechanism of integration of technological innovation in institutional rules; and (iii) “minimal dislocation” cautioning about the destabilizing effects of the process of institutional change (Tool 2000, 87-104).

¹² Technology should be thought of in broad terms, including in applied sciences. A different description of this broad understanding of technology is given by the term “material culture” which suggests both the use of technology and the knowledge that accompanies this use (see, for example, Castells 1996; Williams 1977).

¹³ “[T]he technological innovation is encapsulated within ceremonial patterns of behavior in such a manner as not to change the existing value structure of the community” (Bush and Tool 2003, 27).

¹⁴ Principles are operational propositions that can facilitate scientific explanations of the process of institutional adjustment. “In institutionalist inquiry, *principles* have scientific warrant; they are fundamental generalities; they are evidentially validated; they identify and disclose continuing economic functions and factors. They exhibit evidential grounding” (Tool 2000, 91, emphasis original).

Original institutional economics integrates governance and the state in their analysis of institutions and institutional change. In the context of the Veblenian dichotomy, governance can intervene in the process of institutional adjustment with the aim of progressive institutional change that occurs “when, for a given fund of knowledge, ceremonial patterns of behavior are displaced by instrumental patterns of behavior” (Bush 1988, 151). The three principles of institutional adjustment are developed in order to inform policymaking and to support progressive institutional change. The ultimate goal is to serve pragmatically defined public interest, expressed in terms of specific principles of evaluation. John R. Commons’s (1924) “reasonable value” and Mark R. Tool’s (1986) “social value” are two candidate systems of valuation coming from original institutional economics.¹⁵ A democratically elected government, supported by the state, is central in the process of social valuation, in the implementation of the necessary institutional adjustments, and in the animation of common acceptance of social rules. Democratic control opens the political space to partisan interests in the negotiation of public interest and its bearing on regulation. The view of money presented here, based as it is on the state theory of money and the instrumental value theory, places the state at the center of the analysis. The three principles suggest possible considerations that regulators of the monetary system may face in the process of implementing technological innovation. These principles are employed to build a theoretical framework for the monetary system governance based on the relation between technology, institutional adjustment, social constitution, and – as I will argue – collective intentionality (Searle 1995, 2010).

Technological determination

Technological determinism is one of the main working hypotheses in social theory for investigating social change (Williamson 1985). The principle of technological determination, as advocated by original institutional economics, offers a restatement of a soft¹⁶ version of technological determinism constrained by ceremonial values that are encapsulated in institutions and patterns of thought. In original institutional economics, the transformative impact of technology is channeled through the existing social structures and expressed in their transformation. Technological determinism is constrained by the principles of minimal dislocation and recognized interdependence, which describe the inertia and stability of social institutions.

For institutionalists, the functions of an institution should be brought to the degree of efficiency that is allowed by the level of technological progress and available technology. Foster argued for the necessity of instrumentally efficient correlation

¹⁵ I refer to a series of contributions by institutionalists – including Paul Dale Bush, John R. Commons, John M. Clark, John F. Foster, Harry M. Trebing, Walton Hamilton, and Mark R. Tool – in what is called the public interest theory of regulation. “In their view regulation is viewed as a method for resolving conflicts and coordinating social objective in an industrialized economy” (Tool 1990, 535).

¹⁶ William James [1888] 1956, 149) coined the term “soft technological determinism” in his essay “The Dilemma of Determinism,” where he distinguished between “hard” and “soft” types of determinism.

(Tool 2000, 92-93) between institutional structures and available technological knowledge. The tendency toward improvement of institutions through new technological capabilities is driven by the need to increase their efficiency, and by the impact of new knowledge on the attitudes of an institution's members. Technological innovation expands the horizon of possibility and raises the question of "institutional innovation" (Tool 2000, 115). New technologies function as a shock that disrupts the equilibrium of established institutional arrangements, creating new possibilities and challenges for the established rules and supporting attitudes. New, more effective solutions are made available for the problems that the institution is addressing, new problems are raised by technological progress for the institutional structure to answer, and new understanding of the situation is encouraged by innovation.

