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Surplus

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Embracing Co-Creation Experiences in Economics: Rethinking Surplus

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Economics without the lens of co-creation, in the new evolving economy, blurs visibility. We provide a framework that can reshape economic thinking with co-creation at the core. In particular, an individual's experience from co-creation is at the foundation of our economic apparatus. This is consistent with the mounting evidence on the new evolving economy where the conventional firm-centric view is of little relevance. We compare and contrast key elements of our co-creation thinking with conventional economic thinking. We show how fundamental economic concepts, such as surplus and efficiency, must be modified in order to incorporate co-creation experiences. We also posit a principle of co-creative advantage to guide efficient co-creation.

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“It is time to reengage the severely impoverished field of economics with the economy.”

Ronald Coase (2012)

1. Introduction

In the new evolving economy, with the advent of the web, mobile technologies of expression, communication, and information, value is increasingly being created jointly by the customer and the firm.¹ Yet, economists continue to artificially assign *fixed roles* to firms and consumers, with the firm creating value through production and the consumer generating demand. The market is portrayed as an interface for firms and consumers to engage exclusively in exchange of commodities. Consequently, the relevance of the “nirvana approach”² of conventional economic thinking has shrunk with this apparent disconnect drilling down to the process of value creation since value, in the economy as it is becoming, is no longer confined to goods or services but stems from the *co-creation experience of each individual*. Note that we are not talking merely about endogenous creation of products by individuals assigned the role of producers in concert with individuals assigned the role of consumers, but rather endogenous *joint* human experience creation that is driven by individual interactions, and both *before* and *after* the point of exchange of commodities or more broadly the point of interaction.

Consider two examples, one that opens up production to the role of consumer as a co-creator of “production” experiences, and the other that opens up consumption to the role of the producer as a co-creator of “consumption” experiences. As an example of the former, consider a website such as that of Local Motors that allows designing of cars. This can provide a platform for individuals to generate value through the experience of designing cars. While this can potentially

¹ See Prahalad and Ramaswamy (2000, 2002, 2003, 2004a, 2004b), Ramaswamy (2008, 2009, 2010), Ramaswamy and Gouillart (2010a, 2010b), and Ramaswamy and Ozcan (2014) for a plethora of compelling examples in this direction.

² The expression “nirvana approach” was used by Harold Demsetz, as early as 1969, to characterize the typical fallacy inherent in conventional economic thinking when comparing an imperfect existing arrangement to a hypothetical idealized system.

add to product variety, we need to look beyond to the co-creation experience that transcends the artifact. The designing of a car, by a customer on a manufacturer's platform, need not necessarily lead to a new variety of a car being manufactured. The experience of co-creating a new design still generates value. The traditional distinction between the consumer and the producer, while remaining valid at the point of exchange, is of no relevance when an individual shares the same platform with another individual to co-create an experience with or without an eventual exchange of an artifact. An auto manufacturer is a producer only of the cars it manufactures. The customer is a consumer only of the cars it uses. An individual, who neither manufactures a new variety of car nor uses it, can still generate value through the experience of co-creating a design on the engagement platform provided by an auto manufacturer. The distinction between the value generated through the experience of co-creation and value generated through the provision of artifacts (goods and/or services) draws the boundaries of conventional business interaction.³

Now consider a second example, that of the NikePlus experience, which entails a platform enabled by a smart sensor that can communicate with a built-in wireless receiver, to enhance the active lifestyle experience of individuals, such as runners.⁴ The run tracking environment of NikePlus allows the runner to assess her progress by automatically plotting distance, time, pace, and calories burnt. She can map her runs, become a member of the Nike running club, participate

³ An analogous example can be drawn from consulting arrangements between firms. This can provide a platform for individuals to generate value through the experience of designing solutions. However, limiting attention to the solution (artifact) would overlook the essence of co-creation experiences that transcend the artifact. The designing of a solution, by a consultant, need not necessarily address the problem faced by a hiring firm. The experience of co-creating a "solution" still generates value. The value generated through the co-creation experience of designing a solution (that may or may not address a problem), as distinct from the value generated through addressing (fully or partially) a problem, does not fit into existing economic frameworks. When the same consulting firm engages in co-creating solutions for multiple customer firms, it is possible that the intellectual capital (artifact) developed in the process of designing a solution for one firm can be invested (for a price, an economist would label as "return") in another firm but that artifact (intellectual capital) is distinct from the co-creation experience of individuals engaged in designing solutions. The return (price) on any investment of the intellectual capital (artifact) does not reflect the value generated through the co-creation experience of individuals engaged in designing solutions.

