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EVOLUTIONARY TAXONOMY OF UNCERTAINTY

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Uncertainty has long occupied a central position in economic thought, shaping both theoretical debates and policy design. Existing taxonomies of uncertainty typically rely on fixed distinctions, such as ergodic and non-ergodic states of reality, and therefore remain largely static and teleological. As a result, they fail to capture the historically contingent, cumulative, and institutionally embedded character of uncertainty. Building on Thorstein Veblen's critique of taxonomic science and his evolutionary framework, this article addresses this gap by developing an evolutionary taxonomy of uncertainty that integrates post-Keynesian insights on expectations with Veblen's concepts of cumulative change and the ceremonial-industrial value dichotomy. The article integrates post-Keynesian expectations approaches with Veblen's institutional insights, particularly his distinction between ceremonial (pecuniary) and industrial (instrumental) values. Methodologically, the study employs an integrative review of the literature and a conceptual comparative framework that reinterprets Davidson's uncertainty taxonomy through an evolutionary lens. The proposed taxonomy identifies four regimes of evolutionary uncertainty – ceremonially stable, ceremonially unstable, industrially stable, and industrially unstable – defined by the interplay between institutional functions and the perceived stability of core expectations. The paper demonstrates that uncertainty evolves through institutional adaptation, narrative reconstruction, and shifts in agents' confidence in fundamental assumptions about the economic environment. The main contribution lies in developing a non-teleological and institutionally grounded taxonomy of uncertainty that offers a more realistic analytical tool for institutional analysis, crisis research, and economic policy design.

Keywords: uncertainty; institution; evolution; history of economic thought; Thorstein Veblen
JEL: B52, D80, E12, B15, B25

Niepewność od dawna zajmuje centralne miejsce w refleksji ekonomicznej, kształtując zarówno debaty teoretyczne, jak i projektowanie polityki gospodarczej. Istniejące taksonomie niepewności opierają się zazwyczaj na stałych rozróżnieniach, takich jak rzeczywistość ergodyczna i nieergodyczna, przez co mają charakter statyczny i teleologiczny. W konsekwencji nie są one w stanie uchwycić historycznie uwarunkowanego, kumulatywnego oraz instytucjonalnie zakorzenionego charakteru niepewności. Wychodząc od krytyki nauki taksonomicznej sformułowanej przez Thorsteina Veblena oraz jego ewolucyjnego podejścia do analizy instytucji, celem artykułu jest wypełnienie tej luki poprzez opracowanie ewolucyjnej taksonomii niepewności, która integruje postkeynesowskie ujęcia oczekiwań z koncepcjami kumulatywnej zmiany oraz dychotomii wartości ceremonialnych i industrialnych Veblena. Artykuł integruje postkeynesowskie ujęcia oczekiwań z instytucjonalnymi koncepcjami Veblena, w szczególności z rozróżnieniem między funkcjami ceremonialnymi

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i industrialnymi. Metodologicznie badanie opiera się na integracyjnym przeglądzie literatury oraz konceptualnej analizie porównawczej, w ramach której taksonomia niepewności Davidsona zostaje przekształcona z perspektywy ewolucyjnej. Zaproponowane podejście wyróżnia cztery reżimy ewolucyjnej niepewności: ceremonialnie stabilny, ceremonialnie niestabilny, industrialnie stabilny oraz industrialnie niestabilny, definiowane przez relację między funkcjami instytucji a postrzeganą stabilnością kluczowych oczekiwań. Głównym wkładem artykułu jest opracowanie nieteleologicznej, instytucjonalnie ugruntowanej taksonomii niepewności, stanowiącej użyteczne narzędzie analizy instytucjonalnej, badań nad kryzysami oraz projektowania polityki gospodarczej.

Słowa kluczowe: niepewność; instytucjonalizm; ewolucja, historia myśli ekonomicznej; Thorstein Veblen
JEL: B52, D80, E12, B15, B25

I. INTRODUCTION

Uncertainty remains a central concern in economic analysis, yet much of the literature still equates it with risk or treats it through static classifications. Post-Keynesian taxonomies have advanced the understanding of uncertainty, but they remain largely non-evolutionary and insufficiently grounded in institutional dynamics. This creates a research gap on how uncertainty changes over time, as institutions, narratives, and value structures evolve – an issue long emphasized in Thorstein Veblen's evolutionary approach.

The purpose of this article is to address this gap by developing an evolutionary taxonomy of uncertainty that integrates post-Keynesian insights on expectations with Veblen's concepts of cumulative change and the ceremonial–industrial value dichotomy. The proposed framework reconceptualizes uncertainty as a dynamic process shaped by shifting confidence in core expectations and by changes in institutional functions. Its contribution is to offer a non-teleological and institutionally grounded tool for analysing stability, crises, and structural transformations.