The direction of institutional adjustment is determined by a series of factors, and institutional efficiency is only one of the criteria for the acceptance of technological innovation. There is no determining selection mechanism (something like the idealized market competition advocated by neoclassical economics) to ensure that more efficient solutions will be implemented or that the chosen solutions will increase the overall social welfare. The evolution of the monetary system reveals that the supply and demand of new monetary technologies – the outcome of innovation – depends more on ceremonial considerations of the state, the central bank, and commercial banks, and less on the interests of the public which, in principle, should have been the ultimate target of innovation. Uncertainty, power, privilege, rent, and error of judgment, can lead to the maladjustment of new technologies into institutional structures. The history of implementation of card-based (Evans and Schmalensee 1999) and software-based payment innovations (Evans 2004; Evans, Hagiou and Schmalensee 2006) offer examples of innovations leading to institutional adjustments that only to serve the interests of powerful stakeholders. Similar is the ambivalence of governments, central banks, and financial intermediaries toward bitcoin and other open source, peer-to-peer networks for electronic transfer. The cases of litecoin or dogecoin, for example, attest to the fact that the implementation of financial innovation is conditioned by the interest of the stake holders of the industry, the commercial banks, and the state. This realization brings the discussion to the second principle of institutional adjustment – recognized interdependence.

Recognized Interdependence

The principle of recognized interdependence describes the socialization of technological innovation in the institutional structure. Technological progress has to meet specific conditions in order to be successfully integrated in the institutional structure. The most important of these conditions are (i) the acceptance by the community of users, and (ii) the codification of the status and normative implications of technological innovation in the working rules. Acceptance is conditioned by the institutional structure that defines and enforces the division of power and privileges, and reflects the accumulated knowledge of the "ways and means." While recognition refers to the acknowledgment of users by the community, interdependence describes

the cumulative influence of existing institutions and attitudes on the acknowledgment and constitution of new rules as well as their collective acceptance.

In his analysis of the principle of recognized interdependence, Foster ([1949] 1981, 833) claims: “[T]he fact still remains that the new pattern of behavior must be specified in conceptual form before it can emerge into a new pattern of behavior,” and that “conceptual apprehension precedes the course of action differentiating the new pattern from the old.” These statements are consistent with the description offered by John Searle in his analysis of the contribution of language in the constitution of social reality. “A status function must be represented as existing in order to exist at all, and language or symbolism of some kind provides the means of representation” (Searle 2005, 12). The phrasing is different, but Foster can be interpreted as claiming that, for a new regularity of behavior to arise, a shared representation of the admissible behavior and its status should be acknowledged by the community. A set of rules puts forth this representation – rules are not only a conceivable way to summarize admissible behavior, but also any possible codification of behavior can be formalized in term of such rules – in order to describe the new regularity of behavior and its social significance.¹⁷ Actions, objects, or technical devices can be effective only when they become socially significant, and when they acquire a specific institutional status that, in turn, can (and needs to) be represented in linguistic/conceptual terms, communicated to the community and invested with collective intentionality.

Attempted institutional adjustments aim at making better use of the inherited store of know-how. The recognition of the newly introduced constitutive and normative rules as useful and understandable precedes the habituation to the new forms of action, which is necessary if new technology is to be incorporated in a specific social setting and if institutional change is to be achieved (Tool 2000, 94). Conceptual apprehension must be accompanied by recognizing new patterns of behavior as useful and relevant.¹⁸ Habituation into new rules of behavior involves a conscious choice by those affected by an institution, as well as a recognition that these new patterns of behavior are shared and will be adhered to by the (great majority of) members of society. New technology, as well as its use, needs to be regulated, supervised, and enforced, so that the type of behavior dictated by an institution may be clear to everybody and invested with the necessary institutional status to ensure continuity, consistency, and acceptability. For habituation of behavior to occur, both

¹⁷ There is a terminological as well as conceptual difference between original institutional economics in Veblen and Commons, and their current interpretation by scholars like Geoffrey Hodgson and Douglass North. While the former suggests that institutional structures are constituted of habits or behavioral patterns, the later argues that institutions should be defined in terms of rules (the rules of the game). The distinction is important because, while habits tend to be implicit, rules are more likely to be explicit. Still, in both cases, institutions lead to the regulation and homogenization of behavior.

