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Holarchical Innovation Teams: Principles – Part II

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ABSTRACT

This paper is a continuation of "Holarchical Innovation Teams (HITs): Principles – PART I in volume 14, issue 2 and builds upon "Holarchical Innovation Teams: Philosophy" in volume 14, issue 1 of *Economia Aziendale Online* by establishing principles for the nascent discipline of Holarchical Innovation Teams (HITs). The principles stem from the tripartite philosophy of HITs: Human Dignity, Creative Work, and Holarchical Combinatory Value-Creation. This paper addresses in-depth the principle of Holarchical Combinatory Value-Creation.

Questo lavoro – che è la continuazione di "Holarchical Innovation Teams (HIT): Principi – PARTE I, pubblicato nel volume 14, numero 2 e si basa sulla "Holarchical Innovation Teams: Philosophy", pubblicata nel volume 14, numero 1 di Economia Aziendale Online – stabilendo i principi per la nascente disciplina dei Team Olarchici di Innovazione (HIT). I principi derivano dalla filosofia tripartita degli HIT: dignità umana, lavoro creativo e creazione di valore combinatorio olarchico. Questo paper affronta in modo approfondito il principio della creazione di valore combinatorio olarchico.

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1 – Introduction

This paper is the continuation of the Holarchical Innovation Teams (HITs) principles of human dignity and creative work

in which Reber (2023) explored, and specifically addresses the third principle of Holarchical Combinatory Value-Creation that Reber and Gazzola (2023, p. 97) express as:

> ***HOLARCHICAL COMBINATORY VALUE-CREATION EXISTS WHEN SELF-ACTUALIZING INDIVIDUALS FORM THEMSELVES INTO A HOLARCHICAL SOCIAL UNIT WITHIN A COMBINATORY MANNER AS A MEANS TO ESTABLISH SYNERGIES THAT IN TURN CREATE A VALUE-ADDED PRODUCT FOR SOCIETY.***

They (Reber & Gazzola, 2023; Reber, 2023) provide an exploratory synopsis of self-actualization, and it is re-capped here.

Self-actualization is the work a mature person does in bringing forth into the world her or his irredeemable individual inherent potential. Though each person has an infinite number of human possibilities, each person also has a finite potential in a single lifetime. This "bringing forth" is the activity of creative work, where creative work is meaningful work that one does to become the person one truly is. When one is doing the work s/he knows is the work to do, and s/he enjoys it, we say s/he is in a *state of eudaimonia* since eudaimonia is both a feeling and a condition. As ***feeling***, it signals psychologically to the individual that s/he is happy with her- or himself at a certain point in time. As ***condition***, it provides a pedagogy for the activity of her or his work so her or his past, present, and future can all be one. Within eudaimonia, a person's past actions give rise to her or his present actions and her or his present actions give rise to her or his future actions. Wherever in time we may find this person, we will know s/he is living the life that is her or his life to live, i.e. she or he is living "honestly with her- or himself".

Furthermore, the work one does to become who one truly is must occur by complementing one's excellences with other self-actualizing individuals in a congenial manner. By recognizing one's own self-worth which occurs because of self-love, one implicitly has self-knowledge regarding the goods to which s/he is entitled for actualizing that worth and the goods to which s/he is not entitled that requires her or him to will such goods into the possession of others for their own self-actualization. This performance of *noblesse oblige* that calls on the individual to act upon both the cardinal and distributive virtues is termed distributive justice, and through it one manifests human dignity in the world.

As we may recall, the cardinal virtues are "indispensable to worthy living of every kind," in this case the virtues of the HIT as a formal organizational unit, and distributive virtues are "indispensable to worthy lives of some, but not all, kinds," in this case each member's personal virtues that assist in her or his self-actualization (Norton, 1991, p. 81).

In addition to self-actualization, combinatory behavior is an aspect of a HIT Reber and Gazzola (2022, 2023) address. Following Mella (2017), any system made up of a plurality of agents who autonomously develop their individual micro-behaviors which, *combined together*, give rise to a collective macro-behavior which produces a macro-effect attributable to the system as a whole is a "combinatory" system in which each individual acts on the basis of global information represented by the perception of the macro-behavior and/or the macro-effect, updating the global information because of the micro-macro feedback. A simple example is people performing the wave at a sports stadium. At the stadium, a man by his own volition stands up and yells out, "Let's do the wave, everyone." The result is that the person sitting next to him stands up and does a wave motion, and then the group of people sitting next to that person stands up and does the wave motion until eventually everyone in the stadium stands up and does the wave motion. The combinatory system is the people in the stadium. The micro-

behavior is one person standing up and doing a wave motion, and the macro-behavior is all the people in the stadium standing up and doing the wave motion. Now, if someone or a group in the crowd does some alternative motion and that contributes to everyone in the stadium doing the same motion, then this means that the combinatory system has acted upon the global information (the alternative motion). Furthermore, through the micro-macro feedback the system adjusts to create a new synchronized wave motion.

In regard to the term "system," Reber and Gazzola (2022, 2023) contend that a holarchical combinatory value-creation system comes from the application of systems thinking to holonic thinking (Koestler, 1968). In other words, unlike the hierarchical paradigm that uses linear thinking (Reber & Gazzola, 2022, p. 710), the holarchical paradigm to which holarchical combinatory value-creation belongs uses systems thinking by looking at things holistically (ibidem), hence the term holarchy and the structural arrangements of the HIT.

Finally, and to close, the paper is structured in the following manner. Section 2 addresses the Secondary Principle of Holarchical Formation. Subsection 2.1 discusses "Person as Holon" and subsection 2.2 expounds upon this by exploring "People as Holarchy" and establishes the HITs Governance Principles in sub-sub-sections 2.2.1 thru 2.2.10. Subsection 2.3 is about "Self-Assembling Holons," particularly how HITs self-assemble. Section 3 puts forth the Secondary Principle of Combinatory Action, and specifically references Mella's combinatory systems theory (CST). Subsections 3.1 thru 3.4 address each aspect of the principle, and sub-sub-sections 3.3.1 thru 3.3.3 expound upon the kinds of "Improvement Progress Systems." Section 3 ends with sub-section 3.4, walking the reader through the heuristic model of a HIT as a social-combinatory system.

