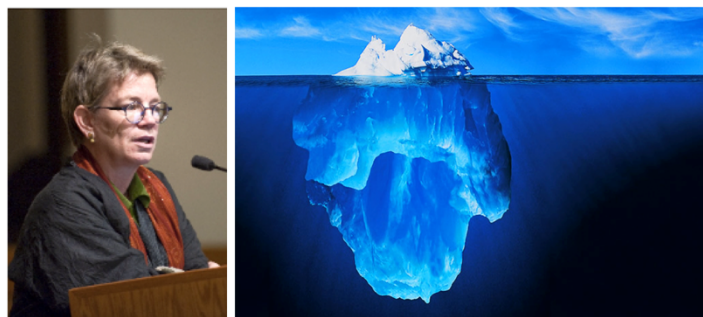


The misunderstanding of excessive communication (3)

The chains of intelligibility in digital finance



Long version



1. A reminder

The misunderstanding of excessive communication (1) — In the first article of this series, we started with a seemingly simple question: do we communicate too much or too little when it comes to explaining complex innovations? An examination of the work of Herbert Simon and Everett Rogers led to an initial conclusion. Innovation networks generally suffer less from an excess of information than from a difficulty in building a shared understanding. The more complex an innovation, the more explanations, reformulations, and mediations it requires.

The misunderstanding of excessive communication (2) — The second article shifted the focus from the diffusion of innovations to the construction of the networks that support them. Through the work of Michel Callon, Bruno Latour, and John Law, we saw that socio-technical networks do not pre-exist the exchanges that flow through them. They are built, maintained, and transformed through a continuous process of translation. Information circulates through chains of intermediaries, groups stabilize through incentive schemes, and networks remain coherent only through constant maintenance.

A new stage — This article extends this reflection by examining a specific area: digital finance ecosystems. We will see that the increasing abstraction of objects, the multiplicity of actors, and the diversity of languages make translation more necessary than ever. In these complex environments, the processes of making information intelligible are no longer simply an accompaniment to technical infrastructures. They themselves become an essential infrastructure for the network's operation.

2. The increasing abstraction of objects

A historic transformation — A major characteristic of contemporary economies lies in the increasing abstraction of the objects that circulate within them. For a long time, value was primarily associated with directly observable material goods: farmland, buildings, industrial equipment, raw materials, or manufactured products. Today, a growing share of economic activity relies on assets whose existence largely depends on information systems, institutional conventions, and digital devices.

From material good to digital asset — This evolution does not signify the disappearance of the material world. Rather, it reflects a transformation in how value is represented, recorded, and exchanged. The same physical reality can now give rise to several layers of information that circulate independently of the original object. Shares represent a company, carbon credits represent carbon sequestration capacity, and digital assets represent various rights, claims, or resources.

A growing distance — In this context, actors are increasingly called upon to make decisions concerning realities they never directly observe. An investor can finance an activity without visiting the site in question. A government agency can evaluate a program based on aggregated indicators. A market can assign a value to a resource whose origin buyers will never see. Economic circulation thus relies on increasingly long chains of representation.

The invisibility of mechanisms — This evolution offers numerous advantages in terms of coordination, speed, and scale. However, it has a significant drawback: the mechanisms that make these exchanges possible are gradually becoming invisible to most actors. The more sophisticated the systems become, the less directly perceptible their operating principles appear. What was once observable in the object itself is now embedded in technical and institutional infrastructures often far removed from users.

Displaced trust — In traditional systems, part of the trust was based on the direct observation of the goods exchanged. In contemporary systems, this trust shifts toward procedures, standards, certifications, platforms, and validation mechanisms. Actors must have more faith in how the system works than in the immediate observation of the realities it represents. This evolution considerably increases the importance of mediation mechanisms.

Blockchain and abstraction — Blockchain technologies provide a particularly illuminating illustration of this phenomenon. Their objective is precisely to enable the circulation of rights, assets, or information between actors who do not necessarily know each other. Yet, the mechanisms that make this trust possible—distributed consensus, cryptographic validation, identity management, or smart contracts—remain largely invisible to the majority of users.

A paradoxical technology — Blockchain is often presented as a technology of transparency. From a technical point of view, this claim is largely justified since records can be verified and transactions traced. But this data transparency coexists with a strong opacity of the underlying mechanisms. Users see the results of the system without always understanding the processes that produce them.