⁴ See Ramaswamy and Gouillart (2010a) and Ramaswamy and Ozcan (2014).

in Nike-sponsored events, engage in virtual training, and even share her experience through social networks. The point to be noted is that the runner is at the center, not Nike, and value is a function of her running experience co-created by her with Nike enabling an engagement platform (NikePlus). All of this facilitates Nike's direct learning from the behavior of customers and building deeper relationships and trust with the running community, and sustaining stickier brand collateral. The co-creative experience through NikePlus continues to multiply through newer platforms like NikePlus Fuelband that is enhanced by a sports-tested accelerometer capable of tracking any daily activity involving motion of the human body.

Together, these two examples illustrate both the “experiences of co-creating” as firms open up production activities to consumers, and the “co-creating of experiences” as consumers open up consumption activities to producers. We refer to both these as “co-creation experiences”. Similar examples of the expansion of value creation through co-creation experiences are abundant with platforms of engagements in numerous enterprises spanning agriculture, automotive, consumer durables, electronics, energy, entertainment, fashion, financial services, healthcare, information technology, manufacturing, media, pharmaceuticals, retail, telecommunication, travel, and many other sectors of the economy.⁵ In all these cases, central to co-creation is the concept of an engagement platform as an assemblage of persons, interfaces, processes, and artifacts, whose design intensifies co-creating agency in joint value creation through the human experiences of individuals *anywhere* in the system.⁶ As a consequence, it is becoming evident that we have to expand how we conceive of value creation and “Economic Surplus” as discussed next.

⁵ See Ramaswamy and Gouillart (2010b) and Ramaswamy and Ozcan (2014) for a discussion of the power of co-creation using a multitude of examples.

⁶ See Ramaswamy and Ozcan (2014) for a discussion of the innovation and design of co-creative engagement platforms.

2. Expanding Economic Thinking through the Co-Creation Paradigm

The future of the evolving economy is in the hands of a more expanded paradigm of value creation --- *the practice of joint creation (and evolution) of value through individuated experiences*. In this paper, we take a small step forward by embracing co-creation thinking that can lead to a paradigmatic leap in economic thinking.⁷ The timeliness of our contribution can best be projected with a quote from the late Ronald Coase (2012), one of the most widely cited centurion Nobel laureates, “Knowledge will come only if economics can be reoriented to study of man as he is and the economic system as it actually exists.” At the dawn of this millennium, a tribute to Ronald Coase appeared on the economic scene of the New York Times with the opening line: “There was never a new economics to go along with the new economy.” The author of that column, Hal Varian, reminded us of the subtle underpinnings of Coase’s nobel-prize winning work as well as the need for “careful analysis of competing forces” in determining the role of the firm in the new “internet” economy.

The increasingly visible hands of co-creation are rapidly replacing what economists, following Adam Smith’s (1776) magnum opus *Wealth of Nations*, have construed as the invisible hand of market forces. Experiences stemming from the immediate aftermath of the industrial revolution prompted economists to formalize the invisible hand as working of the price mechanism on premises that split the firm’s role from that of the consumer. The real experience of the new evolving economy continues to drift far apart from this dichotomized view of the market while economists, in large numbers, march off with arms that fire obsolete explanations for the incessantly expanding territory of the modern enterprise. As Harold Demsetz (1990)

⁷ See Ramaswamy and Ozcan (2014) for an elaborate exposition of value creation as co-creation.

succinctly put it, ever since the publication of *The Wealth of Nations* back in 1776, the principal task of economists has been to formalize the proposition of Adam Smith that the economy could be coordinated by the invisible hand to which Ronald Coase, in his 1991 lecture to the memory of Alfred Nobel, added, “Economists have uncovered the conditions necessary if Adam Smith’s results are to be achieved and where, in the real world, such conditions do not appear to be found, they have proposed changes which are designed to bring them about.”