2 – Secondary Principle of Holarchical Formation

The secondary principle of holarchical formation occurs

> ***When two or more self-actualizing persons (individual holons) self-assemble into an obligate mutualistic symbiotic relationship, referred to as a Holarchical Innovation Team (HIT), to achieve a common stated mission and purpose, creating specifications, functions, and structures with holonic connections that obliterate the dichotomies of far/close, small scale/large scale, and inside/outside to achieve the mission and purpose of the HIT.***

Let us examine the essential elements of this principle and revisit some terms of Reber and Gazzola (2022).

2.1 – *Person as Holon*

The Introduction of this paper expressed what a self-actualizing person is. In addition, Reber and Gazzola (2022, p. 726) define a holon in terms of a HIT as

> An independent, self-regulating open system that displays both the autonomous properties of wholes and the dependent properties of parts without any connection to other systems; and also contains the elements of Mission and Purpose, Specifications, Functions, and Structures (Enabling Systems).

Regarding the Principle of Holarchical Formation, a self-actualizing person is an individual holon. Reber and Gazzola (2022, p. 714) invoke Arthur Koestler's expression of the human being as holon when he asserts that no person "is an island" but "a holon" (Koestler, 1967/1968, p. 56). For example, in the Wedgwood Company HIT of Jack, Jane, and Sarah, if we view things from Jack's perspective as himself as an individual holon, he is located in the center between Jane and Sarah. As Koestler describes it, Jack is a

> Janus-faced entity who, looking inward, sees himself as a self-contained unique whole, looking outward as a dependent part. His self-assertive tendency is the dynamic manifestation of his unique wholeness, his autonomy and independence as a holon. Its equally universal antagonist, the integrative tendency, expresses his dependence on the larger whole to which he belongs: his 'part-ness'. The polarity of these two tendencies, or potentials, is one of the leitmotivs of the present theory. Empirically, it can be traced in all phenomena of life; theoretically, it is derived from the part-whole dichotomy inherent in the concept of the multi-layered hierarchy…. [The] self-assertive tendency is the dynamic expression of the holon's wholeness, the integrative tendency, the dynamic expression of its partness (Koestler, 1967/1968, p. 56).

Figure 1 illustrates Jack's perspective of his holonic relationship with Jane and Sarah in terms of their abilities as a Wedgwood Designer.

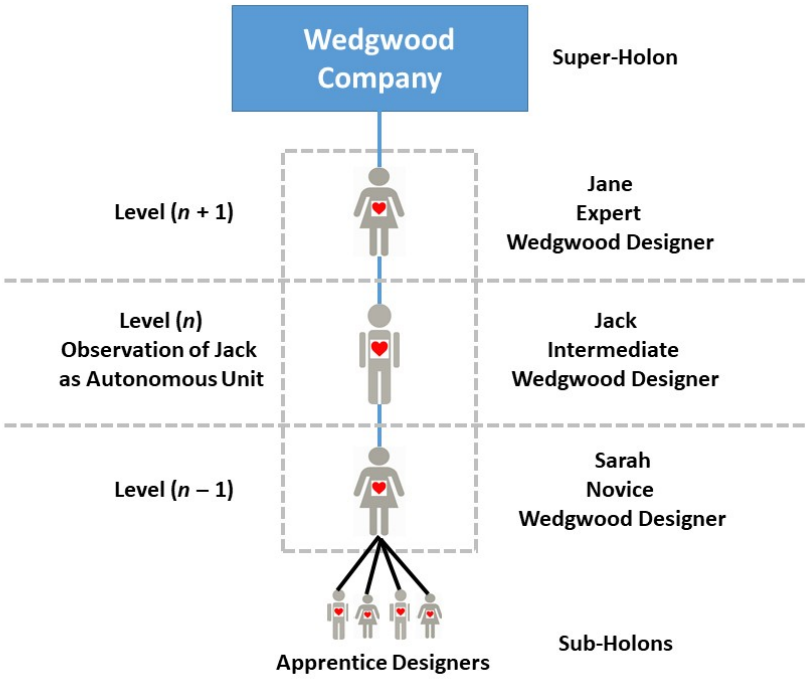

Fig. 1 – Jack's Holonic Perspective

In the above illustration, Jack is an intermediate designer within the Wedgwood Company. As a holon, he is both independent and dependent of the "larger whole to which he belongs," in this case Jane, the expert Designer, who in turn, while being independent in her work, depends on the super-holon (final holon) Wedgwood Company. As an autonomous unit, Jack is the center of his own universe. He is above Sarah to provide her guidance and assistance in raising her from a novice designer to an intermediate designer, and Sarah does the same in turn for the apprentice designers below her. As a dependent part, Jack is below Jane upon whom he depends for guidance and assistance to raise himself above the intermediate level of design.

When we consider Jack, Jane, and Sarah in terms of each one's self-actualization potential, we have a conundrum if the organizational system is hierarchal since it is unable to arrange the holonic relationships of Jack, Jane, and Sarah in accordance with their true selves. If Wedgwood Company arranges its workforce based on hierarchical relationships *only*, then Jack, Jane, and Sarah *only* work in their respective roles within their divisions. Jack will only be in Manufacturing, Jane will only be in Design, and Sarah will only be in Marketing. Neither will ever have the opportunity to develop beyond the requisite skills for being an expert in one's division. This traditional stovepipe management system has long dominated organizations for the last two centuries.

One reason a *holarchy* is better than a *hierarchy* is that it, as stated in the aforementioned Principle of Holarchical Formation, obliterates the dichotomies of far/close, small scale/large scale, and inside/outside. By allowing the organizational system to arrange itself in accordance with *self-actualizing principles*, it in turn creates the conditions for individuals to work creatively and make valuable products for society. Figure 2 illustrates the Jack-Jane-Sarah skill differential in the Wedgwood Company. In some organizations, people have a little flexibility to improve their skills beyond their assigned scope of work. For example, in Figure 2, Jack is an expert manufacturer but a novice marketer and intermediate designer. Jane is an expert designer but an intermediate manufacturer and marketer. Sarah is an expert marketer but a novice designer and manufacturer. They are able to improve their skills, but in a limited and hierarchical way.

