FROM DECENTRALIZATION TO ETHICAL RESILIENCE: A CRITICAL REAPPRAISAL AND EXTENSION OF HAYEK'S THEORY OF KNOWLEDGE IN SOCIETY

FRANS LAVDARI*

Abstract:

Friedrich Hayek's The Use of Knowledge in Society presents a seminal argument for the virtues of decentralized knowledge and the price mechanism, positing that markets, by leveraging dispersed, context-specific knowledge, can achieve efficient resource coordination without central oversight. Hayek's work has deeply influenced economic thought, particularly in its defence of spontaneous order and its critique of central planning. However, Hayek's framework, developed in a pre-digital and less interconnected economic landscape, reveals limitations when confronted with today's challenges, such as digital monopolies, ecological degradation, and economic inequality. This article critically examines Hayek's theoretical positions, revealing inconsistencies and limitations when applied to the complexities of modern global economies. The article then presents an evolved framework—the Ethically Resilient Market Theory (ERMT)—which builds upon Hayek's insights, incorporating principles of ethical accountability, ecological valuation, and resilience to address the ethical and practical demands of contemporary economic life.

Keywords: Decentralized Knowledge, Digital Monopolies, Ethical Resilience, Market Coordination, Price Mechanism.

JEL Classification: B25, D83, E02, L51, O33.

* Sapienza University of Rome, Italy
frans.lavdari@outlook.com

1. Reconceptualizing Hayek's Notion of Dispersion of Knowledge in Today's Context

Friedrich Hayek's 1945 article, *"The Use of Knowledge in Society"*, is one of the foundational texts of economic theory, representing a sophisticated critique of centralized planning and an equally powerful defence of decentralized market systems. In his article, Hayek develops what has since become known as the "knowledge problem," the epistemological fatal flaw in centralized economic coordination, where he argues that knowledge is intrinsically localized and particular to the context of the individual. He goes on to say, "practically every individual has some advantage over all others in the knowledge of a particular circumstance" (Hayek, 1945, p. 521), thereby underlining his assertion that a decentralized system is peculiarly capable of making effective use of the fact that knowledge is widely dispersed. Hayek's contribution brought to the fore knowledge as situational, dynamic, and diffused-these were pioneering thoughts during the atomization of central planning frameworks into the majority socialistic economies.

We began with Hayek's case for the market resting on prices as a facilitator of signalling to people, enabling them to make economically rational decisions with their fragments of localized knowledge. In a free market, prices convey shorthand ways of revealing scarcity and demand. From such prices, people are able to adjust their behaviours appropriately. For example, if the price of a certain good rises, this is an indication of increased demand or low supply, which should spur producers to increase production and consumers to use in moderation. Hayek describes this as "spontaneous order"; he conceptualizes it as an emergent, self-correcting equilibrium, impregnated with the dispersed and dynamic knowledge of those individuals involved. The attribute of the market as a collecting device for knowledge has consequences, beyond the boundaries of pure economic theory, for political philosophy; thus, notions of individual freedom, autonomy, and arguments about stateless government of society come forth.

Pragmatic and philosophical considerations alike underlie Hayek's judgement concerning centralized economic planning. What he is saying practically amounts to his belief that no central authority could either acquire or use the masses of information

https://doi.org/10.70150/dgk3a826

necessary to make sensible decisions in a comprehensive economy. And as he sees things, the knowledge required by economic coordination, is in its very nature too scattered, too context-dependent and too dynamic to be usefully aggregated at the centre. Knowledge for Hayek is not only an epistemological limit; it is, further, the rebuke to conceit that he considers characteristic of centralized modes of governance. In its most philosophic avatar, Hayek's theory allied a commitment to individual self-determination in its insistence that markets preserve the self not by protecting individuals from their own decisions but by allowing them to act on the particular knowledge they have. This one aspect of Hayek's scholarship falls in line with greater liberal philosophy; his framework carries on with the structure of the society that respects the independence and diversity of individual perspectives.

Indeed, in so many respects, Hayek's notion of the market as a spontaneous order embraced an entirely bundled set of insights concerning society and the individual's freedoms. He argues that one way of attaining coordination, via the price mechanism conveying the relevant information concerning scarce means and desired ends, is far from requiring any such rigid, authoritarian structures. This contrasts completely with central planning, which Hayek attacks as essentially authoritarian and quite unworkable, given the impossibility of an organization's being privy to all relevant facts. Markets, Hayek insists, are in one respect an answer to the knowledge problem and, because of that, a protector of individual liberty, permitting people to decide matters in terms of their respective circumstances instead of the arbitrary dictates of a faceless authority. Thus, it is a moral issue with him no less than an economic justification of the decentralized markets within which one could have liberty and efficiency within a system which respects the diversified nature of individual knowledge (Yoon, 2023). But, while the insights of Hayek concerning decentralized knowledge and the price mechanism did create a revolutionary impact on thinking, his model was conceived against the background of a vastly different historical context-one that lacked many of today's technological, social, and ecological complexities. Composed in the aftermath of World War II, Hayek's theoretical framework spoke to a setting mainly characterized by either local or national economies, where the main alternative to market mechanisms of allocation seemed to arrive from centralized and government-driven models. In contrast, the networked, digitized, and ecologically aware economic structure of the 21st century introduces complexities that seem to question the applicability of Hayek's paradigm. Especially, the founding assumptions of his theory on the dispersion of knowledge and neutrality of the price signal show, when put within the contemporary setting-digital monopoly, ecological emergency, and general inequality-their limits.

This creates digital monopolies in any given field and conglomerates all consumer data, which is a big blow to the Hayekian concept of dispersed knowledge.