Let us pause to think: Would Adam Smith have visualized the new economy any differently? It is important to clarify at the outset that, in posing this question, *we are not challenging the view that the rational individual acts in self-interest*. One does not have to disagree with Adam Smith’s (1776) assessment, “It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest. We address to ourselves, not to their humanity, but to their self-love, and never talk to them of our own necessities, but of their advantages.” By the same token, one does not have to appeal to Adam Smith’s (1759) *Moral Sentiments*, “How selfish soever man may be supposed, there are evidently some principles in his nature which interest him in the fortunes of others, render their happiness necessary to him, though he derives nothing from it, except the pleasure of seeing it.”

Instead, we are questioning the relevance of the very premises of the theory of value already in vogue. In so doing, we take a cue from co-creation thinking as it holds the key to expanding an economist’s vision to a space where *an enterprise can be seen as a nexus of engagement platforms and the economy as a nexus of enterprises, with competition centering on individuated co-creation experiences that yield unique value to each individual in space-time*.⁸ We emphasize the fact that a rational individual, by engaging in co-creation, promotes collective interests only

⁸ See Ramaswamy and Ozcan (2014) for a discussion of the co-creation paradigm of value.

to promote self-interest and vice-versa: doing even better for oneself by others doing well. This “win more—win more” vision is increasingly gaining clarity with *wealth-welfare-wellbeing* being continuously created and enhanced in ways that are distinct from what an economist could have experienced through the pre-Internet industrial era. The de-humanization of value, that took place with a perceived split of the firm from the consumer in the industrial era, is being challenged in today’s economy. As Amartya Sen (1999) emphasized, “Indeed, it is precisely the narrowing of the broad Smithian view of human beings, in modern economies, that can be seen as one of the major deficiencies of contemporary economic theory”. Economists have, so far, continued to model value as a relational property of goods and services. This narrow definition of value is misconstrued and its deficiencies are becoming increasingly apparent in the context of the real experiences of the new evolving economy.⁹ The key point of our departure from conventional economic thinking, starts with restoring the element of individual experience in value. Value is generated from experiences, unique to each individual, that result from an interaction through a platform of engagement. We take this holistic view of expanding the space for creating value and recognize that utility theory¹⁰ is not redundant but can be seen as an emergent property of co-creation experiences. In what follows, we lay out (with parsimonious abstraction) a blueprint for the foundation of co-creation thinking in economics --- a contribution we would like to identify as the conception of *Co-Creation Experience Economics*.

In so doing, we expand the notion of “Surplus” in Economic Theory and the space of “Value Creation” possibilities. Contrary to conventional views of economic surplus as a “theoretical

⁹ See Ramaswamy and Ozcan (2014) for a discussion on humanization of value.

¹⁰ A fruitful approach of parsimoniously modifying preferences, to show how economics can be applied to study the forces that shape behavior, dates back to the seminal contribution of Becker (1957). While many economists have followed Becker’s footsteps, in this direction, relatively recent applications can be found in Becker and Murphy’s (2009) insightful analysis of the role of social interactions in enriching the domain of inquiry of economists as well as the way economists conceptualize individual decision making.

toy”¹¹ that artificially constricts attention to perceived differences between the maximum price a buyer would be willing (and able) to pay for an artifact and the minimum price at which a seller would be willing (and able) to sell the same artifact, in what follows, we show how realized surplus encompasses value generated through co-creation experiences shared by individuals on engagement platforms.

3. Co-Creation Experience Economics

Consider the value (V_i) derived by an individual i as a function of C_{ij} , representing the vector of individual i 's co-creation experiences on engagement platform j , as well as on the conventional vector of i 's actions (a_i), others' actions (a_{-i}), and controls (c_i) that entail all else affecting the value i derives:

$$V_i = V_i(C_{ij}, a_i, a_{-i}, c_i).$$

The arguments of $V_i(\cdot)$ are not only sufficient to capture the standard economic role of own actions and externalities but incorporates co-creation experience as a motivation for individual economic behavior. Consider the following representation of individual i 's co-creation experience on engagement platform j :

$$C_{ij} = C_{ij}(R_{ij}, R_{-ij}, T_{ij}, T_{-ij}, a_i, a_{-i}, c_i),$$

where T_{ij} and T_{-ij} represent time and R_{ij} and R_{-ij} represent resources invested by individual i and others $-i$ (including, though not necessarily limited to, those on platform j), respectively, in the engagement specific to platform j .

¹¹ See Little (1957, page 180).