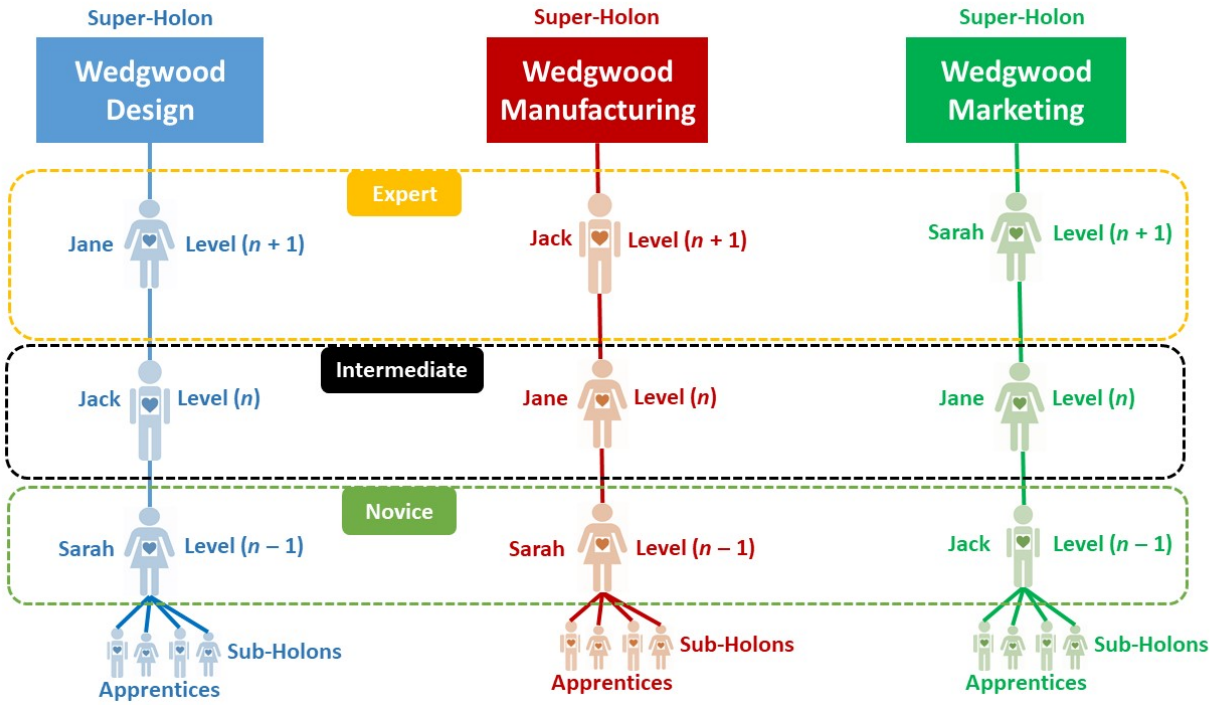

Fig. 2 – Jack-Jane-Sarah Skill Differential within Wedgwood Company Hierarchy

Though Jack, Jane, and Sarah are able to develop skills beyond their current expertise, this is not a holarchy with respect to HITs. Within each person's division, each has a specific mission and purpose, established by organizational constraints. They achieve their respective missions within certain specifications. Furthermore, specifically designed functions and structures are used to support the members adhering to the specifications. Reber and Gazzola (2023, p. 95) refer to this organizational systems design architecture as the holonic characteristics of the

individuals, with reference to their expertise and experience. For example, in the case of Jane, her mission is to "design excellent tea sets for Wedgwood customers" (ibidem). More specifically to the mission, her purpose is to "design excellent tea sets using creative and cutting-edge Wedgwood techniques" (ibidem). As Jane is an expert designer, it required years of study and practice to develop her powers of tea set design creativity and learn to apply the Wedgwood techniques of design. To help her harness these powers, the Design Division establishes specifications in which each designer "designs tea sets for Wedgwood customers based on market data and manufacturing capabilities" (ibidem). Using this data, the Design Division establishes as its functions to design "tea sets for various purposes and clients" (ibidem). This requires the assistance of human resources to establish structures that organize designers into their respective job roles and teams "according to skill, interest, and personality" (ibidem).

2.2 – *People as Holarchy*

Since it has been established that a person "is" a holon, we can in turn say that people as a group are a holarchy. In order to understand people as a holarchy, we need to establish the nature of a HIT. Reber and Gazzola (2022, p. 720) recognize three kinds of holarchies: (1) Molecular or Structural Holarchies, (2) Cognitive, Self-Organized Holarchies, and (3) Operational Holarchies. A HIT is identified as the second kind of holarchy that Mella (2009, p. 24) states is

> characterized by self-organization: these derive from the arrangement of holons in groups of increasing size considered as autonomous "cognitive entities", interconnected by means of relations of programming, coordination and control (typical of sentient, individual and social holons) in order to form larger entities.

Mella (2009, p. 27) uses the term Self-Organizing Open Hierarchical Order (SOHO) for this kind of holarchy whereas Arthur Koestler (1967/1968, p. 341) calls it an Open Hierarchical System in Appendix I of "General Properties of Open Hierarchical Systems (O.H.S.)" in *The Ghost in the Machine*. In terms of HITs, we can accept some of Koestler's comments, such as his OHS and The Janus Effect, and express these as the *HITs Governance Principles*.

2.2.1 – The Janus-Effect

A HIT is a semi-autonomous holarchical structure that is both a part and a whole of a larger system. It is comprised of self-actualizing individuals who are themselves semi-autonomous agents as both a part and a whole of the HIT; thereby creating a Janus-effect in which each member is positioned with the others in a holarchical relationship in terms of skills, interests, and personalities. At a higher level, the individual faces towards the subordinate levels as a self-contained whole. At a lower level, the individual looks upward towards the apex as a dependent part (Koestler, 1967/1968, p. 341).