¹⁸ “We have already observed that Foster explains how actual changes in behavior can occur only when there is some recognition on the part those affected of the need for institutional change and a willingness to accept that change as indicated by an instrumental assessment of the problematic conditions to which inquiry is addressed” (Tool 2000, 93).

a shared mental representation of this action and a shared collective intentionality must exist to provide the support for the emergence, perseverance, and evolution of the institutional structure.¹⁹

The principle of recognized interdependence is consistent with the claim that technological change in the monetary system needs to be implemented through institutional rules. Technology can fulfill its social functions only as long as it is enacted by a specific institutional status through collective intentionality. The recognition of interdependence points to the importance of institutional rules as prescriptive formalizations of behavior, necessary for the wide diffusion of innovation. Any attempt to integrate technological change into the institutional structure needs to be compatible with the established institutional logic, so as not to disrupt the operation of the institution. The realization of the interplay between technological change and social structure leads to the last principle of institutional adjustment – minimal dislocation.

Minimal Dislocation

Financial innovation enhances the efficiency of payment systems, expanding the scope of financial intermediation, at the same time as it can undermine the ability of central banks to control the circulation of money. The principle of minimal dislocation cautions about the disrupting effects of institutional adjustment in the face of technological innovation. Progressive institutional change needs to disturb the established patterns of behavior, but the stability of the institutional structure requires that the dislocation from technological innovation is kept in check. Technological innovation needs to be socially constituted in such a way that the incorporation of new technologies in the structure of institutional rules does not disrupt the operation of the institution. The continuity of operation often presupposes that innovations should disrupt the ceremonial patterns of behavior and the privileges that these sustain.²⁰ The content and speed of institutional adjustments are conditioned by the established structures. New technologies are encapsulated by the existing institutional structures, which limit the space for socialization of new technologies (Tool 2000, 95).

Institutional adjustment must be consistent with the overall institutional structure and its constitutive logic, so that an institution continues to fulfill its functions. If the new rules contradict the existing patterns of behavior, disruption is to be expected. In the face of contradictory rules, agents are not able to recognize how they are expected to act. This confusion will cause uncertainty, adding up to the overall strain of institutional adjustment, and causing difficulties for the institution

¹⁹ Social facts need to be invested by collective intentionality in order to exist, and this is part of the definition of social facts in Searle's theory of social ontology. He claims: "Indeed, I will define a social fact as any fact involving the collective intentionality of two or more agents" (Searle 2005, 6).

²⁰ "[I]nnovations in the arts and sciences bring about growth in the fund of knowledge, but the new knowledge is incorporated into the problem-solving processes only to the extent that it is possible for the community to maintain the previously existing level of ceremonial dominance" (Bush 1987, 1101).

under adjustment to fulfill its function(s).²¹ Any progressive institutional change should be gradual and focused. Individuals need time to adjust to institutional change and to absorb its implications for their behavior and interests. Thus, enough time should be allowed for the new rules to be recognized and become collectively accepted. Habituation to the new social environment and the new imperatives for action requires time to occur.

Adjustment can (and needs to) happen at the level of attitudes, as a consequence of which the principle of minimal dislocation is relevant on the level of beliefs. When severe, the conflict between progressive instrumental thinking and conservative ceremonial concerns may hinder the process of institutional adjustment. A feedback mechanism in the process of institutional change should be recognized. Technological innovation brings about a change of attitudes that, in turn, can challenge the ceremonial aspects and create the conditions for further technological progress. Conversely, when the progressive attitudes destabilize the underlying ideology of an institution, a backlash can occur even when the technology, and the rules that regulate them, are consistent with the established institutional arrangements. Caution has to be exercised in the alignment of rules and underlying attitudes that accompany and rationalize these rules. The principle of minimal dislocation suggests that the discretion in the process of institutional adjustment is limited by the need to ensure the continuity of institutional performance.²²

The process of institutional adjustment should be modest and slow. New rules have to be consistent with the overall institutional structure and its underlying logic, so as not to disrupt the institution's operation. Progressive instrumental thinking should not come into direct conflict with the dominant attitudes that inform social organization and existence.

Conclusion: Institutional Change and Money

The proposed framework for evolutionary analysis of financial innovation combines the state theory of money with social ontology as it is based on the concepts of collective intentionality, constitutive-normative rules and social status, as well as original institutional economics' theory of institutional change, defined by the principles of technological determination, recognized interdependence, and minimal dislocation. Technology is the motor of change in the process of institutional development, with financial innovation leading to institutional innovation. Still, the

²¹ "Changes should be limited in instances where invidious and ceremonial judgments are significantly impeding economic processes" (Tool 2000, 94). The principle of minimal dislocation "involves the recognition that while the dislocation of ceremonial behavior is required for technological progress, the dislocation of even ceremonial patterns of behavior cannot be so extensive as to completely unravel the social fabric of community" (Bush 1989, 458).