Conventional economic thinking would prompt a typical individual i to choose its actions a_i in a way that maximizes V_i , ceteris paribus. This apparently draws the boundaries of the market where the goal of each firm, given its own resource constraints, is reduced to a) the maximum extraction of surplus from individual consumers, and b) the minimum expense of the extracted surplus on individual workers, that specific market structures allow.

Now think co-creation. Imagine the vast potential of co-creative surplus that conventional economic thinking leaves out by simply ignoring the fact that an enterprise can and does, even more so in the modern Internet networked age, release its resource constraints by investing in engagement platforms that co-create value by enhancing the diverse experience of individuals. In an environment of co-creation, the objective of the enterprise(s) providing platform j is to

$$\begin{array}{ll} \text{Maximize:} & V_j = V_j(C_{ji}, C_{-ji}, a_j, a_{-j}, c_j) \\ \{R_{ji}, T_{ji}, a_j\} & \\ \text{subject to} & \bar{T}_j = \sum_i T_{ji} + T_j(R_{ji}) \end{array}$$

while each individual's objective is to

$$\begin{array}{ll} \text{Maximize:} & V_i = V_i(C_{ij}, C_{-ij}, a_i, a_{-i}, c_i) \\ \{R_{ij}, T_{ij}, a_i\} & \\ \text{subject to} & \bar{T}_i = \sum_j T_{ij} + T_i(R_{ij}) \end{array}$$

where C_{ji} is the vector of co-creation experiences of all individuals engaged on platform j ; C_{-ji} is the vector of co-creation experiences of all individuals engaged on platforms other than j ; a_j is the vector of actions of the enterprise(s) providing platform j , a_{-j} is the vector of others' actions; and c_j is the vector of controls entailing all else affecting the value generated on platform j .

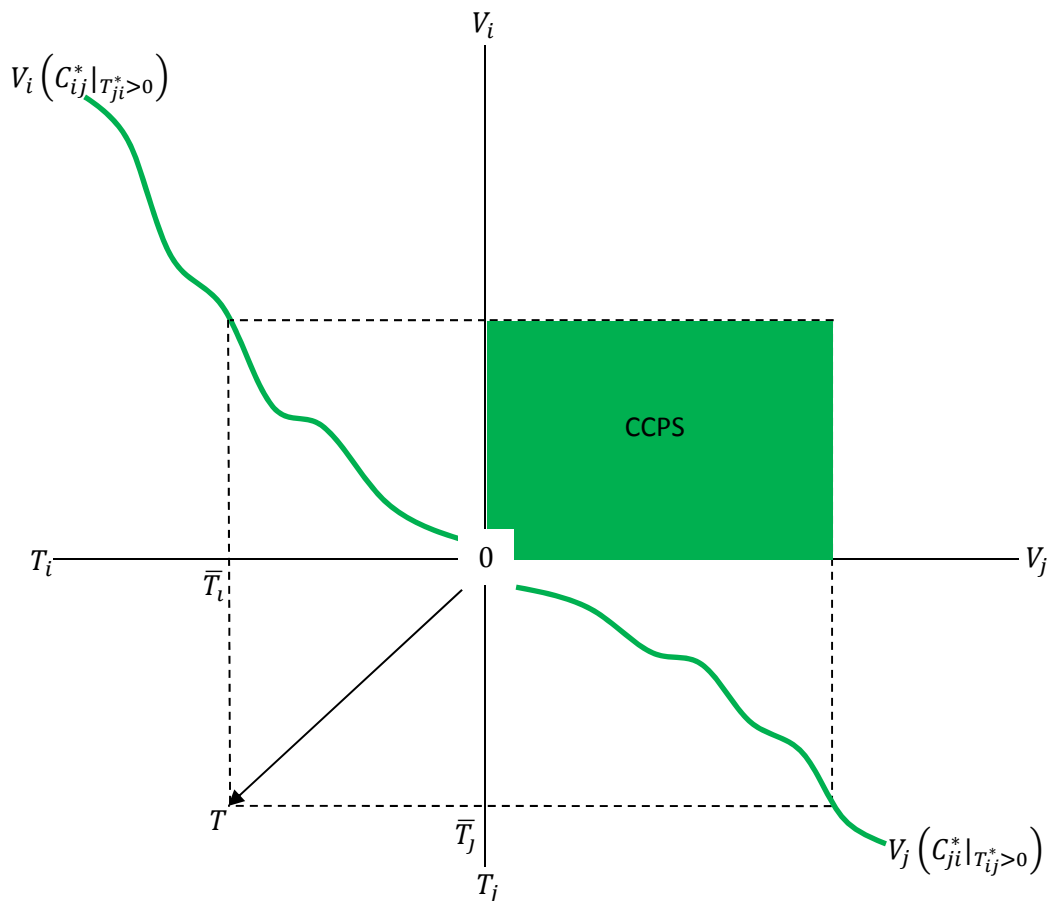
The singular binding constraint is imposed by the arrow of time $T = \{\bar{T}_i, \bar{T}_j\}$ on the optimal choice of any individual or enterprise (participant) with a finite horizon, where \bar{T}_i represents the vector time horizons of individuals and \bar{T}_j represents the vector time horizons of enterprises,