Figure 3 illustrates the Janus-effect in which within a single HIT Holarchy several sub-holarchies exist. We must remember, though, that the Jack-Jane-Sarah HIT is part of the greater Wedgwood Company Holarchy. Therefore, the HIT is semi-autonomous. The HIT itself is Janus-face since as a self-contained whole it faces the subordinate levels of other units within the Wedgewood Company ecosystem. As a dependent part within the Wedgwood Company, it faces upward, such as in terms of procurement procedures to acquire the resources for the HIT to function, e.g. room space, Internet, budget, and amenities.

If we imagine Jack, Jane, and Sarah as individual holons within a holarchy and consider the skill differentials illustrated in Figure 2, we have a holarchical structure, as shown in Figure 3. The first holarchy is the Design Holarchy in which Jane is the expert and leads Sarah and Jack in the design experience. The second holarchy is the Manufacturing Holarchy in which Jack leads Jane and Sarah in the manufacturing experience. The third holarchy is the Marketing Holarchy in which Sarah leads Jane and Jack in the marketing experience.

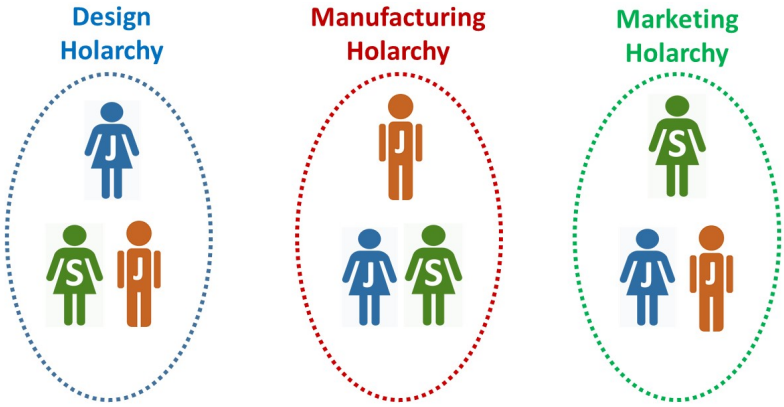

Fig. 3 – Jack-Jane-Sarah Holarchy

2.2.2 – Dissectibility

A HIT is a dissectible system in which each member can branch out from the HIT to form her or his node while still maintaining lines of communication and control and that the number of levels the HIT comprises is the measure of the HIT's depth and the number of members on any given level of the HIT is its span (Koestler, 1967/1968, p. 342). As Figure 4 illustrates, even though we have three people within the Jack-Jane-Sarah HIT, we have three sub-holarchies or nodes; hence, the depth of the HIT is equal to three.

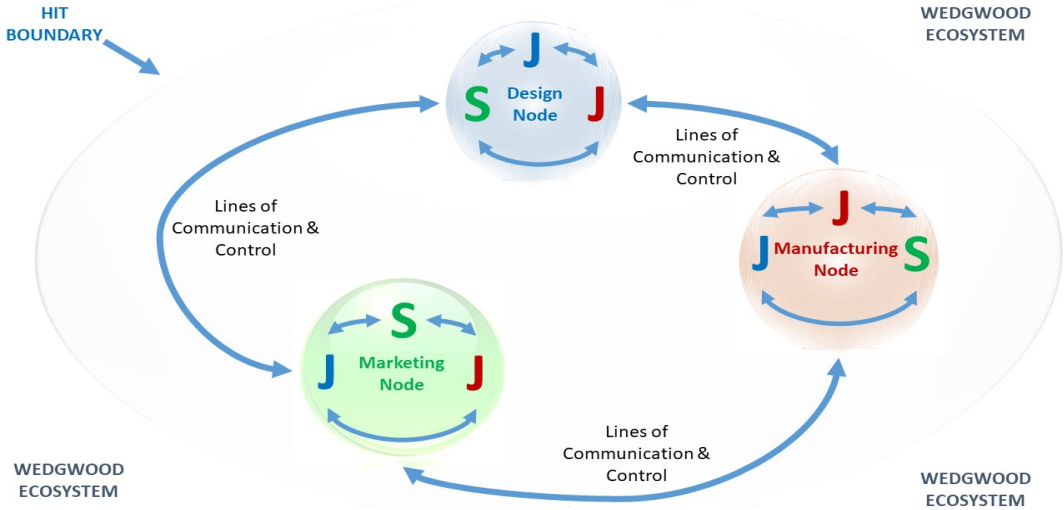

Fig. 4 – Jack-Jane-Sarah Holarchy

To distinguish between a hierarchy, the depth is illustrated as a network of the three nodes. Design, manufacturing, and marketing are in a sense equal but separate nodes because in reality they are three functions that allow the HIT to exist, i.e. one node cannot exist without the other

two nodes. In addition, for each node, Jack, Jane, and Sarah serve as a holon. As stated previously, Jane is an expert designer so she is the lead person for the design node. Jack is an expert manufacturer so he is the lead person for the manufacturing node. Sarah is an expert marketer so she is the lead person for the marketing node.

Furthermore, the HIT is comprised of nine holons and the span of the HIT is equal to nine. It appears that nine separate people exist in the HIT, but in reality, it is three different people holding three different roles. This dissectibility ability, which Koestler identifies, allows the HIT to be more efficient, effective, and economical. In actuality, the holarchy is a fluid relationship amongst three holarchies that provide us with a conceptual framework.

2.2.3 – Rules and Strategies

A HIT operates according to established standards and practices of good corporate governance, behavioral principles of combinatory systems, self-actualization principles of *eudaimonism*, organizational principles of continuous improvement, and the operational principles of holons, holarchies, and *orgoni*zations. Together, these are the HITs Canon (Koestler, 1967/1968, p. 342).