The study employs an integrative literature review and a comparative conceptual method to modify the post-Keynesian taxonomy. Then the resulting framework is illustrated using historical material drawn from Veblen's analysis of institutional change. The remainder of the article proceeds as follows: the first section outlines post-Keynesian taxonomy and then proceeds to review Veblen's evolutionary concepts important for uncertainty taxonomy; the second presents evolutionary taxonomy and mechanisms of change and applies it to a historical case; and the final section reviews and summarizes the main conclusions.

The article tests two theses: (H1) integrating evolutionary characteristics allows for a dynamic and changing institutional environment in which an uncertainty category is placed; and (H2) the integration of Veblen's instrumental theory of value enables a better understanding of the role uncertainty plays in Veblen's writing. The methodology and testing procedures for these theses are elaborated in section III.

II. REVIEW OF THE LITERATURE

1. Post-Keynesian taxonomy of uncertainty

The post-Keynesian (PK) taxonomy of uncertainty is mainly based on Paul Davidson's (1989, 1991, 1995) works. The PK taxonomy identifies solutions for uncertainty in the form of either market-based, decentralized solutions or government interventions and other centralized solutions. The notion of institution appears in post-Keynesian writing about uncertainty, but institutions are understood mainly as potential constraints on agents' behaviour. To adapt this taxonomy to an institutional framework, several key concepts need to be adjusted in order to clarify the transformation of the PK taxonomy of uncertainty.

Table 1

Post-Keynesian taxonomy of uncertainty

Reality	Ergodic	Non-ergodic
Distribution of knowledge	Symmetrical Asymmetrical, without the possibility of symmetry	Not important
Types of uncertainty	Type 1 (risk) Type 2 (epistemological uncertainty)	Type 3 (ontological uncertainty)

Source: the author's own elaboration based on Davidson (1991).

The post-Keynesian taxonomy of uncertainty can be presented as shown in Table 1. The first distinction is drawn along the line of reality, which maybe either ergodic, where previous events are useful as predictors of future events, or non-ergodic, where future events are fully independent of previous ones. Within the realm of epistemological reality, it is possible to additionally distinguish risk, where every agent has the same knowledge or where asymmetry can be overcome, from epistemological uncertainty, where agents differ in knowledge in such a way that these differences cannot be eliminated. In the ontological realm of economic reality, there is ontological uncertainty, which could vary according to the distribution of knowledge, but such variation would be meaningless since ontological reality forces agents to behave in a certain way regardless of the distribution of knowledge.

Risk in this taxonomy is not classified as true uncertainty. Where agents can use probability calculus and successfully optimize their choices under uncertainty, the category defeats the purpose of introducing uncertainty and is not useful in any meaningful sense. The taxonomy differs from the source material of Davidson's research and treats epistemological uncertainty as uncertainty proper. For example, due to the individualistic nature of information,

it is not possible to gather and analyse all information. Uncertainty therefore cannot disappear but can be softened through decentralized institutions such as the free market, based on individual agents.

Ontological uncertainty is different: its concept arises from doubt about the stability of any economic assumption, especially in situations such as wars, pandemics, or global crises. In such circumstances, the answer to the question 'what will happen next' is simply 'I don't know' and not much else. It must be highlighted that post-Keynesian economists, who specialize in ontological uncertainty, in most cases assume stability of government and its ability to exercise power over economic agents. In economic reality, when nothing that has happened can serve as a basis for predicting what will happen, economic agents are overwhelmed by hesitancy since they cannot overcome uncertainty by themselves. Ontological uncertainty compromises the ability of agents to base their confidence on anything other than central institutions, understood as institutions as founded on their ability to enforce compliance across society as a whole, such as government interventions.

The PK taxonomy of uncertainty is a useful tool for understanding uncertainty at given point in time and place, where and when it is possible to identify structural characteristics of the economy that correspond to the ideal scenario for the ontological or epistemological uncertainty category. However, since economies are continuously evolving, the situation will start to depart from these correspondences, thus making the categories less useful for describing the problems facing them. That is why it is important to introduce evolutionary change into the PK taxonomy and additionally import the concept of the instrumental theory of value, to better capture Veblen's writings.