within which T_{ji} represents time and R_{ji} represents resources invested, in the co-creation experiences of participating individuals i , by the enterprise(s) providing platform j ; $T_i(R_{ij})$ represents the time invested by individual in acquiring resources R_{ij} ; and $T_j(R_{ji})$ represents the time invested by the enterprise(s) providing platform j in acquiring resources R_{ji} . The solution to this optimization exercise yields a set of co-creation possibilities $C^*(T) = [C_{ij}^* \ C_{ji}^*]$.

Conventional economic thinking is restricted to the set of production possibilities as distinct from that of consumption possibilities. In contrast, the Co-Creation Possibilities Set (CCPS) stems from the locus of co-creative experiences through interactions between individuals and their platform environments, whose boundary is tied to T . A CCPS exists for each commodity in use, as well as any yet to be in use (e.g., concept cars), and can be projected on a two-dimensional graph for any pair of co-creators i and j with scalar co-creation experiences of each.

Figure 1 illustrates, for any given output vector, a CCPS on a 1x1 (one-individual-one-enterprise) engagement platform, where $V_i(C_{ij}^* | T_{ji}^* > 0)$ represents the maximum value for individual i 's co-creation experiences on engagement platform j and $V_j(C_{ji}^* | T_{ij}^* > 0)$ represents the maximum value for co-creation experiences on engagement platform j . For expositional convenience, we assume that the minimum dimension of an engagement platform is 1x1. The dimensions and volume of the CCPS would increase with a rise in the number of diverse participating co-creators who engage in co-creation as well as the number of co-created attributes (types of co-creation experiences) that enter the vector. Given any number of participating co-creators and co-created attributes, the volume of a CCPS can expand with intensifying co-creative engagements (positive co-creative externalities). When $T \rightarrow \infty$, the CCPS is unbounded.

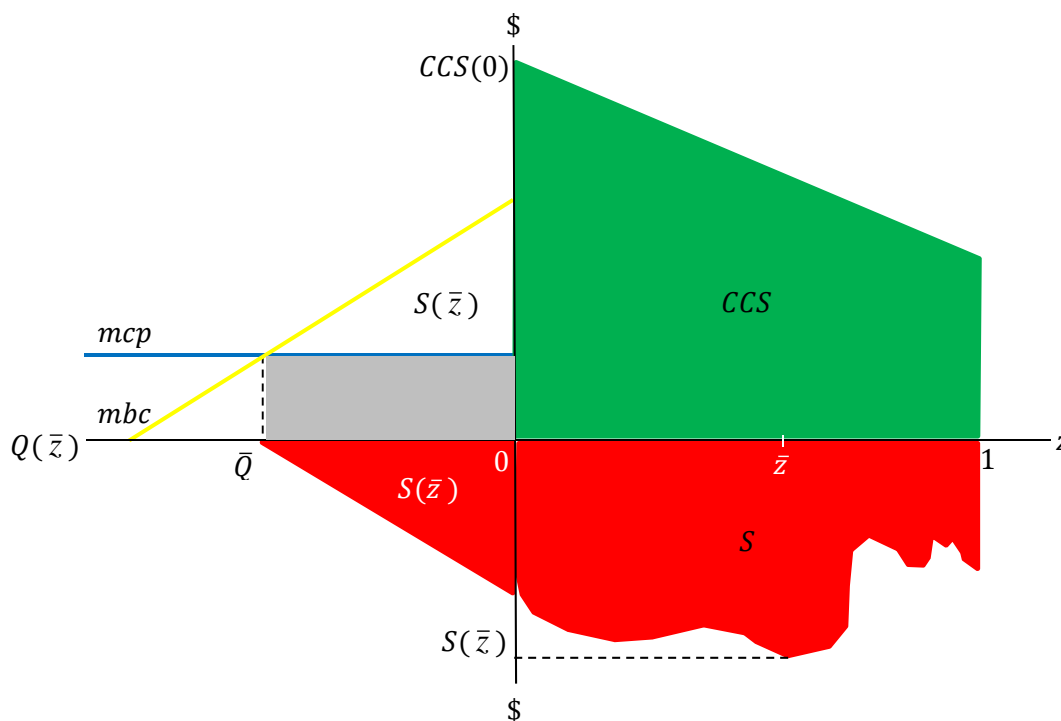
Figure 1: Co-Creation Possibilities Set on a 1x1 Engagement Platform