In contemporary economic contexts, businesses like Google, Amazon, and Facebook have amassed significant amounts of data related to consumer behaviour, essentially centralizing knowledge Hayek believed would remain dispersed. But these companies not only possess all the relevant knowledge with which to understand market responses, they also possess the power to directly influence consumer behaviour. Algorithmic pricing by these firms, for example, allows for instantaneous price updates in response to personalized data from consumers in order to manufacture artificial demand or scarcity that potentially distorts conventional price signals. The prospect of this form of data-driven manipulation scrambles Hayek's assumptions of the character of dispersed information and introduces ethical issues concerning the centralization of epistemic power. Other thinkers, for example, Shoshana Zuboff in her book with the title *The Age of Surveillance Capitalism* (2019), think that these methods denote a sort of "surveillance capitalism," where corporate subjects gain an unparalleled influence on the information flows forming the activities within markets. Moreover, Hayek had little recourse to the price mechanism as an encompassing signal of social needs in the context of ecological sustainability. Conventional pricing mechanisms reflect direct human needs but do not include the broader ecological costs. As such, the prices of fossil fuels do not reflect the ecological damage due to carbon emission, let alone encouraging conservation of natural resources. Hayek's concept is very anthropocentric in that prices will always automatically reflect the demand of society; such an assumption fails to recognize ecological cost of consumption. As the ramifications of climate change become increasingly apparent, it becomes clear that price signals are inadequate in communicating ecological costs. Scholars like Nicholas Stern (2007), in his work *The Economics of Climate Change*, contend that it is essential for markets to incorporate environmental externalities in order to confront the existential dangers associated with ecological degradation. This perspective indicates that a solely market-oriented strategy is inadequate for the sustainable management of resources. Apart from the various digital monopoly challenges imposed on his framework and environmental crisis, he also suffers from a binding in explaining the realities of economic inequality. The respective theory assumes that people can afford the wherewithal financially to act on price signals and thereby be substantive participants in the market processes.

But economic inequality frustrates this freedom for many-most obviously, when access to basic needs-housing, healthcare, and education-is beyond the purchasing power of the less well off. Lacking the wherewithal, individuals are, in effect, excluded from access to the coordinating market mechanism so that, for large groups of people, Hayek's spontaneous order is impossible to attain. Indeed, in perhaps the most influential work, Development as Freedom, philosopher and economist Amartya Sen (1999) offers an important critique, arguing that freedom and agency depend, at bottom, on access to the set of basic resources. For Sen, economic freedom involves more than merely engaging in market transactions; instead, it involves the ability of individuals to exercise their choice in actually fulfilling their real needs and interests.

A pointed conjunction in the manner of centralized data management, environmental degradation, and socioeconomic disparity underlines how incomplete or wanting the Hayek approach has been-whereby the valid contribution of Hayek needs modification in the new unfolding complexities of the growingly globalized and ecologically sensitive paradigm. More recently, authors like Mariana Mazzucato (2018) and Joseph Stiglitz (2002) pressed for an active role in terms of market coordination in ways which take account of social and environmental externalities over and above information asymmetries. Mazzucato argues, for example, in her book, The Value of Everything, that where it comes to public goods, such as health and environmental sustainability, market mechanisms are simply insufficient. On a related note, Stiglitz supports his case against the efficiency of the markets-when information asymmetry and monopoly practices make distortions neutralize the price signals.

Taking these criticisms for a lead, this article develops a more elaborated theory, herein referred to as the Ethically Resilient Market Theory (ERMT), which integrates the important elements of Hayek's work on distributed knowledge but modifies them according to the ethical, ecological, and resilience-related demands exerted by today's economic conditions. Whereas it takes its grounding from Hayek's idea about the importance of dispersed knowledge and spontaneous order, it goes further to underline the underpinning of moral accountability, ecological judgment, and systemic sustainability. In so doing, it tries to construct a market system that, while respecting the autonomy of the individual agent, would give due recognition in return to the welfare of the common good and environmental stewardship. In other words, it would mean for ERMT that the conceptual step away from the one-dimensional measure of shortage and demand in the multi-dimensional "ethical-economic index" has to be a socio-ecological one: "Prices would then convey not only economic scarcity but also environmental impacts of production and moral claims at the level of resource distribution.". ERMT deals with these problems caused by data monopolies through the infusion of principles of transparency and sharing of data that avoid the centralization of informative powers. It also starts mechanisms of equity in participation so that all people, regardless of their social class, have access to resources that allow them to effectively participate in the market. With such modifications, it represents the state-of-the-art model of economic coordination under Hayek's notion of decentralized knowledge and, in the process, addresses concretely the requirements of the global economy in the 21st century. It conceives of markets not merely as means of allocating resources but as moral ecosystems negotiating between individual liberty and collective responsibility. It is envisaged that it would theorize market systems through increasing demands for resiliency, sustainability, and equity through infusions of ethical accountability, ecological sustainability, and inclusiveness.

2. Hayek's Theory of Decentralized Knowledge and the Price Mechanism

Friedrich Hayek's famous essay "The Use of Knowledge in Society" starts with a controversial statement regarding the character and dispersion of knowledge within society. As Hayek would have it, knowledge is strictly decentralized among the individual members of mankind, each with knowledge and information about his circumstances. This-the "knowledge problem-sets the foundation for Hayek's argument against centralized economic planning and underlines his case for market-oriented systems. As Hayek expressed it, no central authority could possibly centralize and utilize economic knowledge since such knowledge is, in its essence, fragmented and transient. On the other side, he believed that the fragments of knowledge are being coordinated through a special kind of dispersed mechanism, viz. the price system. Hayek insisted that "practically every individual has some advantage over all others in the knowledge of a particular circumstance" (Hayek, 1945, p. 521). In this, he reflects his belief in the importance of individual contributions to the economic system-a theme continuing throughout his work.

Central to Hayek's theory is the idea of the price system as the solution to the problem of knowledge. One example is the role of prices: prices reduce cumbersome information on scarcity, demand, and resource availability into an intelligible form for the individual decisionmaker who has no knowledge whatsoever of the total economic structure. When the circumstances change, prices change; and this allows changed actions on the part of consumers and producers. Thus, this poor yield due to the rapid increase in the price of wheat is the clear call to the

consumers to reduce consumption and to the producers to seek ways of increasing supply. In the opinion of Hayek, the markets hence can arrive at the optimal allocation of resources by decentralized decision making and hence the existence of the central authority is not required. He describes the process as “spontaneous order”, a term to capture its emergent and self-organizing features in the markets (Hayek 1945, p. 526). From a philosophical point of view, Hayek's dependence upon the price mechanism speaks to his commitment to individual liberty and an abiding distrust of central authority. In this sense, for Hayek, the market is respectful of the heterogeneity of knowledge and experience that exists in society because individuals are allowed to act where their particular knowing is greatest. The regard for localized knowledge finds harmony with the epistemological theories posited by philosophers like Michael Polanyi. In his work, The Tacit Dimension, Polanyi contended that knowledge frequently relies on context and resists complete articulation (Polanyi, 1966). Polanyi’s concept of tacit knowledge corresponds with Hayek’s assertion that a substantial portion of the knowledge guiding economic decisions is implicit, ingrained within particular contexts, and eludes centralized systems. In this respect, Hayek and Polanyi argue for decentralization of decision-making as prerequisite for conserving the subtle and local knowledge of men.