2. Economics as an evolutionary science

Veblen (1899a) argued that the evolutionary character of economics is not about using dynamic models, empirical methods, the search for causal relations, or the absence of a coherent theoretical system, as classical and neoclassical economics possess all these features. The difference, as he argued, lies elsewhere:

> The difference between the evolutionary and the pre-evolutionary sciences lies not in the insistence on facts. … Nor does the difference lie in the absence of efforts to formulate and explain schemes of process, sequence, growth, and development in the pre-evolutionary days. … It will not even hold true that our elders overlooked the presence of cause and effect in formulating their theories and reducing their data to a body of knowledge. But the terms which were accepted as the definitive terms of knowledge were in some degree different in the early days from what they are now. The terms of thought in which the investigators of some two or three generations back definitively formulated their knowledge of facts, in their last analyses, were different in kind from the terms in which the modern evolutionist is content to formulate his results. The analysis does not run back to the same ground, or appeal to the same standard of finality or adequacy, in the one case as in the other. (p. 4)

Evolutionary scientists such as biologists, physicists, and anthropologists treated causality as the ultimate basis of explanation: when asking 'why?', they expected answers strictly in terms of cause and effect (Veblen, 1899a, p. 5). In contrast, earlier generations of taxonomic scientists, including classical and neoclassical economists, did not regard causality as sufficient. For them, the ultimate objective of inquiry was to uncover a higher-order principle, often framed as a 'natural law' (Veblen, 1899a, p. 5).

Central to the taxonomic approach was the reliance on what Veblen (1898) called 'enlightened and deliberate common sense'. This refers to the assumptions defined at the outset of a discipline, where certain mechanisms and conclusions were deemed 'natural', 'obviously true', and 'common-sense', while others were excluded as 'unnatural' or 'disturbing'. Such judgments, Veblen argued, were normative rather than empirical (p. 7). A striking example was the definition of 'the economy' as 'the market economy', which implied that government was inherently external and could only interfere with the natural order of the market (Hill, 1998, pp. 162–164).

Evolutionary sciences take a different approach: their aim is to uncover cumulative sequences of causes and effects, in which each phenomenon builds on the results of previous ones. Anomalies are not disturbances, but opportunities to broaden and refine the theory. Assumptions are temporary – valid for the present state of knowledge but never absolute or immutable (Veblen, 1898, p. 5). Methodologically, taxonomic sciences rely mainly on deduction, induction, or simple combinations of both, whereas evolutionary sciences employ more complex sequences in which deduction and induction continuously interact (pp. 10–11). Regarding the place of human beings in nature: taxonomic sciences treat humans as external and isolated, as illustrated by thought experiments such as Robinson Crusoe (Camatta & Salles, 2025, p. 530), while in evolutionary sciences see humans as an integral part of nature and society, with their actions considered essential to the processes under study (Veblen, 1899b, pp. 8–9).

Based on the distinction developed to classify the 'evolutionary character' of theories, this work uses a non-consummatory phylogenetic type of evolutionary characteristic (following Hodgson, 1993, pp. 133–135) from a Darwinian rather than non-Spencerian perspective (Tae-Hoo, 2021, pp. 1103–1107; Zhao, 2024). This implies the absence of a stable economic environment that would allow economic agents to evolve institutions towards perfection and thereby eliminate uncertainty.

3. Veblenian theory of value dichotomy

Veblen's concept of value is often seen as being in synergy with Dewey's instrumental valuation theory (Ayres, 1944) and is referred to as the instrumental theory of value (Bush, 2009; Sheehan & Tilman, 1992; Todorova, 2013, 2014; 2015a, 2015c; Martins, 2020). At its foundation lies the so-called Veblenian dichotomy (Hill, 1998, pp. 162–164), namely the distinction between the industrial (instrumental) value and the pecuniary (ceremonial) value. In Veblen's view, a good has industrial value if it contributes to sustaining and

developing social life without doing so through changes in the social hierarchy). The pecuniary value, on the other hand, refers to the capacity of a good to elevate an individual's position in the social hierarchy (Todorova, 2015b, pp. 9–11). Todorova (2015b) summed this distinction up as follows: 'Particularly, "instrumental" refers to the non-invidious continuation of the life process and is not based on a relativist subjective valuation … . Importantly, the dichotomy between pecuniary (ceremonial) and industrial (instrumental) is formulated with respect to the continuation of the life-process, rather than with respect to individual subjective valuation' (p. 9).

It is important to note that while this version of the theory of value is dominant and appears throughout Veblen's writings, it is not the only one. In its most widespread form, instrumental value derives from the instinct of workmanship: an object or activity has value insofar as it satisfies the basic needs of society, as opposed to serving solely the maximization of profit. These motives are not always mutually exclusive, as in Adam Smith's description of the era of 'handicraft' (Veblen, 1904, pp. 78–81).

Institutions are defined as habits of thought (Veblen, 1914, pp. 2–15). This is a broad definition, since it allows us to capture the broad spectrum of Veblen's writings. Examples of institutions are government interventions, programmes, and similar measures, since their role is to create incentives or force people into actions that the government wants them to take; they are, in some sense, forced habits of thought.