To fix our ideas, let us map our CCPS to familiar territories of conventional economic thinking on surplus. Consider a continuum of commodities, indexed by $z \in [0, 1]$ sorted in descending order of the maximum potential surplus that can be generated, given production, exclusively through co-creation experiences on a 1x1 engagement platform over a finite horizon T . The Co-Creative Surplus (CCS) can then be visualized as $\iint \left[\frac{V_i(C^*(z))}{\lambda_i} - E(i, z) \right] didz$ where λ_i is the marginal value of money and E is the expense of co-creation. In contrast, the

conventional definition of surplus¹² is limited to the extent of gains from trade: $S = \iint [mbc(q(i, z)) - mcp(q(i, z))] didz$, that can be generated exclusively through exchange between the consumer(s) and firm(s), where mbc is the marginal benefit from consumption and mcp is the marginal cost of production. For illustration, see **Figure 2**, where $S(\bar{z})$ measures the maximum surplus that the producers of commodity \bar{z} can generate by serving an “efficient” market size: $\bar{Q} = \int q(i, \bar{z}) di$ where $mbc = mcp$.

Figure 2: Surplus with and without Co-Creation

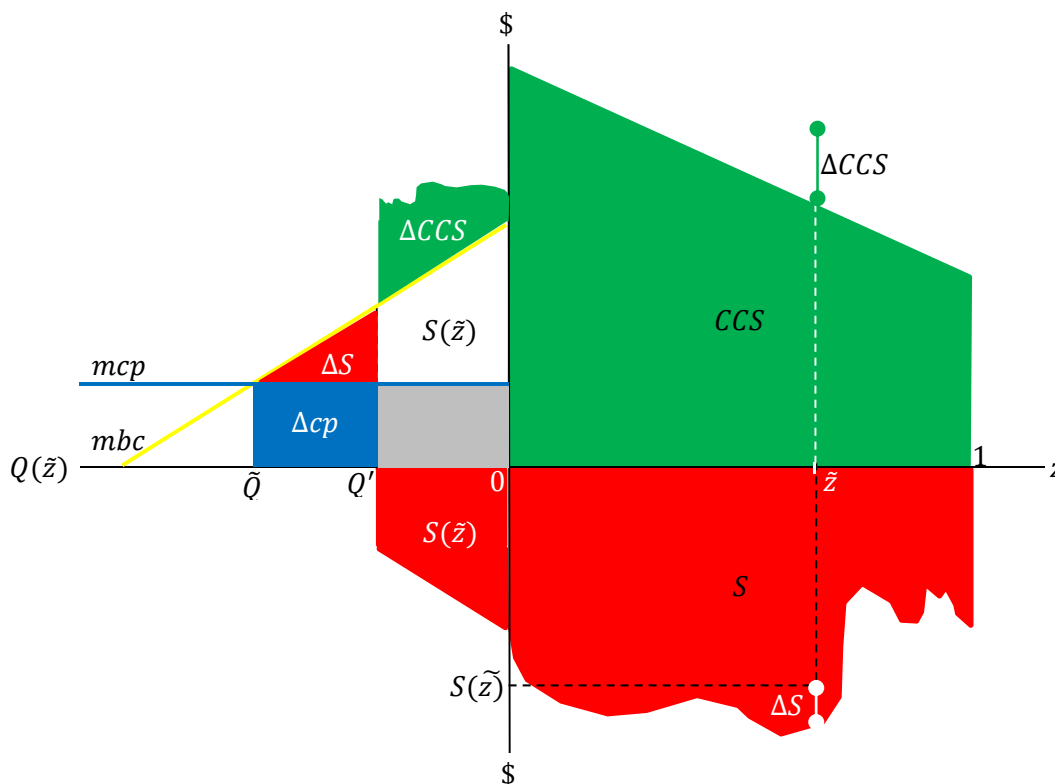


In a co-creative world, an efficient outcome is reached when total surplus $TS = [CCS + S]$ is maximized subject to T . Compare, for any commodity $\tilde{z} \in [0, 1]$, the gains from trade and co-

