

## Implied Intra-Industry Trade in Information: Modified Expositions

By Arthur Shevenyonov

### Abstract<sup>1</sup>

The proposed account posits an inherently implicit nature of trade in knowledge and information, which extends the boundary of value so far as to urge a generalized xHOS. Simultaneously, this strand of research gives rise to applications that have underpinned Ordinalcy and Residuality paradigms.

### *Stocks & Flows: “Knowledge Overhang,” “Cost of Agency,” etc.*

Anyone keen on functionality has indulged in those exercises: positing a particular process as a *time* “function,” taking the dot derivatives, finding the shortest-time paths, and the like. It would be so good to embark on at least some of these manipulations with time *indices*, perhaps as a difference equation format in macro-economic setups, to finally cease the vicious practice of running naïve aggregate demand accounting with all of the components faring as same-period entries and payoffs—as if to maintain two-way symmetry. The same could be done on econometric regressions rendered as structural-form time series, inasmuch as operator-based collapsing might appear awkward when applied to the inherently unstructured residual.

In actuality, the profession and lay public alike have enjoyed working with time functions, time trends, and time squares without ever questioning exactly what those time “stocks” or “flow powers” could possibly convey, or how to interpret the otherwise naïve frameworks that still cannot be critiqued as atheoretic with formal models on hand.

At this rate, time can fair as cardinal numbers to connote some kind of cumulative statuses, or even as ordinal numbers to account for measurable developments—or “parametrization” and “shadow” representation and “instruments,” should any ill-defined yet long-accustomed-to clichés collapse on careful scrutiny.

Incidentally, the same might go for knowledge, and information as its raw underlying input (as long as both are generic or lack specificity) or ad-hoc intake (with specific application setups like search borne in mind). It has been commonplace to speculate that,

---

<sup>1</sup> The present analysis was originally proposed in December 2000 as a standalone if somewhat abstract topic bordering on some implications of bounded rationality to areas shared by macro-trade and micro-foundations. Later on, it focused on some more specific applications (Shevenyonov, 2001), in turn ultimately motivating and informing the bulk of Ordinalcy and Residuality theorizing. Among other things, the core premises that reveal a striking generalization of Poisson-Jacobi commutators (Shevenyonov, 2016c) had drawn originally upon the duality of stock prices or information flows as inputs (outlays) versus gains depending on the timing.

whoever enjoys access to the relevant information stands closer to controlling the effective opportunities and terms of trade. I believed so back as an economics freshman, with major qualifications that followed up pointing to the relevance, or effective scarcity, being contingent on [bounded] rationality as well as risk aversion, motivational power of the vision being “bought into” (subject to learning inertia), and utter complexity aversion which forces many to avoid computation and analysis to the extent that risk taking appears technically superior to a high “deliberation cost.”

On second thought, scarcely ever do the more creative as well as critical types tend to view analytical efforts as just that—“another cost item subject to rational minimization.” Otherwise, most geniuses would long have been plagued as irrational types and dangerous outliers—unwilling to indulge in the waist of the Maslow pyramid and incapable of having an appreciation for “mitigation” and “satisficing” tools that are up for grabs on the marketplace. At the end of the day, they might have stopped short of being downright denied as implausible cognitive profiles, only to earn the researchers their capital gain twice—by first ruling them out (“geniuses are so rare to find, their expectation is nil *ex ante*”) then questioning this hypothesis against the data (“they are still out there *ex post*”).

That said, genius has little to do with “information stocks” or “knowledge spillovers” per se, as these lower-key endowments are too inferior to serve as numeraire anyway. Although this paper’s research scope is not meant to capture either, it should still suffice to question the latter domain as too unduly arcane to lend itself with either “impractical” creativity or with the more down-to-earth channels down those “value chains” contributing to GDP (insofar as the latter might be the ultimate and unqualified aggregate in its own right).

To cut the story short, there is little that may amount to a “stock of knowledge” or even a “level of technology,” even though “knowledge spillovers” are routinely exchanged (as well as leaked) within any corporate “value web.”

At this stage, enough has been said to usher in a set of propositions on the “market” nature of knowledge and information:

**(KI1)** Knowledge and information (KI) may be produced and traded, even though these qualify as *largely* non-tradable and either too much of commodity type or too advanced to have any production (processing) equivalence

**(KI2)** KI may not pertain to *any* of the layers of needs “up Maslow” or may, alternatively, apply to *all* of these

**(KI3)** In light of the above, KI qualifies as largely a *non-market* or *semi-institutional* value profile, with utility or rewards accruing in *non-pecuniary* terms chiefly (e.g. non-monetary recognition or self-actualization as per Maslow needs)

**(KI4)** While largely non-market, KI may still take *some* marketable forms (notably research products or monetized content)

**(KI5)** In addition, KI may pertain to how *preferences* tend to form and be defined as either responses to particular solutions (*value mixes*) or as entangled Maslow levels (*need mixes*)

**(KI6)** Apart from being *partially* market-type, KI may prove *partly* tradable—implicitly so

**(KI7)** Genius being, not so much a talent *extent* (singular *abundance*), as it is a [gradiency] *resultant* (production function) of talent-*mixes*

Trade in intangibles could be explicated only inasmuch as these are seen as the underlying [core] inputs, which could be “scarce” in a well-defined sense and/or monetized terms. For instance, stale knowledge could be of lesser relevance to securing an edge amidst a “fast cycle”—more so whenever there is considerable resource similarity or market commonality. More relevant or state-of-the-art knowledge is routinely garnered via R&D outlays (or otherwise non-organic M&A aimed at buying the possibly small-size yet creative projects that have shown to set standards without boasting a material market share or “goodwill”).