²² "The principle [of minimal dislocation] states that while technological change always involves dislocation in the institutional structure, the interdependence is such that 'progressive' institutional change is possible if it involves a minimal dislocation of the behavioral patterns of the community" (Bush 1988, 156).

institutional structure, and the attitudes constituting it, creates the context wherein technological innovation has to be adapted. State regulation and collective acceptance are necessary for new technologies to acquire social significance in order to become socially effective.

The interplay between ceremonial and instrumental values represents the causal mechanism of institutional adjustment implementation. The analysis explained the conservative inertia of social development, describing how privilege, power, and rent-seeking define the conditions for the social constitution of innovative financial technologies. This description of the social conditions for financial innovation is consistent with the evidence regarding the implementation of card-based (Evans and Schmalensee 1999) and software-based payment innovations (Evans 2004; Evans, Hagiou and Schmalensee 2006). The recent development of peer-to-peer, open-source “public ledger currency platforms,”²³ such as bitcoin, also deserved to be mentioned. The case of bitcoin illustrates the conservatism of financial institutions toward an innovation that may jeopardize their business model. The peer-to-peer, open-source architecture of systems like bitcoin makes them difficult to incorporate into the traditional banking system that relies on the creation of credit, interest rates, and fees. The reluctance to include public ledger currency platforms in the official monetary system can be blamed for the relatively low degree of penetration of such “virtual currencies” – despite their technological advantages and low transaction costs – and their being confined to communities of specialists with shared codes of conduct who can socialize the new virtual currencies. Following the analysis of institutional adjustment, it seems very unlikely that such “virtual currencies” are going to expand outside their niches, if central and commercial banks do not acknowledge and integrate them into the official monetary system.

This paper further discussed the importance of institutions and shared representations. In many ways, the latest crisis in the European Union can be blamed on a neglect of the institutional environment that supports the monetary system. The haste of European governments to introduce the euro currency – without considering the implications for the monetary system, banking, and finance, as well as for the governance structure of the system of prices and the mechanism of distribution of social welfare – has brought about a crisis with devastating consequences, particularly for the poorest European citizens. Similar problems are also visible in the global financial architecture, where the waves of deregulation, which started in the late 1970s, brought about growth, but also increased the volatility of economic performance. Again, the root cause of the monetary crisis was a neglect of the institutional structures, often coupled with respective ceremonial attitudes, ultimately leading to instability of the monetary system and partiality to the concentration of wealth and power in the hands of the financial industry.

²³ David S. Evans (2014) provides the most accurate description and the most convincing answer to the question regarding the extent to which bitcoin is money. Therefore, I use his terminology of “public ledger platform” to describe bitcoin and other “virtual currencies” like it.