¹² The origin of the notion of surplus dates back to the works of Dupuit (1844). See Hicks (1941, 1943, 1945) for an early assessment of the general the validity of this notion, that gained popularity among economists since Marshall (1890) and still remains in vogue.

creation, as shown in **Figure 3**. Conventional economic thinking would lead one to believe that Q' results in foregone gains from trade (ΔS) due to inefficiency since $mbc \neq mcp$ violates the normative principle of efficiency by which over-production occurs only for $Q > \tilde{Q}$. However, the saving (on account of any $Q < \tilde{Q}$) in cost of production (Δcp) can be invested in co-creation which can raise gains from co-creation by ΔCCS . As long as $\Delta CCS > \Delta S$, Q' is more efficient than \tilde{Q} .

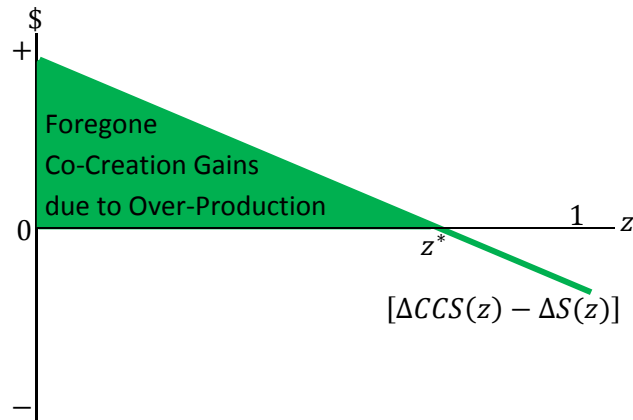
Figure 3: Trade-off between Production and Co-Creation



This immediately points to the inevitable trade-off between production and co-creation, from which emerges gains from co-creation, as distinct from, yet related to the notion of efficiency in production. This is captured in **Figure 4**, where, after sorting z in descending order of $[\Delta CCS(z) - \Delta S(z)]$, the foregone co-creation gains ($\int_0^{z^*} [\Delta CCS(z) - \Delta S(z)] dz$) due to over-

production relative to co-creation is shown, with z^* pinned down by setting $[\Delta CCS(z^*) - \Delta S(z^*)] = 0$ with the marginal value of diverting investment from production to co-creation exactly offsetting the marginal cost of diversion.