Following this line of thought, an institution is instrumental if its goal is to enhance the well-being of society, measured as fulfilment of needs, and ceremonial if its goal is to enhance the well-being of individuals, measured as the fulfilment of wants. Because most institutions do not fit into either the ceremonial or industrial category, researchers have introduced the idea of ceremonial and industrial functions of institutions instead of treating individual institutions as either industrial or ceremonial (Bush, 1983, p. 4). For example, one could argue that the institution of patents has ceremonial functions, since it boosts the ability of individual patent-holders to generate wealth at the cost of others, namely the rest of society. It is also reasonable to argue that the institution of patents has industrial value, since better incentives for researchers can increase society's stock of knowledge, leading to better fulfilment of societal needs through technological advance.

Although the reviewed literature provides strong foundations for Veblenian evolutionary theory and the value dichotomy, none of these studies has applied these concepts to modify existing uncertainty taxonomies. This absence highlights the gap that this paper addresses. The PK taxonomy provides the foundation for a taxonomy based on an important distinction between epistemological and ontological uncertainty, but it remains analytically limited from an institutional and evolutionary perspective. Once uncertainty is classified into one of the categories, it remains fixed, and the institutional environment is implicitly treated as unchanging. This absence of a mechanism explaining how uncertainty itself evolves is in direct contrast to Veblen's cumulative approach and motivates the need for a modification of the post-Keynesian taxonomy.

III. RESEARCH METHODS

The study is based on a targeted selection of the literature on Veblen's evolutionary economics and post-Keynesian theories of uncertainty, chosen for its relevance to institutional change and expectations. The reason for this work stems from the static and institutionally incomplete nature of the PK taxonomy.

The article tests two theses:

(H1) integrating evolutionary characteristics allows for a dynamic and changing institutional environment in which a category of uncertainty is located.

(H2) the integration of Veblen's instrumental theory of value enables for better understanding the role uncertainty plays in Veblen's writings.

The first thesis is tested by obtaining a taxonomy that allows for a change in the category of uncertainty. If the correspondence with ontological/epistemological uncertainty categories can change in a way that would be interpreted in the PK taxonomy as a change between ontological and epistemological uncertainty, or vice versa, then the thesis is true. The second thesis is tested in a similar fashion, but by examining the possibility of change in institution functions or change caused by those functions.

The method combines an integrative review (Snyder, 2019) and conceptual integration as defined by MacInnis (2011). The integrative review is used to select works by Veblen and works on Veblen's methods that are important for changing the PK taxonomy into an evolutionary taxonomy of uncertainty. Conceptual integration involves finding parallels between the PK taxonomy and Veblen's writings on uncertainty and combining elements of both. The combination is achieved by changing the PK taxonomy with evolutionary elements and the instrumental theory of value.

Its strength is the ability to unify separate economic schools of thought, in this case, post-Keynesian and Old Institutionalism; its limitation is the reliance on theoretical rather than empirical material. This limitation can be mitigated to some extent by using empirical material to complete particular mechanisms for a given time and place.

IV. RESULTS

1. Evolutionary taxonomy of uncertainty

The modifications undertaken to give the PK taxonomy evolutionary characteristics are of two kinds:

– expanding the uncertainty matrix to reflect both the ergodicity/nonergodicity and the ceremonial/industrial axes;

– embedding the taxonomy with a mechanism that allows for dynamic change.

The first task is to remodel epistemological/ontological uncertainty into stable/unstable periods and expand the matrix to 2 × 2 by adding ceremonial/industrial differentiation to existing categories. The second issue is resolved by providing mechanisms by which changes in the uncertainty category of the economic environment are created, thereby providing space for institutions of every category to exist and have a rationale for their existence.

Table 2

Evolutionary taxonomy of uncertainty

Value/Period	Stable	Unstable
Ceremonial	Ceremonial Stable	Ceremonial Unstable
Industrial	Industrial Stable	Industrial Unstable

Source: the author's own elaboration.

Table 2 presents the taxonomy adjusted to address the first issue. The taxonomy, modified for the purpose of reflecting evolutionary character and the Veblen dichotomy, is called the evolutionary taxonomy of uncertainty in this article. The distinction is created along the stable/unstable and ceremonial/industrial lines. The stable/unstable demarcation is at the same time a category of institution and a feature of the institutional economic environment in which agents make decisions, while the ceremonial/industrial distinction concerns function. The subject of categorizing is the function of an institution that influences the uncertainty; the same institution can have different functions and is able to change from stable to unstable and vice versa.

The logic behind the reality distinction is that economic agents, in order to undertake any economic decision involving the possibility of losses, need to have certain level of confidence in some core assumptions. Such as the market not crashing completely, the business not being nationalized without compensation, ownership laws being enforced, inflation not getting out of control, need to be hold, and agents need to have confidence that these core assumptions will continue to hold (Dequech, 1999). Unfortunately, inflation does get out of control sometimes, and crises, pandemics, and other significant adverse events happen. In such situations, agents lose confidence that the core assumptions will be true. The period, not measured chronologically, when the agent has confidence that the core assumptions will be true in the not-too-distant future is called a stable period and corresponds to ergodic reality. The rationale is that when agents believe that the core assumptions will be true in the future, information currently true or that was true in the recent past becomes an accurate predictor of future information. Similarly, an unstable period corresponds to non-ergodic reality, and the logic behind it is that, when agents do not believe even in core assumptions about the economic environment, they do not place any confidence in past information holding true in the future.