The *canon* ensures that the HIT functions in a fast-paced, interconnected, and chaotic world within ethical parameters (Reber & Gazzola, 2022, 2023; Reber, 2023). In addition, since a HIT is an organizational unit focused on creating valuable products for society, it employs continuous improvement, also known as *kaizen* (改善), and the operational principles of holons, holarchies, and *orgoni*zations so it can adapt to the global information it receives. Based upon the ideas of John Boudreau, Ravin Jesuthasan, and David Creelman in *Lead the Work* (2015), a "work spectrum" exists from a closed system to an open system, as shown in Figure 5.

A HIT is able to operate along this spectrum in terms of value-creation, organization, and rewards for its members. Reber and Gazzola (2022, p. 726) define a HIT holon as an open system. In Figure 5, "Organization" has four characteristics: boundary permeability, linkage, collaboration, and flexibility.

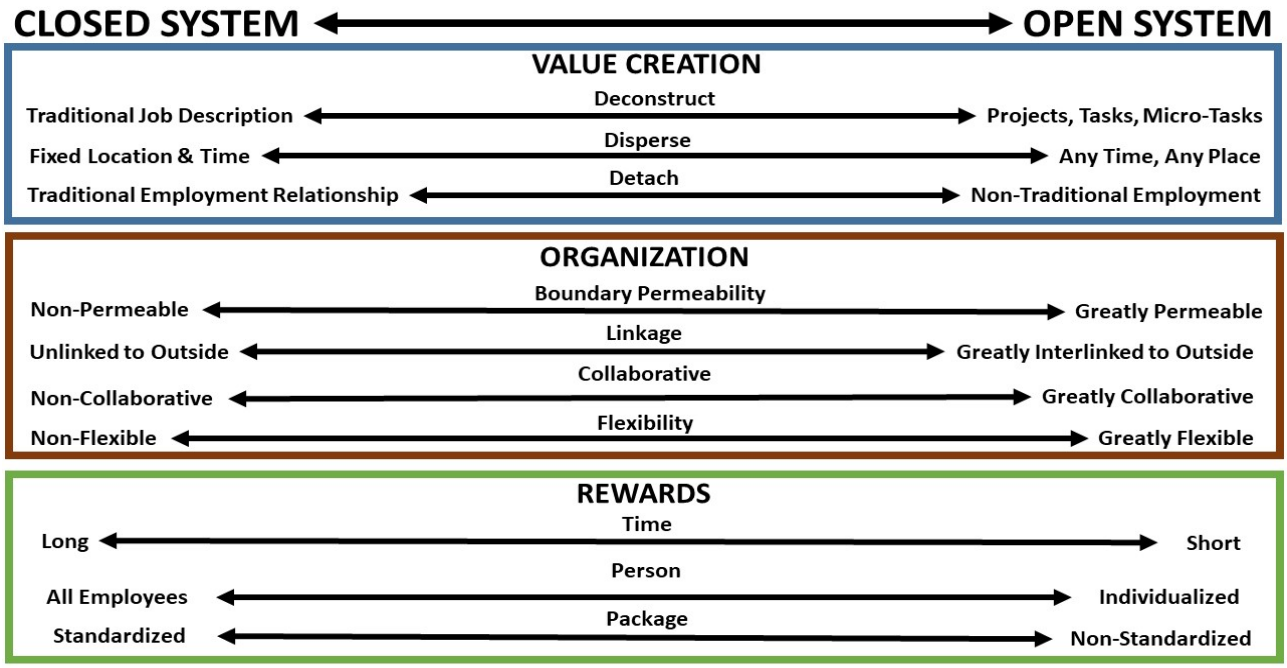

Fig. 5 – Work Spectrum

A HIT is a greatly flexible organizational unit with a greatly permeable organizational boundary and strong interlinkages to the outside world in order to engage in highly collaborative activities.

Boudreau, Jesuthasan, and Creelman (2015, p. 141) write that

> a permeable organization allows work and workers to flow more freely across the boundary. An interlinked organization also has work and workers flowing across its boundary, but now forges actual connections with one or more individuals, platforms, or other employers to make those flows easier, more systematic, and more predictable.

Therefore, instead of highly rigid, structured job descriptions, the HIT is person-centered, focusing on skills, interests, and personalities as illustrated in Figures 3 and 4. The HIT is fluid, almost transparent, since Jack, Jane, and Sarah flow almost ubiquitously from design, manufacturing, and marketing holarchies as illustrated in Figure 6.

Fig. 6 – Fluidity of Jack-Jane-Sarah Holarchy
(Because the HIT obliterates the time-space dichotomies, the three nodes move in-and-out of each other, similar to when one pours three glasses of water into each other into a pan and moves the pan around)

2.2.4 – Integration and Self-Assertion

A HIT is an integrated system that is part of a greater system. It also asserts itself to actualize its own individuality since each member of the HIT is her- or himself a self-actualizing person. As a self-actualizing organizational unit, it stubbornly clings to its values and ethical constraints to meet the organizational mission while at the same time is greatly flexible to promote the creative work with which each self-actualizing person partakes (Koestler, 1967/1968, pp. 343 – 344).

As shown in Figure 5, integration and self-assertion operate across a spectrum. In a HIT, the linkages are strong even though Jack, Jane, and Sarah are from three different divisions within Wedgwood. The HIT employs organizational design principles in which

> reporting structures, decision rights, information sharing, trust, and collaboration must…be applied as much to the interlinked ecosystem of workers, work, and external entities as they are to more traditional organizational units such as employees and divisions (Boudreau, Jesuthasan, and Creelman, 2015, p. 141).

In addition, the HIT has its own set of values that reflect the cardinal virtues to which Jack, Jane, and Sarah subscribe. Here, *noblesse oblige* is pertinent (Reber, 2023), where "persons

recognize that their responsibility for continuous moral growth is their responsibility for progressively more elevated moral conduct" (Norton, 1991, p. xii). In addition, each person within the HIT has her or his own distributive virtues that are in alignment with her or his own *daimon* (Reber & Gazzola, 2023; Reber, 2023). The work Jack, Jane, and Sarah do in the HIT is deconstructed, dispersed, and detached in accordance with the complementarity and congeniality of personal excellences of Jack, Jane, and Sarah. Reber and Gazzola (2023, pp. 81 – 82) recognize two eudaimonistic principles that guide work in a HIT. These principles are proportional productive equality and proportional recipient equality, where proportional productive equality "obtains when A and B are alike doing the work for which each is by nature best suited" (Norton, 1991, p. 161) and proportional recipient equality "obtains when A and B alike possess the particular goods and utilities to which each is entitled" (ibidem). Therefore, the self-assertive tendencies of a HIT are grounded in these two principles, where Jack, Jane, and Sarah do the work to which s/he is best suited and each receives those goods and utilities that are commensurable with each one's person.