In contrast, the contribution by Hayek is rather a serious critique of the central planning system. He foresees problems related to cognition. Such a system requires informational control of the decision makers, more or less unattainable in real life. He extends this further into the philosophical realm when he says that central planning constrains human liberty since it cannot utilize the particular, localized knowledge of the individual mind. To Hayek, the price mechanism can serve the dual purposes of being an efficient means of coordinating economic activity with a means of preserving human freedom whereby men can respond to market signals rather than to the dictates of a central authority. The conception of the market as an institutional arrangement of cooperative interaction combined with informational competition squarely challenges the idea that the needs of society can be met by central planning.

While Hayek's schema of dispersed knowledge and the price mechanism is fruitful of insight, it also reveals some theoretically limiting aspects. Hayek's reliance on prices as comprehensive reflectors of scarcity and demand is grounded in the economic environment of knowledge dispersion and somewhat equal distribution of information. While such a presupposition seemed plausible in the times of Hayek, nowadays, it faces serious criticism on the basis of digital monopolies aggregating data in the contemporary economy. When today's Amazon, Google, or Facebook can acquire, master, and control consumer information on an unprecedented scale, it can shape the market through patterns of leading consumer behaviour in directions that violate Hayek's assumption of diffused information, and by altering consumer tastes by manipulating their algorithms to manufacture artificially created demand or scarcity, masking the neutrality of the price signal. With that centralization of data, such researchers as Shoshana Zuboff (2019) even go further to claim that it is actually "surveillance capitalism," whereby corporate institutions get hold of information flows through which economic transactions are influenced. With such prominence, this is directly opposite to Hayek's vision of markets as a self-organizing, decentralized structure and raises ethical issues regarding the role of data in advanced economies. Another limitation, in using Hayek's framework to consider environmental sustainability, is that while the price mechanism could bear out adequate information about human scarcity and demand, through his lens, wider ecological costs of consumption and production are ignored. For instance, the prices of fossil fuels in no way reflect their environmental damage in the form of carbon emissions, let alone incentivize the protection of biodiversity. It is anthropocentric in its very foundational structure: prices reflect the needs of the social body. Yet, the assumption misses the ecological footprint coming out of consumption in many traditional price signals. For instance, theorists like Nicholas Stern (2007) argue that markets need to internalize environmental externalities if there is to be any hope of sustainable resource management. In The Economics of Climate Change, Stern contends that a market system which is indifferent to the ecological costs of economic activity provides no incentive for good environmental stewardship (Stern, 2007).

Finally, Hayek's theoretical structure relies on the prerequisite that people possess the necessary capital that would allow them, when receiving the appropriate price signals, to respond to the market. This assumption certainly aligns with classic liberal positions on questions of personal agency and autonomy, of course: people should be best positioned to apply their knowledge to the fluctuating market. Economic inequality restricts that agency for many, disproportionately so in those markets in which basic goods like housing, healthcare, and education exist out of economic reach for lower-income individuals. In his work, Development as Freedom, economist Amartya Sen presents a relevant critique, positing that genuine freedom and agency hinge upon the availability of fundamental resources (Sen, 1999). In the absence of adequate financial resources, individuals find themselves effectively barred from engaging in the market's coordination mechanisms, thereby making Hayek’s conception of spontaneous order unattainable for substantial portions of the populace.

The above criticisms of Hayek point out that his

theoretical construction is not very well-equipped to deal with the moral and structural issues of contemporary advanced economies. However germane the Hayekian model as of views on how fragmented knowledge performs its role in economic coordination, it does need revisions to amply account for data concentration in digital monopolies, environmental impact resulting from production processes, and issues of participatory hindrances of economic inequalities in markets. While this may be central to the Hayekian theoretical apparatus, insistence on the neutrality and universality of the price signal from Hayek does seem increasingly tendentious set against a background where information asymmetries, environmental pressures, and economic injustice compromise market coordinating mechanisms.

While intuitively appealing, Hayek's account of spontaneous order actually rests on an implicit faith in the efficiency and moral neutrality of markets-a presumption increasingly called into question by many recent scholars. Joseph Stiglitz also mentioned, while working on market efficiency, such cases when asymmetric information results in distorted market output, especially in those kinds of situations where only a part of the actors is in possession of special information that becomes relevant for price setting. Stiglitz did this to underline that the theoretical framework which Hayek pursued was incomplete to deal with those situations where powerful actors distort or lock up price signals and to create a better theory of economic coordination (Stiglitz, 2002). Besides, spontaneous order in Hayek is based on an assumption that the actions of individuals through the price mechanisms ensure allocation efficiency. However, other critics such as Mariana Mazzucato (2018), think otherwise. According to her, markets have no self-corrective mechanism. In *The Value of Everything*, Mazzucato argues that markets frequently neglect public goods, particularly in sectors such as healthcare, infrastructure, and environmental sustainability, where collective action is crucial. Her analysis implies that Hayek's emphasis on spontaneous order might be excessively optimistic, considering the intricate interdependencies present in contemporary economies and the substantial externalities linked to economic endeavours (Mazzucato, 2018). These criticisms, however, put even more emphasis on the need for an elaborated framework that extends Hayek's insights with respect to decentralized knowledge but develops the moral, ecological, and structural needs of the present market systems. The Hayekian interest in the price mechanism and the notion of spontaneous order indeed reflect an important foundational element for developing complex natures through the globalized, technologically advanced, and ecologically fragile environment. The following chapters will introduce an advanced theoretical framework in addressing these challenges: the so-called Ethically Resilient Market Theory, or ERMT, that will be directed at sustaining Hayek's commitment to decentralized coordination by means of introducing ethical dimensions, ecological assessment, and participatory fairness toward the construction of a more robust and ecologically inclusive economic system. While reconceptualizing the price mechanism as a multi-dimensional, complex ethical-economic indicator, it raises the price mechanism from a mere measure of scarcity and demand to a carrier of information with regard to social and environmental values. Thus, it makes market coordination congruent with far-reaching social concerns by integrating the value of social and environmental concerns within the pricing framework and gives a system that respects individual freedom while fostering the common welfare. This is how ERMT's theory contributes to the new economic organization: It supplements another different approach, other than Hayek's theory, to the peculiarities of the 21st century.