References

- Aglietta, Michel. "Whence and Wither Money" In *The Future of Money* edited by Riel Miller, Wolfgang Michalski, and Barrie Stevens, pp. 31-70. Paris, France: OECD, 2002.
- Arthur, Brian W. "The Structure of Invention." *Research Policy* 36, 2 (2007): 274-287.
- Bush, Paul Dale. "The Theory of Institutional Change." *Journal of Economic Issues* 21, 3 (1987): 1075-1116.
- . "The Theory of Institutional Change." In *Evolutionary Economics I: Foundations of Institutional Thought*, edited by Mark R. Tool, pp. 125-166. Armonk, NY: M.E. Sharpe, 1988.
- . "The Concept of 'Progressive' Institutional Change and Its Implications for Economic Policy Formation." *Journal of Economic Issues* 23, 2 (1989): 455-464.
- Bush, Paul Dale and Marc R. Tool. "Foundational Concepts for Institutional Policy Making." In *Institutional Analysis and Economic Policy*, edited by Paul D. Bush and Marc R. Tool, pp. 1-46. Dordrecht, Germany: Kluwer Academic Publishers, 2003.
- Castells, Manuel. *The Rise of the Network Society*. London: Blackwell, 1996.
- Christensen, Clayton M. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Boston, MA: Harvard Business School Press, 1997.
- Commons, John R. *Reasonable Value*. Madison, WI: University of Wisconsin, 1924.
- Evans, David S. "More Than Money: The Development of a Competitive Electronic payments Industry in the United States." Unpublished paper, 2004. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=653381. Accessed November 11, 2014.
- . "Economic Aspects of Bitcoin and Other Decentralized Public-Ledger Currency Platforms." Unpublished paper, 2014. Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2424516. Accessed November 11, 2014.
- Evans, David S., Andrei Hagiu and Richard Schmalensee. *Invisible Engines: How Software Platforms Drive Innovation and Transform Industries*. Cambridge, MA: MIT Press, 2006.
- Evans, David S. and Richard Schmalensee. *Paying with Plastic: The Digital Revolution in Buying and Borrowing*. Cambridge, MA: MIT Press, 1999.
- Foster, J. Fagg. "John Dewey and Economic Value." *Journal of Economic Issues* 15, 4 ([1942] 1981): 871-879.
- . "The Relation Between Theory of Value and Economic Analysis." *Journal of Economic Issues* 15, 4 ([1949] 1981): 899-905.
- Frame, W. Scott and Lawrence J. White. "Empirical Studies of Financial Innovation: Lots of Talk, Little Action!" *Journal of Economic Literature* 42, 1 (2004): 116-144.
- Gordon, Robert J. "Does the 'New Economy' Measure up to the Great Inventions of the Past?" *Journal of Economic Perspectives* 14, 4 (2000): 49-74.
- Henderson, Peter, Jr. "Modern Money." In *Electronic Fund Transfers and Payments: The Public Policy Issues*, edited by Elinor Solomon, pp. 17-38. Dordrecht, Germany: Kluwer Nijhoff Publishing, 1987.
- Hodgson, Geoffrey. "What Are Institutions?" *Journal of Economic Issues* 40, 1 (2006): 1-24.
- Ingham, Geoffrey. *The Nature of Money*. London: Polity, 2004.
- James, William. *The Will to Believe and Other Essays in Popular Philosophy*. New York, NY: Dover, [1888] 1956.
- Kurtzman, Joel. *The Death of Money*. New York, NY: Simon & Schuster, 1993.
- Lipsey, Richard G., Kenneth I. Carlaw and Clifford T. Bekar. *Economic Transformations: General Purpose Technologies and Long Term Economic Growth*. Oxford, UK: Oxford University Press, 2005.
- Maurer, Bill, Taylor C. Nelms and Lana Swartz. "When Perhaps the Real Problem Is Money Itself: The Practical Materiality of Bitcoin." *Social Semiotics* 23, 2 (2012): 261-277.
- Papadopoulos, Georgios. "Between Rules and Power: Money as an Institution Sanctioned by Political Authority." *Journal of Economic Issues* 43, 4 (2009): 951-969.
- Searle, John. *The Construction of Social Reality*. New York: Free Press, 1995.
- . "What Is an Institution?" *Journal of Institutional Economics* 1, 1 (2005): 1-22.
- . *Making the Social World*. Oxford, UK: Oxford University Press, 2010.
- Solomon, Elinor H., ed. *Electronic Funds Transfers and Payments: The Public Policy Issues*. Dordrecht, Germany: Springer Science and Business Media, 1999.
- Stokes, Robert. "Anti-Money Laundering Regulation and Emerging Payment Technologies." *Banking & Financial Services Policy Report* 32, 5 (2013): 1-10.

- Tool, Mark R. *Essays in Social Value Theory: A Neoinstitutionalist Contribution*. New York, NY: M.E. Sharpe, 1986.
- . *Value Theory and Economic Progress: The Institutional Economics of J.F. Foster*. Boston, MA: Kluwer Academic Publishers, 2000.
- Tool, Mark R. and Warren Samuels. *The Economy as a System of Power*. New Brunswick, NJ: Transaction Publishers, 1989.
- Triplet, Jack E. "The Solow Productivity Paradox: What Do Computers Do to Productivity?" *Canadian Journal of Economics* 32, 2 (1999): 309-334.
- Veblen, Thorstein. *The Instinct of Workmanship and the State of the Industrial Arts*. New York, NY: Augustus M. Kelley, [1914] 1964.
- . *The Theory of the Leisure Class*. London: Dover, [1889] 1996.
- Waller, William T. "The Concept of Habit in Economic Analysis." *Journal of Economic Issues* 22, 1 (1982): 757-771.
- Williams, Raymond. *Marxism and Literature*. Oxford, UK: Oxford University Press, 1977.
- Williamson, Oliver. *The Economic Institutions of Capitalism*. New York, NY: Free Press, 1985.

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