Figure 4: Gains from Co-Creation

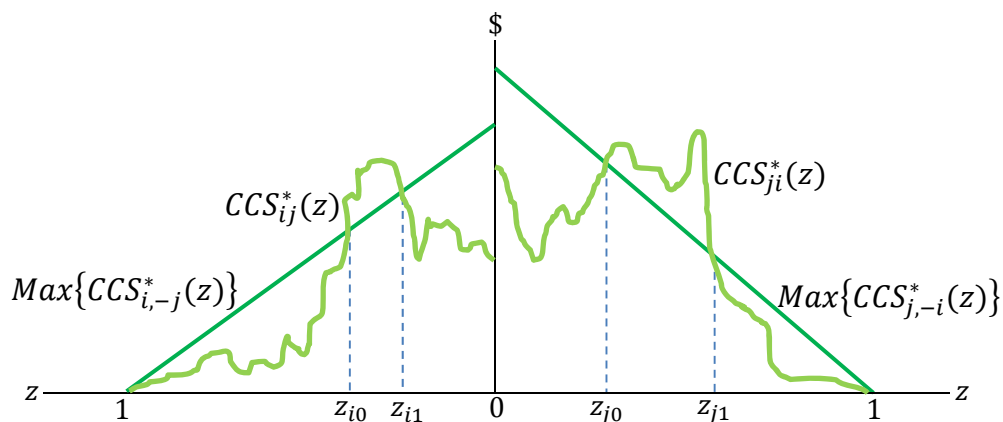


Conventional wisdom suggests that a competitive market yields the maximum surplus while the maximum extraction (of the same surplus) by a producer is possible under perfect price discrimination. In a world of co-creation, this would hold only for $z \in [z^*, 1]$. Diverting investment, $\forall z \in [0, z^*]$, from production to co-creation would enhance the total surplus available for distribution among the co-creators. Over a finite horizon T , an efficient co-creative equilibrium is reached at $[C^*(z) \ Q^*(z)]$ when $\Delta CCS(z) = \Delta S(z) \ \forall z$.

Consider next the magnification effect, on surplus, that co-creation can have through resource leverage, as shown in **Figure 5**. Here, mcp^* is the minimum mcp that can be achieved through leveraging competencies on a platform of co-creation. Co-creative gains can expand by eliminating relatively inefficient use of resources: raising the magnitude of $\Delta cp (< 0)$ allows more resources and time to be released for raising the magnitude of $\Delta CCS > 0$ by co-creating

$Max\{CCS_{i,-j}^*(z)\}$ in the North-West quadrant and in descending order of $Max\{CCS_{j,-i}^*(z)\}$ in the North-East quadrant, i and j (individuals or organizations) have a co-creative advantage for the subset of commodities $z \in [z_{i0}, z_{i1}] \cap [z_{j0}, z_{j1}]$. An engagement platform that does not satisfy this principle of co-creative advantage, therefore, leaves room for gains from co-creation.

Figure 6: The Principle of Co-Creative Advantage



In sum, economic thinking remains incomplete without the cognizance of co-creation. Conventional economic thinking has left us with normative principles that are increasingly becoming obsolete, and often misleading, in the evolving economy “as is” and the way it “ought to be”. The relevance of economics, in today’s evolving economy, can be restored through co-creation thinking. By recognizing that value is generated from experiences, unique to each individual, a new foundation for economic thinking evolves rather naturally that does not need an artificial segregation of the role of the consumer from that of the firm through the process of value creation. Co-creative surplus emerges as a core concept, that economic thinking must

diversification that challenge the conventional view of the much celebrated principle of comparative advantage in an open economy.

embrace to identify gains beyond the conventional notion of surplus, with normative rules of Co-Creation Experience Economics guided by the Principle of Co-Creative Advantage.

4. Concluding Remarks

In this paper, we have made an effort to bridge the widening gap between economic thinking and the economy as it is becoming. Through the pre-internet industrial era, value was viewed as a creation of the firm through its product and service related activities: firms created value by optimizing and managing their assets and activities and passed that value down through activity chains to recipients, be they customers, employees, or other stakeholders. The rapidly changing elements of our economy places the individual (consumer) at the center standing in sharp contrast with the firm-centric view that conventional economic theory is yet to let go. The transition from a firm-centric view to a co-creation view is not about making minor changes to conventional thinking. Conventional economic thinking focuses squarely on the exchange of products and services between the company and the consumer, placing value extraction by the firm and the consumer at the heart of the interaction. In the co-creation view, *all points of interaction between the enterprise and the consumer are opportunities for co-creation experiences that can potentially generate value*. The co-creation paradigm fundamentally challenges the traditional distinction between supply and demand. When the experience, along with the value inherent in it, is co-created, the firm may still produce a physical product but the market transforms into a *space of potential co-creation experiences where roles of the company and the consumer converge*.

This challenges the basic tenet of traditional economic theory: that the firm and the consumers are separate, with distinct, predetermined roles, and, consequently, that supply and

demand are distinct, but mirrored, processes oriented around the exchange of products and services between firms and consumers. We have shown how economic thinking can be enriched by embedding co-creation experiences at the core. The surplus in the new co-creative economy is not restricted to the surplus that conventional economic thinking identifies with. Consequently, we showed that the normative rule of efficiency (around which much of economic analyses revolves) must be modified to capture co-creation experiences. We formalized a Principle of Co-Creative Advantage that can guide efficient co-creation. We hope that our framework of *Co-Creation Experience Economics* will form the foundation of co-creation thinking for a new generation of forward-looking economists with a shared vision.

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