3. The Inconsistencies of Hayek's Theory in the Face of Contemporary Challenges

Friedrich Hayek's solution to the problem of dispersed knowledge through the price mechanism within a perfectly functioning market is an advanced solution to the epistemic problems of economic coordination. Using prices as the carrier of information on scarcity and demand conditions, Hayek argued that the market could coordinate resources with ease independent of any central observer. However, in as much as Hayek's contributions remain influential, contemporary economies reflect substantial limitations characteristic of his schema. Here I reflect on the identified constraints in the context of data centralization, environmental externalities, and problems of economic inequality. Each of them has disclosed an identified contradiction in the Hayek theoretical framework by showing that Hayek's leaning on the price mechanism and the assumption of dispersed knowledge are not enough to justify the ethical and structural claims coming from economic systems today.

3.1. Data Centralization and the Assumption of Dispersed Knowledge

A fundamental presupposition of Hayek's theory is that knowledge is naturally dispersed among the group's members, each of them possessing situation-specific knowledge because of his situation. Hayek argued that this fragmented distribution of knowledge makes any type of central economic planning fundamentally ineffective inasmuch as no central authority could acquire and process the enormous amount of information needed to make apt decisions on behalf of an entire economy (Hayek, 1945, p. 519).

But the rise of digital monopolies and the centralization of data run flatly counter to Hayek's assumption of necessarily dispersed knowledge. Today's giant corporations-Google, Amazon, Facebook-have access to previously unimaginable volumes of information on consumer behaviour, thus centralizing knowledge which Hayek assumed never was destined to be centralized.

This data consolidation amongst these companies strengthens their capabilities and enables them to conduct market behaviour in ways that undermine price indicators' impartiality.

They could therefore use algorithmic pricing: change the prices in real-time per consumer data, thus creating artificial sensations of scarcity or demand that actually do not exist in any market. Such manipulation of prices, however, opposes what Hayek had postulated: that prices reflect objective scarcity and demand. Shoshana Zuboff (2019) describes this phenomenon as "surveillance capitalism," arguing that such firms exert a new form of power via the control of information flows that shape economic activity (Zuboff, 2019, p. 8). Zuboff's work highlights one of the deep inconsistencies in Hayek's framework: while Hayek viewed prices as spontaneous manifestations of dispersed knowledge, modern economies show how prices can be distorted by firms with monopolistic control over information.

This, in turn, jeopardizes the equality principle that should underpin Hayek's theory, since informational power will then diffuse across a few corporations. While classically, the agents in the market act upon their local knowledge and contribution to emergent organization-a reflection of the diverse tastes and needs within society-under data-driven economy, those firms with large datasets take epistemic dominance, introducing twists in the market process. These businesses not only perceive consumer preference but also shape it, making it a vicious circle wherein the prices are changed in their favour to maximize their profit rather than depict real scarcity or demand. This concentration of knowledge is against the decentralized system suggested by Hayek, and thus, it means that the markets under digital monopolies would not keep operating on the principle of spontaneous coordination suggested by him. The ethical ramifications associated with data centralization add complexity to Hayek’s theoretical framework. Through the management of consumer data, digital monopolies engage in a type of surveillance that prompts concerns regarding privacy, autonomy, and consent. Zuboff (2019) contends that the commodification of personal data signifies a “new economic order” that emphasizes profit at the expense of individual agency (Zuboff, 2019, p. 15). Commercialization of knowledge thus evidently collides with Hayek's view of markets as mechanisms respecting individual freedom because they enable agents to act on grounds of their unique knowledge. However, within an economic environment in which data become concentrated in a few corporations, power balances change, thus undermining the moral foundation of Hayek's scheme and thereby indicating that the chasm between Hayek's theoretical axioms and the facts of digital capitalism has become fairly wide.

3.2. External environmental factors and anthropogenic bias in price mechanisms

The other strong contradiction to Hayek's theory is based on the price mechanism as an all-encompassing carrier of information regarding questions of relative scarcity and demand. According to Hayek, prices are carrying the information about the availability of resources and allow markets to function perfectly without oversight of any type. The conventional price mechanisms reflect only immediate human preferences and scarcity but not wider ecological costs. More precisely, through price, markets summarize human needs and dismiss concern about the possible ecological impact of the production and consumption. This negligence is one of the significant factors contributing to environmental degradation and global change. For instance, the prices of fossil fuels do not take into account the long-run ecological price of emitting carbon into the atmosphere and conserving natural ecosystems. Nicholas Stern (2007), in his The Economics of Climate Change, enumerates the preconditions for resource management to be truly sustainable: markets need to internalize natural externalities. As Stern (2007, p. 13) points out, this constitutes a grave failure in Hayek's model: ecological costs, excluded from the price mechanism, cannot be valued effectively by traditional markets, let alone rewarded for good behaviour. By claiming Hayek's plan may assume that price conveys societal need, but again this cedes almost all relevant ecological consequences of consumption to the invisible part of the price signal.

Correspondingly, many environmental economists have become a proponent of an extended valuation system in an effort to overcome the ecological limitations of markets. In their landmark study on ecosystem services, Robert Costanza and his colleagues make the case for incorporating environmental costs into economic valuations, asserting that ecosystems provide "natural capital" without which human life would be impossible (Costanza et al., 1997). Such a perspective challenges Hayek's anthropocentric vision of prices as neutral signals, suggesting instead that markets must evolve in a way that respects both human scarcity and the ecological renewability of natural systems. Without considering such more general ecological concerns, Hayek's scheme is profoundly limited in its capacity to engage with the existential dangers glimpsed through environmental degradation-dissonance between the dependence he placed on price signals

and the more complex, ecologically embedded reality of contemporary society.

The failure by conventional pricing mechanisms to capture ecological costs therefore carries huge ethical implications in that it jeopardizes the very principles of intergenerational equity. Some philosophers, such as John Rawls (1971), argue that a just society must look ahead into the need of future generations, so that the activities undertaken today do not use up the resources necessary to ensure their prosperity. The Hayek framework focuses merely on the functioning of the current market and is thus blind to this moral vision. By neglecting environmental effects of consumption, the conventional price tends to intensify ecological damages, which disproportionately hurt future generations. Anthropocentrism in Hayek's model points to a sort of philosophical inconsistency: his model has chosen between short-run market efficiency and long-run sustainability.