2.2.5 – Triggers and Scanners

As an open system, a HIT adheres to the operational holon principle established by Koestler (1967/1968, p. 344) where

> A holon on the n level of an output-hierarchy is represented on the (n + 1) level as a unit, and triggered into action as a unit. A holon, in other words, is a system of relata which is represented on the next higher level as a relatum.

In addition to triggering, a HIT is able to scan where

> filtering devices range from habituation and the efferent control of receptors, through the constancy phenomena, to pattern-recognition in space or time, and to the decoding of linguistic and other forms of meaning (Koestler, 1967/1968, p. 345).

Let us simplify the aforementioned in relation to Jack (n), Jane ($n + 1$), and Sarah ($n – 1$). As Figure 2 illustrates, the three of them have skill differentials for design, manufacturing, and marketing. For design, Jack is at level (n) since he is at the intermediate level. Therefore, when he needs help from Jane who is at the expert level ($n + 1$) level, he sends a trigger to her in the form of communication. Jane receives the message and filters it, and she decides the best way to help Jack. The same goes for the relationship between Jack and Sarah in which Sarah sends a trigger to Jack and Jack in turn receives it and decides the best way to help Sarah.

2.2.6 – Arborisation and Reticulation

A HIT is an arborisation and reticulation organizational system (Koestler, 1967/1968, pp. 345 – 346). In terms of arborisation, it has "'vertically' arborising structures whose branches interlock with those of other hierarchies at a multiplicity of levels and form 'horizontal' networks" (Koestler, 1967/1968, p. 345). As previously stated, within the Jack-Jane-Sarah HIT exists the design, manufacturing, and marketing holarchies. Furthermore, within each holarchy exists a natural skills-based hierarchy. These holarchies interlock in alignment with the work arrangements amongst Jack, Jane, and Sarah at certain points in time and space. The reticulation of the HIT is fluid, an ever expanding and contracting network of activity amongst them. Figure 7 is a snapshot of this network.

Similar to Figure 6, the design, manufacturing, and marketing holarchies connect in the abstract as well as in the concrete. Furthermore, any of the persons can occupy any of the holarchies at the same time and place. As Koestler (1967/1968, p. 346) states,

> Organisms and societies operate in a hierarchy of environments, from the local environment of each holon to the 'total field', which may include imaginary environments derived from extrapolation in space and time.

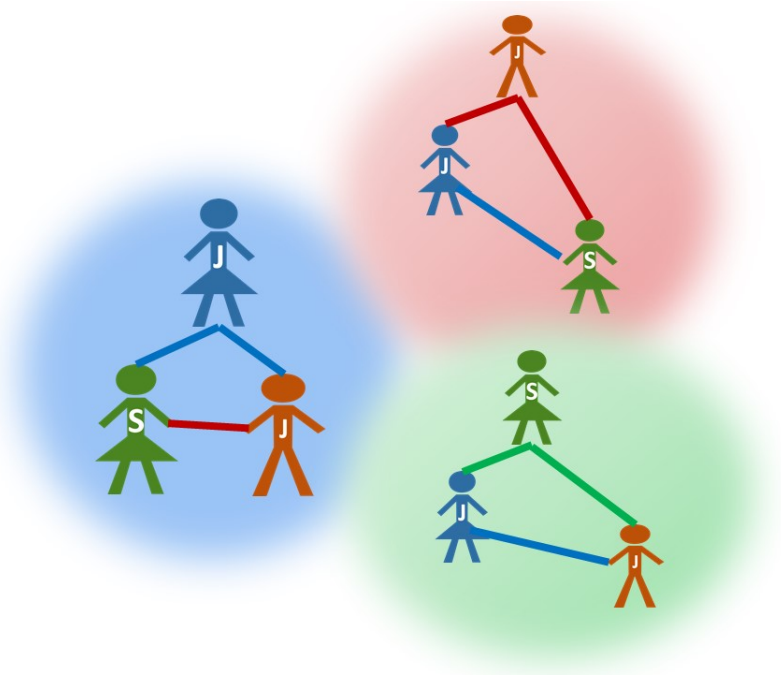

Fig. 7 – Arborisation and Reticulation of Jack-Jane-Sarah HIT

2.2.7 – Regulation Channels

A HIT uses regulation channels to communicate (Koestler, 1967/1968, p. 346). In Figure 7 the three holarchies have a skills-based hierarchy. Higher echelons of each holarchy may not communicate directly with lower echelons, relying instead on intermediaries. For example, in the case of Jane's design hierarchy, she may communicate to Jack who in turn communicates with Sarah in terms of design skill development.

On the other hand, because holarchies dissolve the dichotomies of far/close, small scale/large scale, and inside/outside, Jack, Jane, and Sarah occupy all three holarchies at the same time and in the same space, making communication instantaneous. Regulation channels act according to holarchical rules instead of hierarchical rules. Holarchies are more flexible and employ channel rules according to principles of effectiveness, efficiency and economics (Reber & Gazzola, 2023, p. 82).

2.2.8 – Mechanization and Freedom

As previously stated, a HIT has both hierarchical and holarchical characteristics. Routine functions of the HIT are mechanized or standardized for efficiency, effectiveness, and economic purposes since it is

> the highest manifestation of the Integrative Tendency…to extract order out of disorder, and information out of noise (Koestler, 1967/1968, p. 347).