Core expectations denote economic agents' confidence that specific institutional arrangements and 'rules of the game' will endure with sufficient predictability to render economic activity intelligible and practicable. These expectations encompass the enforceability of property rights, the continuity and credibility of the monetary regime, the fundamental reliability of contractual obligations, and the presumption that political authorities will refrain from arbitrary suspending, interfering with, or expropriating economic activity.

What differentiates core expectations from ordinary forecasts is their systemic and constitutive character. Errors in price or demand expectations are ordinarily accommodated within prevailing institutional structures and, in isolation, do not compromise agents' capacity for purposive action. By contrast, violations of core expectations undermine agents' confidence in the use of past experience as a guide to future behaviour. Under such conditions, uncertainty becomes non-ergodic not primarily because of high variance in observable outcomes, but because the underlying assumptions that render experience interpretable and projectable are themselves called into question.

Accordingly, stability should not be conflated with the mere absence of shocks, low volatility, or smooth macroeconomic aggregates. A historically stable phase may encompass recurrent disturbances, provided that agents continue to regard these disturbances as transient deviations embedded within a durable institutional order. Conversely, instability does not presuppose continuous or dramatic shocks; a persistent erosion of confidence in core expectations, such as mounting doubts about monetary sustainability or the political enforceability of rights and contracts, can shift the economy into an unstable regime even during periods of superficial calm.

This conceptualization is consistent with the post-Keynesian emphasis on confidence and non-ergodicity, while extending it in an evolutionary and institutionalist direction. Stability and instability are thereby construed not merely as properties of objective states of the world but as historically contingent outcomes of shared, socially mediated assessments of institutional continuity. As institutions evolve and collective narratives are updated in light of past events, the content and structure of core expectations may themselves be reconfigured, enabling transitions from unstable to newly stabilized regimes without implying convergence towards any teleologically defined, unique equilibrium.

The ceremonial function of an institution denotes the ways in which it satisfies individual wants and reinforces or elevates the social position of individuals or groups, often at the expense of broader social well-being regarding uncertainty. An example would be the provision of cash reserves and/or low-interest loans to businesses selected at the discretion of the authorities. An additional cash cushion provides a basis for these businesses to continue and expand their operations, enabling them to overtake their competitors. On the other hand, if such support were provided successfully with the goal of preventing job losses, and thus preserving people's livelihood, it could be argued that it performed an industrial function.

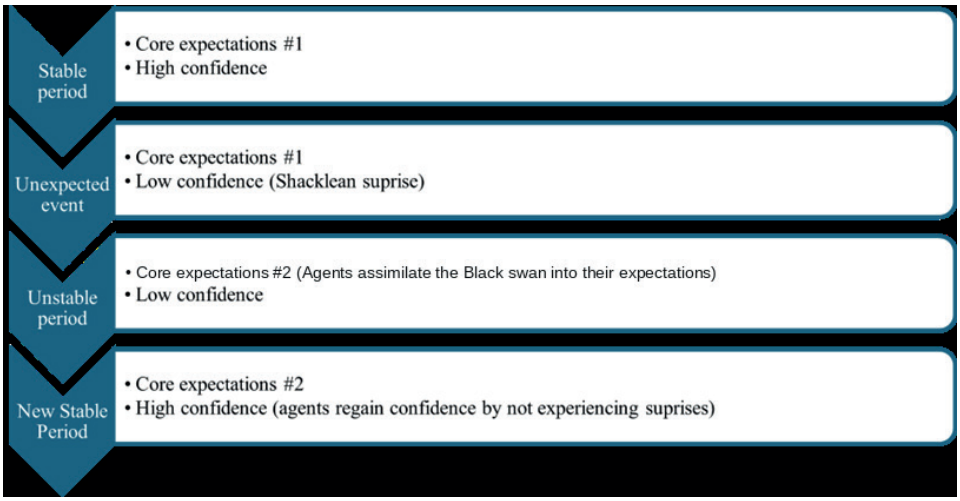
The evolutionary taxonomy of uncertainty consists of four categories: stable ceremonial, stable industrial, unstable ceremonial, and unstable industrial. Stable ceremonial and unstable industrial institutions provide the clearest examples of institutions. Stable ceremonial institutions are institutions that boost everyday profit, such as hostile takeovers, wide-ranging lending with low interest rates, and high-leverage expansion practices. They work well for generating profit if everything behaves in a predictable way. When a crisis occurs, and many people lose their jobs, many unstable industrial institutions gain momentum, and their goal is to help society as a whole with a focus on the poorest, who are most in need of help. Such institutions include unemployment benefits, job guarantees, projects aiming to employ people who have lost their jobs because of a crisis, etc. Unstable ceremonial institutions have the goal of preserving certain groups, especially businesses, during a crisis, without deliberation as to how this will influence the general well-being of society. They are often masked as unstable industrial institutions, for example when financial support is presented as a way of saving jobs, even though the jobs concerned do not exist in the country, as in the case of international companies whose employment base is located abroad. Stable industrial institutions are institutions that fulfil the needs of society only when the environment is predictable. They include, for example, food or housing programmes started by business-dependent entities, such as not-for-profit branches of for-profit companies that provide necessities for the poor.