3.3. Economic Inequality and Obstacles to Market Entry

Another fallacy in Hayek's model is the assumption that people can afford to act upon price signals. The Hayek schema thus assumes that everyone has wherewithal to act upon changes in prices, hence acting efficiently in the market. However, economic injustice confines that in a large fraction of any population in most markets, given that the prices for basic goods like housing, health, and education lie beyond the reach of the poorest part of the population. Amartya Sen (1999) presents a relevant analysis in his work Development as Freedom, contending that authentic freedom and agency are reliant on the availability of fundamental resources (Sen, 1999, p. 36). In Sen's view, economic freedom cannot simply be viewed as a matter of engaging in market activities; instead, it is predicated on individuals' ability to make choices that align with their true needs and aspirations. It would be highly contentious to consider that people have an equal opportunity when economic inequality increases. When basic commodities become so expensive that part of the population cannot buy them, these people automatically get excluded from the coordinating function of the market. This constitutes an affront to the inclusiveness of the notion of spontaneous order by Hayek because it is assumed that decent coordination in a decentralized manner would require participants having equal resources. With Hayek considering the market as a mechanism of democratic, free deals, his utopia becomes unreachable for those who cannot afford the wherewithal to enter the market. It is here that one finds the weakest link within his theory-that despite Hayek's avowal of divided knowledge and the freedom of individuals, his system overlooks economic inequity, a fact that so many persons are compelled by economic restraints. Such exclusion, as can be imagined, raises important ethical questions and speaks to core issues of fairness in a system that prioritizes market efficiency over basic need. Theorists like Martha Nussbaum have contributed significantly to discussing the question of the capability approach to justice, or justice that consists of supplying individuals with the basic resources that enable them to function in an important sense (2000). In other words, from that perspective, economic inequality is not only a question of unequal income but also an attack on human flourishing. The Hayekian structure, which considers only coordination within the market to be efficient, completely ignored such moral notions. Therein lies the contradiction in Hayek: between his commitment to individual freedom and the structural causes of economic inequality.

3.4. A Call to Refine the Existing Framework

These diverse challenges point, in turn, to questions of data centralization, environmental externalities, and economic inequality that underpin the critical limitations of Hayek's reliance on the price mechanism and the assumption of decentralized knowledge. Where Hayek's insights into the role of prices in economic coordination remain apt today, his theory is increasingly inapplicable to the ethical and structural demands placed on advanced economies.

Against the background of information channelled through digital monopolies and ecological degradation threatening the next generation and polity, the proposition of Hayek on spontaneous order sounds vastly reductive. These limits set the order that, although Hayek's construction was of great importance, it needs a revision to meet the complications arising today within the economy. Academics such as Joseph Stiglitz (2002) and Mariana Mazzucato (2018) have been more interventionist in methodological terms, calling attention to the role of information asymmetries, social externalities and public goods. In her latest book, *The Value of Everything*, Mazzucato makes this case: that markets left to their own devices cannot deliver collective needs in the areas of health, infrastructure, and environmentally sustainable investment. The former indeed criticizes Hayek for resting on spontaneous order probably a bit too idealistically, considering the great magnitude of externalities arising from economic activities. The following chapters will introduce the Ethically Resilient Market Theory, or ERMT-a thought pattern that also remains committed to Hayek's emphasis on the decentralizing coordination logic of markets but does respond to significant ethical, ecological, as well as structural imperatives for the current economic life. In this respect, ERMT re-conceptualizes the price mechanism into a multi-dimensional ethical-economic indicator, whereas its meaning shifts from a pure representation of scarcity and demand into a device of information about social and environmental

values. By embedding social and environmental values into the price mechanism, it aligns market coordination with wider social imperatives and provides a conceptual platform that also respects individual self-determination while promoting the common welfare. In so doing, it provides a new framework of economic coordination, one rooted in the tradition of Hayek but addressing the specific features of the 21st century.

4. Toward an Evolved Theory: The Ethically Resilient Market Theory (ERMT)

In view of such constraints understood within Hayek's theory, the required development has to be a high-level model of economic coordination that embeds the basic insights of Hayek's decentralized knowledge and the price mechanism but develops them further to meet the ethical, ecological, and structural demands of modern society. The Ethically Resilient Market Theory represents a further step ahead in economic thought, offering a conceptual framework whereby ethical consideration, environmental sustainability, and inclusiveness are hosted right in the very basic working of market coordination. The ERMT follows Hayek's basics but reinterprets the price mechanism in a multidimensional "ethical-economic index" that, alongside scarcity and demand, it conveys values relating to social and environmental, and resilience-related issues. Here I explore the foundational elements of it necessary to extend Hayek's theory in ways that construct a model of the market compatible with both individual freedom and social responsibility.

4.1. Decentralized Knowledge and Dynamic Transparency in ERMT

Central to Hayek's theory is this notion of decentralized knowledge-that knowledge is uniquely and contextually held by individuals, and it is impossible to aggregate it or use it effectively by a central authority. ERMT retains this commitment to decentralized knowledge but adjusts this to the realities of a data-driven economy in which the knowledge is usually firmly concentrated within the digital monopolies. It is against this agglomeration that it theorizes dynamic transparency as a methodology that restores the symmetrical distribution of information argued for by Hayek.

Dynamic transparency would presuppose, first, that major data controllers-the big technology companies-publish non-proprietary information in a decentralized information commons. For example, that would be a kind of virtual repository for all market participants where data concerning marketplace conditions, trends in consumer behaviour, and product information is freely available. This would mean symmetric access to information, whereby small-scale enterprises, entrepreneurs, and consumers would be correctly informed in making decisions independent of monopolistic dependence. Because of this, dynamic transparency would make informational authority decentralized with the aim of nurturing a self-managing market as exemplified by Hayek's notion of decentralized knowledge and self-managing systems.

Further, dynamic transparency also considers ethical aspects related to data privacy and personal self-determination. By insisting on data sharing within a communal model, ERMT limits good data governance and reduces risks connected with the monopolization of data. With respect to "surveillance capitalism," Shoshana Zuboff (2019) writes that data commercialization by businesses implies a new method of domination over people's lives (Zuboff 2019, p. 15). Due to these facts, it applies a clear, transparent, and decentralized data infrastructure that saves privacy and individual self-determination. Through this glass, dynamic transparency seeks to balance Hayek's commitment to individual liberty with these needs in a digital economy.