These mechanized or standardized functions operate at the lower echelons of the HIT, arranged hierarchically; whereas, the upper echelons of the HIT are arranged holarchically, have more freedom, and are the place for creativity and adaptation (Koestler, 1967/1968, pp. 346 – 347). If we recall Figure 5, rules and strategies for work operate across a spectrum. As functions of the HIT become more standardized, the rules and strategies move closer to the "closed system" of the spectrum. On the other hand, since the HIT has to be adaptive, the functions of creativity and innovation move closer to the "open system" of the spectrum.

For example, in the Jack-Jane-Sarah HIT, "basic" functions or pedagogy of design, manufacturing, and marketing are standardized. Within each holarchy, those at the novice level will perform the basic functions of design, manufacturing, and marketing. Those at the expert level will perform higher-level cognitive functions and require more freedom in considering a new innovative Wedgwood Tea Set product. Therefore, and here exists the beauty of holarchies, when Jack (manufacturing), Jane (design), and Sarah (marketing) play her or his respective expert role in her or his domain, each one synergistically complements the other's personal excellences in a congenial manner working at the highest end of the abstractive altitude. Then, after their combined efforts in addressing each of the domain areas is accomplished, they standardize the functions to meet the mission of designing a particular kind of Wedgwood tea set in a most effective, efficient, and economical manner. The HIT communicates these standardized processes to the greater Wedgwood Ecosystem for implementation at the respective divisions. In a strict hierarchical organizational system, this maneuverability does not exist.

2.2.9 – Equilibrium and Disorder

A HIT tends towards equilibrium because of the micro-macro feedback that exists (Reber & Gazzola, 2023, pp. 82-88). However, if the environmental factors are too strong to prevent the feedback loop from balancing, then disorder may result (Koestler, 1967/1968, pp. 347 – 348). In one circumstance, the HIT may exert enough self-control to break away from the larger system (Koestler, 1967/1968, p. 347). In another circumstance, the larger system may erode the independence and individuality of the HIT (Koestler, 1967/1968, p. 348).

The first circumstance in which a part breaks away from the whole is most common with spinoff companies, such as when "a portion of the business is headed in a different direction and has different strategic priorities from the parent company" and "it can unlock value as an independent operation" (Fontinelle, 2021, para. 6). For example, if the Jack-Jane-Sarah HIT is able to make more money as an independent company, then Wedgwood would spinoff the HIT as a subsidiary, allowing Jack, Jane, and Sarah autonomy in running the new company but also allowing the parent company to receive a percentage of the profits.

The second circumstance in which the larger system erodes the "autonomy and individuality" of the smaller system (Koestler, 1967/1968, p. 348) is common when a unit, division, or subsidiary of a company is unprofitable or its functions are no longer germane to the larger system. For example, if the Jack-Jane-Sarah HIT is not producing any profit, then Wedgwood could take several different measures: a) reduce allocated funds, b) change the members of the HIT, or c) eliminate the HIT.

2.2.10 – Regeneration

A HIT has regenerative abilities during critical challenges to its existence (Koestler, 1967/1968, p. 348) in order to re-establish equilibrium (Reber & Gazzola, 2023, pp. 82 – 88). In the above example of Wedgwood eroding the autonomy and individuality of the HIT, such as reducing allocated funds, the HIT is able to "regenerate" in response to the corrective actions of Wedgwood. With limited funds, Wedgwood forces Jack, Jane, and Sarah to find ways to make the HIT profitable. They perform a thorough analysis of the HIT's operations and discover a more effective, efficient, and economical way in which to manufacture the new tea set product. The HIT shares the new idea with the parent company. It results in a 200% increase in profits. The profits regenerated the HIT and re-established equilibrium in terms of reaching the targeted operating profit margin of the HIT.

2.3 – *Self-Assembling Holons*

Traditionally, self-assembling or self-organizing is

> [The] macro behavior of a collectivity of agents in which the micro behaviors appear to be directed, or organized, by an Invisible Hand, Supreme Authority, or Internal Organizer in order to produce the emerging phenomenon represented by the formation of ordered structures, or recognizable patterns…(Mella, 2017, p. 2).

In terms of a HIT, self-assembling or self-organizing is when a self-actualizing person, through the power of imagination, spontaneously develops an idea for an innovative product and enlists the efforts of other self-actualizing persons to complement in a congenial manner their personal excellences in the mission to create the value-added product of the first self-actualizing person's original idea. Since the catalyst for the formation of the HIT is an individual's imagination, the outward appearance is indeed an "invisible hand." Reber and Gazzola (2022, p. 730) also state that self-assembling is

> when each individual team member is acting upon "global information" that the team creates which in turn creates a virtuous cycle in order for the organization to create value for society, specifically, high quality, low cost, and innovative products.

A HIT is a greatly flexible organizational unit with a greatly permeable organizational boundary and strong interlinkages to the outside world in order to engage in highly collaborative activities. This comment is true even though one of the members came up with an idea for a new product through her or his imagination. This imagination is either synthetic or creative and influenced by "global information" (Reber & Gazzola, 2022, p. 724) and each member of the HIT is "an independent agent who acts spontaneously to global information s/he receives" (Reber & Gazzola, 2023, p. 95).

In addition, self-assembling is spontaneous and Reber and Gazzola (2022, p. 730) apply Mella's (2017, p. 54) definition:

> Spontaneous systems can be defined as "*natural*" (in the relative and conventional meaning of the term), producing ordered micro behavior that can be viewed as forms of self-organization. In other cases we can observe *ad hoc* rules to form combinatory systems, and as such we can define these as "*artificial*".

When self-assembling in a spontaneous way, the self-actualizing members at a certain point in time align in an obligate mutualistic symbiotic relationship (Reber & Gazzola, 2022, p. 730).

This alignment is a holonic connection (Reber & Gazzola, 2022, p. 727). For example, when Jack, Jane, and Sarah align themselves in regards to the mission statement of "Create a perpetual lifespan usage tea set which appeals to tea set connoisseurs" (Reber & Gazzola, 2023, p. 96), they will have begun the first process of creating a holonic connection between them. Once Jack, Jane, and Sarah agree upon the mission, they arrange themselves in an obligate mutualistic symbiotic relationship, and this means "creating a new purpose, specifications, functions, and structures in the holarchical form" (Reber & Gazzola, 2022, p. 727).