The second issue of evolutionary characteristics needs to remain partially open due to the very nature of the inquiry. The mechanism by which the environment changes and evolves is not and never will be static; relations between the elements of institutional system change all the time (Hodgson, 2004). The mechanism uses two famous concepts: black swans (Taleb, 2007) and Shacklean surprise (Shackle, 1953). Shacklean surprise refers to how agents react when, in a stable situation, a crisis occurs: they are surprised because their expectations fail. However, in unstable environments, broken expectations do not surprise them, since they never trusted those expectations. Black swans show how unexpected events are absorbed into agents' expectations, helping them better interpret current events and rebuild confidence.

Figure 1 presents this mechanism, starting from a stable situation, or stable period, in which agents possess a set of core expectations #1 and high confidence. An unexpected event occurs, breaking their confidence and greatly surprising them, thereby lowering their confidence in core expectations. After a while, agents start to internalize the unexpected event, including it in their narrative and treating it as if it were obvious that this event was going to happen, a process described in Taleb's *The Black Swan*. The new narrative is represented by new core expectations #2, which include the unexpected event. Through the process of not revising their beliefs, in other words, through a lack of surprises, agents gain confidence in core expectations #2, moving the environment into new stable period.

Figure 1

The mechanism of change in the environment due to Core Expectation Changes



Source: the author's own elaboration based on Shackle (1953) and Taleb (2007).

The described mechanism is one of the potential mechanisms that describe relationships within the evolutionary taxonomy of uncertainty. Mechanisms that match evolutionary taxonomy can be found in Veblen's works, often with historical examples.

2. Historical example: Institutional change in the era of state-making in Continental Europe

Veblen (1914) explains the distinctive emergence of the Industrial Revolution in Great Britain by reference to institutional evolution during the transition from handicraft to early industrial production. In Continental Europe, the development of handicraft and petty trade generated technological progress, higher productivity, and a growing commercial surplus. Yet these advances also produced instability, as institutions failed to maintain a balance between their industrial, or productive, and ceremonial, or pecuniary/status-orientated functions (Veblen, 1919, pp. 124–125).

The era of handicraft marked the transition from feudal servility to a semi-property-based order. Production relied on the skill, diligence, and autonomy of the craftsman; reputation and livelihood were to a greater degree grounded in workmanship than in feudal times (Veblen, 1914, pp. 233–239). With the rise of petty trade and the division of labour, production expanded and generated larger material and financial resources. Wealthier masters and merchants emerged, separating ownership from craftsmanship. As Veblen (1914) put it:

> Through its side issue in the commercial enterprise which it fostered the handicraft industry brought to the hands of politicians a further means of trouble. The trade brought on the price system, and so made it possible for ambitious princes to buy what they needed in their warlike negotiations; with funds in hand stores and munitions could be bought where they were needed, so enabling warlike operations to be carried on with greater facility at a greater distance than was feasible under the earlier rule of contributions in kind. … The game was then as always, an emulative one, in which any advantage was a differential advantage only. ... Hence they borrowed what they could and where they could, their borrowings being floated by the help of all manner of expedients. Some of these fiscal expedients brought monopolistic advantage to the captains of industry and so contributed to their further gain and to the concentration of wealth in fewer hands. (p. 272)

Through commerce and finance, the industrial surplus became the basis for state-making. The growing wealth of cities and merchants allowed rulers to finance wars and political ambitions. Funds became 'the sinews of war', as princes borrowed heavily from captains of industry, mortgaged future revenues, and imposed fiscal exactions on trade (Veblen, 1914, pp. 272–274). The interaction between rulers and financiers, motivated by rivalry and dynastic ambition, consumed the material base of the industrial community. Once the accumulated surplus was exhausted, economies collapsed into bankruptcy and depopulation, and regressed in terms of the available body of knowledge. Veblen (1914) summed it up this way:

> So, when all available resources of revenue and credit, present and prospective, had been exhausted, and all the accessible material had been consumed, the princely fisc went into bankruptcy, followed by its creditors, the captains of industry, followed by the business community at large with whose funds they had operated and by the industrial community, whose stock of goods and appliances was exhausted, whose trade connections were broken and whose working population had been debauched, scattered and reduced to poverty and subjection by the wars, revenue collectors and forced contributions. Meantime, too, habituation to the sentiments, ideals, standards and manner of life suitable to a state of predation had swamped the handicraft spirit and put abnegation and dependence on arbitrary power in the place of that initiative and pertinacious self-reliance that had made the era of handicraft. It was from this eventuality that England in great measure escaped by favour of her insular position and the inability of her princes to draw a reluctant industrial community into the traffic of dynastic intrigue that filled the Continent. (p. 273)

From the perspective of the evolutionary taxonomy of uncertainty, these developments illustrate how the evolution of institutional functions changes agents' perception of the stability of core expectations. The handicraft era exemplified an industrial stable condition. The confidence in the workmanship and steady material progress encouraged long-term production and innovation. As the price system expanded and inequality deepened, ceremonial values – prestige, accumulation, and emulation – gained strength. Institutions entered a ceremonial stable phase: still productive, yet increasingly orientated toward pecuniary gain rather than communal service. The very conditions that allowed production to grow created much of the resources that allowed princes to fulfil their ambitions. Growing concentration of wealth created a need for greater wasteful spending, with war at the top of the list

for the wealthiest people in power (Veblen, 1914, p. 273). The later era of state-making reflected a shift to ceremonial unstable conditions. The diversion of industrial surplus to war and fiscal exploitation destroyed trust in both the market and the stability of the economic system. Economic agents found themselves in seemingly endless and total war, lost their confidence in the stability of the current economic system, and had to rethink their expectations. Due to the low level of economic activity, modern economic institutions such as the division of labour, manufactories, lost their footing in Continental Europe for some time.

Connecting this with the previously proposed mechanism, the described situation could be described as two processes in play: the changes in institutional function due to feudal institutions, which resulted in the concentration of wealth in hands of warmongering princes, and changes in the stability of the institutional environment due to changes in institutional function. The new reality, in which the princes realized endless and large-scale war, breached agents' expectations. During the process of exhausting resources, agents assimilated the new reality, and new sets of core assumptions gained credibility only after the wars ended. Both the exhausted resources and agents' perceived assumptions, which did not allow for a greater division of labour in production, halted the development of the industrial revolution in Continental Europe.

3. Contemporary example: The 2008 financial crisis

The decades preceding the 2008 crisis were characterized by an accelerating process of financialization – the growing tendency for profit-making in the economy to occur through financial channels rather than through productive activity (Krippner, 2011). From the 1980s onwards, successive waves of deregulation dismantled the regulatory architecture established after the Great Depression, blurring the boundaries between commercial and investment banking, and enabling the rapid expansion of securitization, derivatives markets, and leverage across the financial system (FCIC, 2011). Financial institutions, rating agencies, and regulators shared a set of core expectations that had come to function as institutional certainties: that housing prices would not fall nationally, that diversification through securitization had effectively distributed and neutralized systemic risk, and that self-regulating markets required only light-touch oversight.

From the perspective of the evolutionary taxonomy of uncertainty, this period exemplified a ceremonial-stable condition. The dominance of pecuniary and status-oriented values in the financial sector – the pursuit of short-term returns, the emulation of high-leverage strategies across institutions, and the ceremonial authority granted to credit rating agencies – reinforced a shared confidence in the stability of these core assumptions. Institutional functions became increasingly ceremonial in character: financial innovation was not primarily oriented towards expanding productive capacity but towards gen-

erating financial surplus and distributing it upward. As Minsky (1992) had argued, prolonged stability in such an environment is itself destabilizing, as it encourages the progressive shift from hedge to speculative and ultimately Ponzi financing structures. The very stability of the ceremonial regime created the conditions for its collapse.

The rupture came when the core assumptions underpinning the system were exposed as unfounded. As house prices began to fall in 2006–2007, the logic of mortgage-backed securities unravelled rapidly. Confidence in the instruments, in the institutions holding them, and in the broader framework of self-regulating financial markets collapsed together. The bankruptcy of Lehman Brothers in September 2008 marked the moment at which agents could no longer maintain confidence in any stable set of core expectations about the economic environment. Uncertainty shifted from the epistemological to the ontological register: the rules of the game themselves were in question (Davidson, 1991). This transition corresponds to a shift into a ceremonial-unstable condition – the institutional functions remained predominantly ceremonial, but the perceived stability of core expectations had been destroyed.