It would manage information in conformance with the ethical standards of a decentralized information commons: first, principles of transparency, data integrity, and privacy. It would avoid corporate uses of data entailing manipulative and distorting consumer behaviour or market signals. In this sense, dynamic transparency secures the veracity of price signals as a guarantee of real market conditions versus artificially contrived outcomes. This brings the pricing mechanism in tune with the best practice principles of transparency and fairness to ensure that it retains the priceless coordination Hayek valued in its original form while enhancing the ethical and informational integrity of today's markets.

4.2. The Social-Economic Index: A Pricing-for-Value That Integrates Social and Environmental Values

A major development of ERMT was the reworking of the traditional price mechanism into an "ethical-economic index," an embedded function that synthesizes social and environmental values with the facts of scarcity and demand. As explained in Chapter 3, the Hayek anthropocentric model of pricing did not measure ecological costs or the welfare of society. It will inculcate ethical and ecological concerns directly into prices in an attempt to get a more sustainable marketplace that is fair and resistant along with efficiency. The value is sought within goods and services that add to the betterment of the environment, social equity, and sustainability. It would include the ecological footprint of various systems of production and would give incentives to the consumers in case of choosing products that have less environmental cost. Goods produced in an environmentally friendly way-such as if renewable energy is used-would bear low

ecological costs. And they are highly dependent on the environment – like the use of fossil fuels or products resulting from deforestation – would be assessed with higher costs so that these wider ecological costs are shown. This is how the ethical-economic index would align incentives within markets with the care for the environment: create incentives for sustainable consumption and production.

This approach adheres to methods adopted from environmental economics, especially the concept of natural capital, put forward by Costanza et al. (1997, pp. 254). As described by Costanza, there is basic "natural capital" supplied by ecosystems that must be included in economic calculations. Ecological resilience integrated into its valuation has allowed the ethical-economic index to include ecological costs and thus turned the pricing mechanism right into an instrument that delivers the footprint of consumption. This change in Hayek's price mechanism is but an expression of the consensus reached by the economists and the environmentalists on the need for principles of sustainability to be nested inside market value for effective action by the markets to address current climate change and biodiversity loss. Aside from valuing natural capital, the ethical-economic index embodies an important element of social equity: goods and services considered to enhance social welfare-such things as low-income housing, healthcare, and education-receive social equity credits that underwrite some of the cost and make these goods and services available to the poor.

This mechanism embodies the ethical obligation to guarantee access to vital resources, corresponding with Amartya Sen's notion of "capabilities", which he posits as fundamental to human welfare (Sen, 1999, p. 36). By integrating social equity into the pricing framework, ERMT fosters inclusivity and justice, tackling the obstacles to participation that constrain agency for marginalized communities. It is for this reason that the ethical-economic index reinterprets the price mechanism as an instrument applied not only in signalling scarcity and demand but also in imparting values that are of essence in bringing forth a just and sustainable society. This will surely make the marketplaces reflect the increasingly intricate ethical and ecological imperatives of today, hence raising the price mechanism from a narrow economic tool to a wide system for guaranteeing responsible economic conduct.

4.3. Crisis-Responsive Market Nodes to Enhance Market Resilience

Hayek's theory of spontaneous order at least suggests that, in normal conditions, self-regulating capabilities of markets could perform well. It was crystal clear from the COVID-19 pandemic that during such emergency situations, a response purely grounded in market mechanisms turned out to be inadequate in preventing extreme shortages and equitably organizing the distribution of supply, other than by timely and coordinated action. This deficit in the ERMT is overcome through CRN, a temporary decentralized hub of resource management during the emergency. Crisis-response market nodes are triggered into operation at threshold conditions of scarcity or threshold conditions surrounding crisis-related ones, such as in contexts involving a natural disaster or pandemic. Such nodes employ "equity-pricing algorithms" that temporarily adjust prices based on urgency, need, and equitable access, other than the convention of supply and demand as an isolated principle. This ensures that important products remain available and within reach, at least to the vulnerable segments of society.

In autonomous decentralized traditional markets, these nodes dissolve once the crisis has passed and prices return to normal.

The foundational motivation for CRN derives from the abstract notion of "public goods provisioning," which recognizes that, when supply is squeezed, markets can occasionally allocate resources in a very uneven way (Samuelson 1954). CRNs provide temporary interventions, such as the priority of collective welfare, within those aspects where Hayek's framework seems to fall short of accounting for moral responsibilities arising during crises. It is without losing the Hayekian emphasis on decentralized coordination that CRNs serve as flexible means of assuring resilience and equity in the face of extraordinary disruptions.

4.4. Participatory Equity Credits: Increasing Opportunities for Market Participation

ERMT addresses this problem of economic inequality by providing a new financial instrument called Participatory Equity Credits that uses blockchain technology in a very innovative way to decentralize giving a greater voice and real participatory role to poor people in markets. The distribution would need to be done based on local markets, or groupings of income, so as to create for the people a basic level of purchase power in core needs like housing, health, and education. Theorizing PECs draws in part upon views emanating from the capabilities approach to justice advanced by philosophers such as Martha Nussbaum and Amartya Sen. According to Nussbaum, justice requires supplying individuals with what they need to pursue a good life, a concept consistent with the goal of participatory equity within ERMT (Nussbaum, 2000, p. 84). It issues the PEC with a view to meeting threshold needs, thus allowing economic agenthood to remain with not one person but all in society. To this extent, it can be taken as one way of democratizing access to markets, considering how Hayek claims a free market order would presuppose that knowledge and capital become dispersed across various multiple decision-makers.

Participatory Equity Credits, if embedded in an ethical-economic index, would immediately reflect changing local pricing and demand conditions-so they could never lose their relevance under altered economic circumstances. They would permit people to respond to price signals and exert their will in the market. The unique contribution of PECs within widening the bounds of economic inclusion cleans an important weakness in Hayek's theoretical framework-a kind of assumption whereby everyone has the same amount of capital uniformly. Hence, incorporation makes participatory equity turn Hayek's notion of spontaneous order into a truly democratic model in a way that preserves diversity in choice and inclusiveness.