Tokenization — This movement reaches a new stage with tokenization. A token represents an economic, legal or material reality in a digital form capable of circulating

within a blockchain infrastructure. The operation makes it possible to increase the liquidity, traceability or divisibility of assets. But it also introduces an additional level of mediation between the original object and those who interact with its digital representation.

A new cognitive distance — As layers of representation multiply, cognitive distance also tends to increase. Understanding a tokenized asset often requires knowledge relating to law, finance, IT and data governance simultaneously. Few players naturally master all of these areas. This situation creates a growing gap between the sophistication of the systems and the public's ability to understand their mechanisms.

The case of natural resources — Projects combining natural resources and digital technologies illustrate this dynamic particularly well. A forest plot becomes an environmental measure. This measure becomes a carbon credit. Credit becomes digital asset. The asset can then be integrated into broader financial mechanisms. At each stage, the circulation increases but the distance between the initial object and its representation also becomes greater.

Cumulative complexity — This accumulation of transformations does not constitute a malfunction. It is precisely what allows resources to circulate across increasingly vast economic, institutional and geographical spaces. However, each transformation also adds an additional layer of complexity. The actors must then understand not only the initial object but also the mechanisms that allow its representation, validation and circulation.

The digital paradox — This is where a characteristic paradox of contemporary digital societies appears. Technologies are often designed to simplify use while complicating the infrastructures that make it possible. The simpler interfaces become for the end user, the more sophisticated the underlying mechanisms tend to become. Ease of use thus relies on increasing complexity that remains largely invisible.

A direct consequence — This invisibility contributes to increasing the need for translation. When mechanisms become less observable, explanations become more necessary. Actors must be able to understand the general principles of a system without necessarily mastering all the technical details. Translation then appears as a means of reducing the cognitive distance created by the increasing abstraction of digital devices.

A new function of translation — In this context, translating is no longer just about disseminating an innovation or maintaining a network. It is also about making perceptible mechanisms which naturally tend to disappear behind their own performances. The more abstract systems become, the more intelligibility operations become essential to their collective appropriation.

A necessary transition — This function becomes particularly visible when very different actors must cooperate around the same object. However, these complex objects often have an additional characteristic: they can be understood differently by each of those who use them. To understand how such cooperation nevertheless remains possible, we must now look at the notion of boundary object developed by Susan Leigh Star.

3. Boundary objects

A lingering question — The preceding analyzes lead to an important question. How do actors belonging to different professional, institutional or cultural worlds manage to cooperate sustainably when they share neither the same knowledge, nor the same priorities, nor the same representations of the world? This question led Susan Leigh Star and James Griesemer to develop a notion that has become particularly influential: that of the boundary object.

Susan Leigh Star — A sociologist of science and infrastructure, Susan Leigh Star is interested in the mechanisms that enable cooperation between heterogeneous actors. His work shows that complex collectives are not necessarily based on an identical understanding of situations. They can function despite different interpretations, provided that we have objects that are robust enough to be recognized by everyone and flexible enough to receive multiple meanings.

Cooperate without thinking the same thing — This idea constitutes one of Susan Leigh Star's major contributions. Contrary to certain conceptions of coordination, cooperation does not require perfect homogeneity of representations. Actors can pursue different objectives, use distinct languages and interpret the same realities differently while participating in collective action. The main thing is not that they think exactly the same thing, but that they can act around the same object.

A border rather than a fusion — The border object does not eliminate the differences between the actors. On the contrary, it allows their coexistence. Each group maintains its own categories of analysis while having a common point of reference. The border is therefore not a watertight separation but a contact zone where different worlds can meet without necessarily merging.

Objects interpreted differently — The same object can thus receive several legitimate meanings. For a researcher, a map constitutes a scientific instrument. For an administration, it can become a management tool. For an elected official, it represents a decision support. For a citizen, it is used to find one's way in a territory. The object remains the same, but the uses and interpretations vary depending on the actors concerned.

A plurality of readings — This multiplicity is not a defect. It often constitutes a condition of cooperation. If each actor had to adopt exactly the same definition of the objects mobilized, many collective projects would become impossible. Boundary objects precisely make it possible to maintain a balance between coherence and diversity. They create a common space without imposing complete uniformity of points of view.