The policy response that followed illustrates the mechanism of narrative reconstruction. The emergency interventions of 2008–2009 (bank bailouts, the Troubled Asset Relief Program, and subsequently quantitative easing) were not merely technical measures but represented a reconstruction of the institutional narrative around which agents could rebuild their core expectations. Central banks, and particularly the Federal Reserve, took on the role of guarantor of last resort for the entire financial system, a function far exceeding their pre-crisis institutional mandate. Over time, a new set of core expectations gradually stabilized around the post-crisis framework: low interest rates as a permanent feature, central bank intervention as a backstop, and the implicit guarantee of systemically important institutions. This new stable configuration – whether industrial or ceremonial in character remains an open interpretive question – represents the emergence of a new stable regime, though one built on a different institutional foundation from that which preceded the crisis.

Connecting this with the mechanisms proposed in section IV, the 2008 crisis can be described as a two-stage process. First, there was a functional shift: the growing dominance of ceremonial over industrial functions in the financial sector, driven by financialization and deregulation, eroded the productive foundations of confidence in core expectations. Second, there was a collapse of expectation stability: once the ceremonial assumptions proved unfounded, agents entered a condition of ontological uncertainty from which recovery required not merely policy intervention but a wholesale narrative reconstruction of the institutional environment. Unlike the historical case drawn from Veblen, where reconstruction was delayed by the exhaustion of resources and prolonged conflict, the 2008 case demonstrates that sufficiently powerful central institutions – operating in an industrial fashion – can accelerate the

transition toward a new stable regime, though the ceremonial or industrial character of that regime depends on the nature of the narrative reconstruction undertaken.

V. DISCUSSION

The results indicate that the evolutionary taxonomy mitigates the static character of the PK taxonomy by explicitly incorporating uncertainty into processes of institutional change and into underlying value structures. However, several issues warrant further examination.

First, the proposed framework remains primarily conceptual and relies on reinterpretations of Veblen and post-Keynesian authors. As in the case of Davidson's taxonomy, this dependence on theoretical reconstruction constrains its operational applicability and makes empirical identification of transitions between regimes difficult. In particular, the absence of clearly defined and measurable indicators that distinguish relatively stable from unstable periods constitutes a methodological limitation that calls for additional research.

Second, although the taxonomy draws on Bush's concept of institutional functions rather than classifying institutions as purely ceremonial or industrial, the analytical demarcation between different functions can encounter practical difficulties. Authors such as Todorova (2015) and Bush (1983) recognize that these functions frequently overlap and evolve over time. Although the taxonomy attempts to accommodate this ambiguity, numerous empirical cases are likely to remain challenging for such functional classification.

The historical illustration drawn from Veblen's work provides qualitative support for the taxonomy, showing how shifts in institutional functions can align with changes in perceived stability. Nevertheless, this example should be supplemented by systematic empirical testing. Future work should therefore translate the mechanisms of core expectation stability, functional shifts, and narrative reconstruction into testable variables, allowing the framework to be applied to contemporary institutional dynamics.

For example, it is possible to link core expectation stability with precautionary saving, understood as the length of time for which a household could live solely on its liquid assets, and to examine how levels of precautionary saving change after an uncertainty shock in households. The hypothesis would be that the level of precautionary saving follows a path of involving an initial rise immediately after the shock, stabilization at a high level, and subsequent decline towards a new normal level. This path can theoretically be linked with the mechanism of change from stable to unstable and then to newly stable conditions, with differences in confidence level between the periods. Overall, the findings support an institution-centred and evolutionary interpretation of uncertainty, while simultaneously underscoring the

need for empirical operationalization, refinement of functional distinctions, and more explicit criteria for identifying transitions between distinct uncertainty regimes.

VI. CONCLUSIONS

This paper has proposed an evolutionary taxonomy of uncertainty that integrates post-Keynesian insights on expectations with Veblen's institutional theory, including his concepts of cumulative change and the ceremonial-industrial value dichotomy. Unlike static or teleological classifications, the framework views uncertainty as a cumulative and adaptive process shaped by evolving institutions, narratives, and value structures.

By distinguishing between industrial and ceremonial functions within stable and unstable periods, it captures how economic agents reinterpret the stability of their core expectations and how institutional responses evolve in turn. The four regimes – industrial-stable, industrial-unstable, ceremonial-stable, and ceremonial-unstable – reflect not fixed states but recurring configurations in the co-evolution of behaviour, policy, and confidence about core expectations.

This evolutionary approach restores uncertainty to its historical and social context: a dynamic expression of institutional change, narrative reconstruction, and shifting collective beliefs. It thus provides a non-teleological analytical tool for understanding crises, transformation, and resilience in modern economies.

The analysis is conceptually grounded and therefore limited by the absence of empirical testing. Future research could operationalize the taxonomy, examine transitions using historical or contemporary data, and assess its relevance for policy design. The framework also suggests practical implications for institutional analysis, particularly for understanding shifts in stability and crisis response

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