4.5. Ecological Resilience Credits - Incorporating environmental stewardship into the market metrics

The theory of an Ethically Resilient Market furthers this with the concept of Ecological Resilience Credits, which ascribe value to natural capital, ecosystems, and biodiversity according to their ecological importance and resilience. ERC works alongside traditional price signals, thus providing a twin-pricing mechanism that can balance short-term economic needs with long-term ecological health. For example, ERCs for rainforest preservation would reflect the system's value in terms of carbon sequestration and biodiversity, thus encouraging its protection rather than exploitation. Ecological Restoration Credits are fundamentally based on the principles of ecological economics, which is a discipline that has emphasized the need for natural capital to be recognized within economic systems. As early as 1997, Robert Costanza and his colleagues identified "services" provided by ecosystems-which are crucial for human survival-that must be included in economic valuations (Costanza et al., 1997, p. 254). By bringing ERCs into the pricing system in a way that renders economic activity compatible with environmental sustainability, ERMT overcomes one of the major ecological limits to markets. ERCs redefine the price mechanism through ERMT, with respect to economic scarcity and ecological resilience, extending Hayek's model to incorporate human and environmental wellbeing as intertwined. While this ecological aspect propagates sustainable practices, it actually harmonizes markets with the principles of intergenerational equity, hence considering the needs of future generations within current economic choices. With this in mind, ERCs therefore offer a holistic strategy in the coordination of markets which pays respect to human and environmental well-being.

5. Ethically Resilient Market Theory as an Evolution of Hayekian Thought

Friedrich Hayek's pioneering views on decentralized knowledge and market coordination have found resonance across disciplines, be it in economics, philosophy, or political theory. His work "The Use of Knowledge in Society" is thus an appeal to the cogency of markets as one system of decentralization whose price mechanism allows variety in emergent order-what Hayek himself calls "spontaneous order." The underlying idea is that prices, through signalling scarcity and demand, allow individuals to act upon their own local knowledge without any centralized oversight. Thus, the market is not viewed as any sort of economic mechanism, but an epistemic and ethical space in which the agents engage in the exercise of self-determination within the structure of mutual coordination.

However, to focus on Hayek's schema, while valuable for their time, reveal significant limitations when considering the complexity introduced by today's society and economy-data centralization, environmental degradation, and deeply entrenched economic inequalities.

The contemporary context brings to light the structural lacuna in Hayek's dependence on the price mechanism for efficiently signalling social needs. The Ethically Resilient Market Theory assumes a mature paradigm within a world in which all economic and social dynamics are completely linked with ethical and ecological imperatives; a re-conceptualization of Hayek's notion befits the needs of an interconnected universe which is at once ethically elaborate and ecologically precarious. It is against these various challenges that the ERMT responds by reinterpreting Hayek's model in a far richer ethical and ecological context and thus radically changes his key insights into the nature of the market system which would balance individual autonomy with collective responsibility. Though it takes its cue from Hayek's emphasis on dispersed knowledge and the price mechanism, it extends the parameters of market principles to cover transparency, social equity, and environmental sustainability. In this sense, the extension of Hayek's work means that it retains all the insights of Hayekian theory but also takes into consideration the ethical imperative of the 21st century.

The novelty of the it basically lies in this concept of dynamic transparency. The original theory of Hayek implicitly assumes that the knowledge of dispersion among agents occurs spontaneously, which enables the markets to act as decentralized information mechanisms.

However, this assumption is sorely stretched in a data-centric world where a few digital monopolies amass enormous stores of consumer information. Dynamic transparency helps to redress this asymmetry by forcing data-rich corporations to generate and share non-proprietary information in a decentralized information commons-a common repository that democratizes market-relevant data.

Dynamic transparency in creating an open information network counteracts any monopolies of knowledge flows and replenishes egalitarian knowledge distribution under conditions described by Hayek. The premises here, therefore, answer the epistemic ethical issues created by such a concentration of data power and reinstate the preconditions necessary to achieve the actual coordination in a decentralized way.

This latter structure follows directly from Hayek's wider moral commitments since it ensures, in particular, that price signals reflect true market conditions rather than the artefact of monopolistic outcomes. Dynamic transparency resurrection provides an open data infrastructure for Hayek's original vision of decentralized knowledge in such a way as to demonstrate awareness of ethical concerns about data privacy and autonomy. As Shoshana Zuboff warns in The Age of Surveillance Capitalism, the commodification of data poses profound risks to individual autonomy and agency (Zuboff, 2019). By ensuring that data flows are not solely controlled by corporate entities, ERMT preserves Hayek's commitment to individual autonomy within a digital economy and prevents the epistemic monopolization that undermines genuine market coordination.

Another critical novelty of ERMT is repositioning the price mechanism as an ethical-economic indicator. While Hayek's original model relies on the price mechanism to convey the forces of scarcity and demand, the conventional price system is unable to internalize key social and ecological values relevant to long-term sustainability and the common good. The ethical-economic index applied in it changes the price mechanism to a multi-dimensional signal, carrying not only scarcity information but also ethical and environmental consequences of economic choices. The embedding of the ecological and social costs in the pricing system of it is, in fact, an appeal for recovery from the anthropocentric limits of the traditional market, too frequently liable to simply neglect various externalities of consumption and production.

This draws from the thinking of environmental economists such as Robert Costanza, who argue that ecosystems are irreplaceable "natural capital" for human survival (Costanza et al., 1997). The present index, in translating prices into ethic signals, is based upon an extended moral vision for markets, given that personal economic decisions ripple throughout social and ecological landscapes. That ethical remapping of price signals finds its philosophical fellow traveller in the work of Aldo Leopold, whose Land Ethic proposed that moral communities extend beyond humanity to include the broader biotic environment (Leopold 1949). Looked at through that lens, ERMT re-imagines markets as ecosystems in which human economic interests are weighed against the intrinsic value of ecological resilience. The ethics-economic index, on the one hand, furthers this approach of Hayek by embedding social equity as a central value in prices. Goods and services contributing to welfare-such as health care, low-income housing, and education-receive social equity credits, which cut their price to make them accessible to low-income classes. This mechanism reflects the work of Amartya Sen, who contends that genuine freedom requires access to basic capabilities, enabling individuals to pursue fulfilling lives (Sen, 1999). By embedding social equity within prices, ERMT enhances the inclusivity of markets, addressing the barriers to participation that result from economic inequality. This extension of Hayek's vision moves in the direction of making real an insight into the reality that economic agency is not solely the preserve of financial ability but of all members of society, extending individual self-determination in a manner compatible with the common good.