Carbon credit — Environmental finance mechanisms offer a particularly interesting illustration of this logic. For the scientist, a carbon credit represents the result of a measurement and validation protocol. For the investor, it constitutes an asset capable of being acquired or exchanged. For an administration, it can become an instrument of public policy. For a local community, it represents a potential source of income or territorial development.

The digital token — Digital assets share similar characteristics. For engineers, a token represents a record within a blockchain infrastructure. For lawyers, it raises questions



of rights and compliance. For investors, it serves as a valuation vehicle. For policymakers, it can be seen as a tool for economic innovation. Each stakeholder speaks of the same object without necessarily attributing the same meaning to it.

The traceable ingot — Traceability systems applied to mineral resources also produce boundary objects. A traceable gold ingot simultaneously represents a raw material, proof of origin, an economic asset, a result of regulatory compliance, and a source of trust for markets. Each category of stakeholders projects its own concerns onto it while recognizing the validity of the object that connects them.

Convergence without uniformity — This situation helps explain why highly complex networks can function despite the heterogeneity of their participants. The actors do not cooperate because they share a single representation of the world. They cooperate because they possess objects that are stable enough to be recognized by all and flexible enough to be integrated into different frames of reference.

The risk of fragmentation — However, this balance remains fragile. If interpretations become too divergent, the boundary object risks losing its coordinating capacity. The actors then continue to use the same terms while referring to increasingly different realities. Cooperation weakens not because the object disappears, but because its shared meaning becomes insufficient to maintain the necessary alignment.

Translation as articulation — It is precisely at this level that the work of translation comes into play. Translating consists of maintaining the links between the different interpretations of the same object. It is not about imposing a single definition but about preserving a minimal coherence between multiple representations. Translation acts as an articulation operation, allowing different worlds to continue to engage in dialogue around a shared reality.

Maintaining Bridges — In projects combining digital technologies, natural resources, and public policy, this function becomes essential. Stakeholders must constantly rebuild bridges between technical, financial, regulatory, territorial, and political languages. Without this work of articulation, the objects that currently ensure cooperation risk gradually losing their capacity to connect the different worlds they represent.

A new interpretation of communication — This perspective leads to a different view of activities involving popularization, explanation, or contextualization. They do not simply serve to disseminate additional information. They contribute to maintaining the boundary objects themselves by preserving the links between the meanings attributed to them by the various actors in the network.

A strategic consequence — The more complex the objects involved and the more distant the worlds they connect, the greater the need for articulation becomes. Translation then appears as an invisible infrastructure of cooperation. It allows different actors to continue discussing the same object without having to think exactly the same thing.

4. Invisible infrastructure

A paradoxical question — Susan Leigh Star's analyses lead to a surprising observation. The more efficiently an infrastructure functions, the less attention it attracts from those who use it. Roads, power grids, administrative systems, and digital infrastructures gradually become invisible when they perform their function correctly. This invisibility is often a sign of success. Yet, it also produces particular effects on how stakeholders perceive the work required to operate them.

When everything works — In everyday life, users rarely pay attention to the infrastructures themselves. They are interested in the results they produce. We immediately notice a power outage, but we pay little attention to the grid that normally ensures energy distribution. Similarly, those involved in a project generally focus on the objectives achieved, the resources mobilized, or the results obtained, much more than on the mechanisms that make these results possible.

Disappearance in use — According to Susan Leigh Star, an efficient infrastructure tends to disappear behind its uses. It ceases to be an object of attention and becomes an implicit condition of action. Users no longer see the system; they only see what it allows them to do. This disappearance is not a failure. On the contrary, it constitutes one of the signs of the successful integration of the infrastructure into everyday practices.

The disappearance of mediation work — This phenomenon does not only concern technical devices. It also affects the human activities that enable networks to function. The operations of coordination, translation, harmonization, and explanation become progressively less visible as they become more successful. When they effectively fulfill their role, they cease to appear as separate activities and become part of the normal functioning of the system.

A discreet contribution — Those responsible for maintaining links between different professional or institutional worlds often occupy this discreet position. They produce documents, organize exchanges, reformulate concepts, bridge viewpoints, and reduce misunderstandings. Yet, when these activities succeed, they are rarely perceived as achievements in themselves. They simply become an invisible part of the collective functioning.