### ***Implicit Trade Most Explicit***

It happens, the actual extent of “market commonality” or “resource similarity” may either refer to intense rivalry potential or to cooperative micro-level setups such as implied value chains or amount to a special case of *intra*-industry trade at the macro-level. It has been argued that trade in KI (as an important layer if dominant core of the intangibles) is by and large *implicit in nature*—somewhat along the *HOS* (Heckscher—Ohlin—Samuelson) lines.

However, its *intra*-industry layer might be attached with some extra uncertainty calling for either more knowledge or more information to mitigate or cope with. This may or may not amount to the vicious circles of deferents cropping up, yet this plain representation can be rendered simpler by invoking its ultimate underlying nature—the *complementarity* of KI and human capital (HK), which captures all creative faculties and entrepreneurial propensity (investor savvy and arbitrage slack picking not least). More importantly, it is lack or loss of an interactive or relational match between KI and HK that counts far more heavily than conventional cognitive or processing capacity (or lack thereof).

While the latter may amount to [the dual of] “bounded rationality,” it remains to be seen what the equivalent might be that materially undermines human capital with an eye to its KI complementarity being compromised. In any event, it appears that KI trade—or its implicit as well as complementary nature first and foremost—*signals relative abundance* of HK within the particular set of players as a matter of self-selection. This expectation can further be strengthened for *intra*-industry trade, which involves an utmost ability to *differentiate* between or match the finer detail of KI inputs.

The discussion thus far maps into an additional subset of corollaries:

**(KI8)** As an extension or rethinking of HOS domain ( $xHOS$ ), trade in KI signals the *relative abundance* of HK as well as KI *intensity*, as per the end-industry profiles within the effective or implied value chain

**(KI9)** *Implied* trade in KI suggests how the *effective or implicit* KI as well as HK endowments could *converge* (with a structural endowment or technology gap shrinking)

**(KI10)** *Intra*-industry implied trade poses some extra incentives as well as stimuli for the KI and HK “endowments” or frontier quality to further shift in *absolute* terms, while spanning an increasingly full-fledged set of HK domains (in turn capable of generating a full-blown scope of KI)

### ***Implications & Applications: Games & [Asset] Networks***

It has previously been shown how international trade could be endogenized in game- and portfolio-theoretic terms (Shevenyonov, 2016k) as a game with the opportunity frontier (production system as well as the “milieu”) or an investment choice subject to one’s risk preferences. Over the long haul, the chance player could be actualized as more of a controllable or programmable vehicle, thus converging to the quality of game itself as well as to the key prayers (social planners) strategy:

$$\overline{s_{t+\Delta t}} = M(G_{t+\Delta t}) \xrightarrow{\Delta t \gg 0} s_{t+\Delta t} = G_{t+\Delta t}^{-1}$$

But then it happens, the *strategies* ( $s, \bar{s}$ ) could, too, be deemed as the implied *inputs*, indeed akin to KI, mapping into payoffs as the “final goods” being shared or produced as well as traded one way or the other. While trade at large may be seen as either inherently cooperative (building on mutual dependence and specialization) or noncooperative (propelling rivalry as a matter of Pareto slack picking), tossing up over these extremes could point to implied KI trade being [n]either of the “shared value” [n]or bargaining type. The latter being largely efficiency laden and sterile with an eye on productivity shifts, it is the former that aims to deploy KI in the more aggressive terms as above, i.e. seeking to endogenize and harness the “chance player” thus coping with structural uncertainty.

A host of stances can be taken in between, bearing in mind that standalone asset selection or full-blown portfolio-managerial strategies can be ensured—notably beyond conventional diversification—as one grand application, or indeed “KI-intensive product.” In particular, it can be proposed that similar as opposed to disparate assets could inform a meaningful strategy as driven by a rationale other than “style” investment and based on the [irrelevance of] the assets’ actual relationship as their commonly shared ordinal nature.

## References

Shevenyonov, A. (2016k). Game of trade: A portfolio approach to theorizing on trade and investment as entangled domains. *viXra: 1611.0204*.

Shevenyonov, A. (2016c). An introduction to new foundations: The Ordual calculus for ultimate search. *viXra: 1610.0363*

Shevenyonov, A. (2001). Intra-industry trade in asset-networks: A microfoundations model of comovement. *Mimeo*, forthcoming at viXra.