Complementing these systemic adaptations, under ERMT there would also be temporary, decentralized hubs called Crisis-Responsive Market Nodes that would support coordination of resource distribution in crisis. Hayek's theory of spontaneous order presumes that, in normal circumstances, markets can self-regulate, while in crisis situations-such as natural disasters or pandemics-the traditional ways in which market mechanisms are supposed to work break down in distributing resources equitably. CRNs address the above flexibility in responses: they turn on when specific crisis threshold levels are reached and adjust prices in line with measures of urgency and equitable access. It fulfils the moral dictate on the care of the vulnerable in disaster and adds resiliency to Hayek's conception of decentralized coordination.

By introducing PECs, ERMT attempts to deal with economic inequalities inseparable from impeded market participation. In contrast to Hayek's model, which simply assumes that agents have whatever resources might be necessary in order to exploit price signals, it recognizes that agency for many is circumscribed by economic inequality. PECs grant credits to the economically deprived and offset the costs of the goods for economic survival, democratizing access to such a market and ensuring that all of its members can exercise economic agents. The mechanism is an inspiration from Martha Nussbaum's capability approach defended by Nussbaum (2000), whereby justice demands that people are made capable of developing themselves and acting in society as peers. The PECs therefore expand access to whatever is required to extend Hayek's spontaneous order into an inclusive democratic format appreciating liberty in concert with equity.

The wide philosophical ramifications of ERMT go well beyond economic coordination, pointing at nothing less than a paradigm shift in the very ethical grounding of markets. If Hayek's model is grounded

in a notion of individual liberty, then it brings an ethics of ecological responsibility beneath such liberty. It, therefore, harmonizes individual freedom with the ethical imperatives of the common welfare by installing sustainability and inclusivity into the basic market structure. What this reorientation means in concrete terms is a change in the philosophy of economics whereby markets are no longer understood as transactional systems but as multidimensional ecosystems carrying social and environmental value. And also overcomes the dichotomy between autonomy and collective responsibility, which is thought to be essentially polar.

Martha Nussbaum has written about capabilities, arguing that justice demands access to those resources which are necessary for individuals to flourish-a line of thought very much in tune with the commitment to participatory equity expressed by ERMT (Nussbaum, 2000). With its structural supports for market participation, this new approach takes up Hayek's emphasis on individual agency and submits the moral and pragmatic facts of inequality. Moreover, ERMT's ecological orientation aligns with John Rawls's principle of intergenerational justice, suggesting that markets must incorporate long-term ecological values to ensure that future generations are not deprived of essential resources (Rawls, 1971). Through these ethical extensions, it reinterprets markets as spaces that uphold both individual freedom and societal responsibility. This characterizes an adaptive evolution of Hayekian thought whereby ERMT preserves the virtues of decentralized knowledge, its market process turning into ethical ecologies in consonance with the imperatives of life in the modern age. With the reconceptualization of the price mechanism, the it extends the capability of markets to reflect the full gamut of social values: sustainability, inclusivity, resilience. The evolved framework vindicates Hayek's legacy insofar as the core principles in the theory are those of decentralized coordination, but it recognizes that autonomy cannot be insulated from ethical accountability. It is here that it provides vision into economic coordination compatible with both personal agency and collective welfare, thereby turning in a resilient model that is ethically tuned to the 21st century. The potential impact wrought by ERMT is huge. It is a model market that finds its balance in economic growth while managing to harmonize social and environmental values. Embedding principles of transparency, equity, and sustainability, ERMT envisages markets responsive to big societal challenges, not least climate change and social inequalities. The Ethical-Economic Index and Participatory Equity Credits apply to how policy and business leaders may be guided in responsible practice such that market outcomes would reflect both individual and common interests. ERMT is still evolving, but applications from health and energy to digital governance indicate a great promise for building resilience in systems that prioritize long-term well-being. In all, Ethically Resilient Market Theory marks a philosophically and economically cogent turn that extends Hayek's insight into a wider ethical and ecological framework. It is actually the harmonization of Hayek's legacy with the modern world's complexity by redefining markets as systems supportive of individual autonomy and collective responsibility. By anchoring itself on the principles of transparency, equity, and resilience, ERMT shows how markets can become ethical ecosystems able to sustain human prosperity and the integrity of the environment in concurrence. Such a forward path, as represented by the reconceived framework, is able to respect the precepts of Hayek, while answering the moral and practical challenges posed to economic life today in service of a vision of economic prosperity combined with the ethical imperatives of the 21st century.

Conflicts of interest

The author(s) states that there is no conflict of interests.

References

Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R. V., Paruelo, J., Raskin, R. G., Sutton, P., & van den Belt, M. (1997). *The value of the world's ecosystem services and natural capital*. Nature, 387(6630), 253-260. https://www.nature.com/articles/387253a0.

Hayek, F. A. (1945). *The Use of Knowledge in Society*. American Economic Review, 35(4), 519-530. https://www.jstor.org/stable/1809376.

Leopold, A. (1949). *A Sand County Almanac: And Sketches Here and There*. Oxford University Press.

Mazzucato, M. (2018). *The Value of Everything: Making and Taking in the Global Economy*. PublicAffairs.

Nussbaum, M. C. (2000). *Women and Human Development: The Capabilities Approach*. Cambridge University Press. https://doi.org/10.1017/CBO9780511841286.

Polanyi, M. (1966). *The Tacit Dimension*. Routledge & Kegan Paul.

Rawls, J. (1971). *A Theory of Justice.* Harvard University Press. https://www.hup.harvard.edu/catalog.php?isbn=9780674000780.

Samuelson, P. A. (1954). *The Pure Theory of Public Expenditure*. The Review of Economics and Statistics, 36(4), 387–389.

Sen, A. (1999). *Development as Freedom*. Oxford University Press. https://global.oup.com/academic/product/development-as-freedom-9780192893307?cc=no&lang=en&.

Stern, N. (2007). *The Economics of Climate Change: The Stern Review*. Cambridge University Press.

Stiglitz, J. E. (2002). *Globalization and Its Discontents*. W.W. Norton & Company.

Yoon, Y. (2023). Forging a Moral Basis for Emerging Economies. *Journal of Global Trade, Ethics and Law*, *1*(3), 26-35. https://doi.org/10.5281/zenodo.10059725.

Zuboff, S. (2019). *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power*. Public Affairs.