The illusion of obviousness — This invisibility has an important consequence. When mediations function correctly, the results obtained end up appearing natural or obvious. The actors gradually forget the effort required to build the alignments from which they now benefit. What results from a long process of coordination ends up being perceived as self-evident. The connections that have been built become invisible as they stabilize.

What seems natural — Familiar concepts illustrate this phenomenon well. Once integrated into routine practices, they often appear simple and obvious. Yet, their understanding has generally required numerous explanations, discussions, reformulations, and learning. The success of the translation paradoxically contributes to making people forget that a translation has taken place. What has been built then appears naturally understandable.



Invisible translators — This situation particularly affects those who perform mediation roles. Their work consists precisely of making complex realities understandable to different audiences. When they succeed, the gap between the worlds they connect becomes less perceptible. Their contribution then tends to disappear behind the result achieved. Translators become invisible because the connections they maintain now seem self-evident.

An often underestimated function — This invisibility explains why activities of popularization, education, or making things intelligible are sometimes considered secondary. The results they produce appear in the form of shared understanding, facilitated coordination, or strengthened trust. However, these effects are rarely attributed to the translation operations that made them possible. The success of the mediation often masks the reality of the work accomplished.

A misleading perception — It is in this context that the impression of an excess of communication can arise. When translation mechanisms have been functioning correctly for a long time, the actors sometimes end up considering the acquired understanding as a natural state. The new explanations then seem redundant. They are evaluated based on a level of knowledge already attained, without always recognizing the ongoing work required to maintain this level of understanding.

The arrival of new players — Yet, networks are constantly evolving. New participants join projects. Contexts change. Technologies advance. Regulations transform. Knowledge that seemed acquired by some must be reconstructed for others. The need for translation therefore never completely disappears. It is renewed as the network itself transforms.

The fragile memory of networks — Organizations often possess a more fragile memory than they imagine. What was perfectly understood by one generation of players can become obscure a few years later. Knowledge circulates, is lost, transforms, and must be regularly updated. Without the work of transmission and reformulation, networks risk gradually losing the collective understanding that underpinned their coherence.

Why communication seems excessive — From this perspective, the impression of excessive communication can sometimes stem from a paradox. The more effective mediation has been in the past, the harder it becomes to perceive its necessity in the present. Those involved see the results of translation but forget the processes that produced them. What appears as unnecessary repetition may, in reality, be essential maintenance work.

Another reading of publications — Analytical notes, documentary files, educational articles, or blog posts can thus be interpreted in two different ways. They can be seen as an accumulation of additional information. But they can also be understood as cognitive maintenance operations designed to maintain the coherence of a network facing constant transformations. It all depends on how one conceives of the stability of collectives.

A decisive transition — This reflection ultimately leads to an important conclusion. The more abstract objects become, the more complex networks become, and the more invisible infrastructures become, the greater the need for translation tends to become. Digital finance ecosystems offer a particularly revealing example in this regard. They

combine sophisticated technologies, numerous players, and very different frames of reference. It is this concrete situation that we must now examine.



Conclusion — From translation to the ecology of intelligibility

One question remains — Previous analyses lead to a strong conclusion: socio-technical networks rely as much on infrastructures of intelligibility as on technical infrastructures. The circulation of data, assets, and transactions is not enough. Actors must also be able to understand the objects circulating, the mechanisms that produce them, and the goals they collectively pursue.

From infrastructure to actors — One question remains, however. Who actually produces this intelligibility? Who maintains the translation chains, builds the bridges between languages, preserves the coherence of boundary objects, and prevents breakdowns in understanding? Behind the concepts of translation, mediation, and intelligibility lie actors, organizations, documentary systems, and communication practices whose role remains to be explored.

Toward an ecology of translation — In contemporary digital finance ecosystems, intelligibility does not result from isolated actions but from a set of distributed contributions. Experts, media outlets, institutions, operators, researchers, platforms, communities, and content producers all contribute to varying degrees to maintaining collective understanding. Translation thus appears less as a one-off activity than as a permanent function of the network.

The fourth article — This is the dimension we will examine in the next article. After demonstrating why innovations need to be explained, how networks thrive on translation, and why digital finance relies on chains of intelligibility, we will need to understand how the production of this intelligibility is concretely organized and why it now constitutes a major strategic challenge for contemporary socio-technical networks.