"*Obligate mutualistic symbiotic relationship*" is a relationship in which each member after self-assembling into a HIT acts *obligatory* (with noble obligation), meaning in accordance with the requirements of *noblesse oblige* (Reber, 2023). Furthermore, each self-actualizing person recognizes and acts upon the cardinal and distributive virtues of the HIT. In this respect, the relationship is *mutualistic*, i.e., each member is conscious of the other's inherent individual worth and each member actualizes her or his worth in harmony with each other (ibidem). This harmony means each person acts in a just manner in order to distribute the HIT's goods equitably according to each person's individual worth.

By acting upon *noblesse oblige* that mutually benefits the other, the members create a symbiotic relationship. Collins Dictionary (2023) defines a symbiotic relationship as "one in which organisms, people, or things exist together in a way that benefits them all." Therefore, the relationship is just not mutual, but symbiotic in order to emphasize a positive and beneficial co-existence.

3 – Secondary Principle of Combinatory Action

The secondary principle of combinatory action occurs

> ***When members of a HIT consciously or unconsciously act, exclusively or prevalently, based on global information that the members themselves directly produce and update as the consequence of their micro behavior and the micro-macro feedback in achieving the mission and purpose of the HIT.***

Let us refer again to Mella's comments on the fundamental idea of a combinatory system:

> Collectivities can be viewed as units formed by a plurality of *similar* elements or agents, each of which produces similar *micro behaviors* – and in many circumstances also *observable micro effects* – which, "in combining", produce a *macro behavior* that gives rise to collective macro phenomena – and noticeable *macro effects* – which do not refer back to the individual micro behaviors, even if they necessarily derive from the agent's micro behaviors. If, on the one hand, the macro phenomena are produced from a "combination" – hence the term "combinatory systems" – of the agents' micro behaviors, on the other hand, at the same time those phenomena condition the agents' behaviors, as part of a *micro-macro feedback* relationship that represents the "invisible hand" that seems to guide the individual behaviors and produce the collective phenomena (Mella, 2017, p. viii).

In terms of a HIT, and in accordance with combinatory systems theory (CST),

> ***A HIT is a natural, robust, persistent, spontaneous, self-organizing social combinatory system focused on progressing society through individual***

IMPROVEMENTS AND OPERATES ACCORDING TO ENDOGENOUS AND EXTERNAL CONTROLS.

3.1 – *Spontaneous, Self-Organizing*

Reber and Gazzola (2022, p. 730) assert that a HIT is a spontaneous and self-assembling (self-organizing) system, a natural system, "(in the relative and conventional meaning of the term), producing ordered micro behavior that can be viewed as forms of *self-organization*" (Mella, 2017, p. 54).

A HIT may start out as independent individuals who act according to the dynamics of CST, but at a certain point in time, these individuals align their actions into an obligate mutualistic symbiotic relationship (Reber & Gazzola, 2022, p. 730). The characteristics of a natural system include expansion, organization, and ramification (Mella, 2017, p. 55) where the parent system allows its members to expand beyond the traditional boundaries and organize themselves into individual HITs that include ramifications, such as a HIT becoming a spinoff company as mentioned previously in subsection 2.2.9.

In regards to expansion, the context of the parent system defines a HIT where the micro and macro rules act upon the HIT, for example, Wedgwood Company's environment defines the context within which the Jack-Jane-Sarah HIT operates.

Furthermore, in terms of how the HIT organizes itself, it does so by specializing "in its own function by taking on the appropriate state in relation to the position it occupies in the [parent] system" (Mella, 2017, p. 56), for example, the Jack-Jane-Sarah HIT organized itself around Jane's central idea of a new kind of tea set. This reflects previous comments on the HITs Governance Principles addressed in subsections 2.2.1 through 2.2.10.

Finally, after a HIT is organized, ramifications will indeed present themselves whether positive or negative.

The typical ramification is that of the diffusion kind that has "temporal dynamics during which part of the *base* is transformed into another combinatory system that can subsequently expand, and whose elements have features in common with the other system and others that are different" (Mella, 2017, p. 56). A simple example is establishing the Jack-Jane-Sarah HIT as a subsidiary company of Wedgwood because it can make more money.

3.2 – *Robust & Persistent*

A HIT is a robust and persistent system where robustness is the

> characteristic of a combinatory system to resist perturbations and weakenings that, in some way, limit the production of the macro behavior or the macro effect. The most robust combinatory system is the one that equally produces the macro behavior or the macro effects even when part of the *base* is eliminated or when the *environment* modifies its *form* (Mella, 2017, p. 57).

This is consistent with the HITs Governance Principle 2.2.10 in regards to Regeneration in which a HIT can regenerate in a crisis, such as when Wedgwood reduces the budget of the Jack-Jane-Sarah HIT and they implement countermeasures to improve manufacturing techniques for their tea set that results in an increase profit of 200%.

Persistence is a combinatory system being able to

> resist over time and to operate for a long period of time. The most persistent is the one that over time reproduces the macro behavior even when the base activity is reduced to the minimum density, even to a single element of the entire base (Mella, 2017, p. 58).

Here again the Jack-Jane-Sarah HIT is applied in which *Wedgwood reduces the HIT's budget* (macro behavior) that in turn reproduces the macro behavior via *cost cutting of the HIT* (micro behavior). Now, even though this example demonstrates the HIT is both robust and persistent, a robust system is "not always persistent" (Mella, 2017, p. 58). Robustness and persistence are usually together because they depend on necessitating factors (ibidem). Necessitating factors are "the micro rules that trigger the feedback between the micro and macro behavior" (ibidem). The dynamics of the necessitating factors fall under the HITs Governance Principles of 2.2.5 Triggers and Scanners as well as 2.2.7 Regulation Channels.

3.3 – *Improvement & Progress Typology*

Mella (2017, pp. 58 – 59) identifies five types of combinatory systems according to their macro behavior or effects: Accumulation, Diffusion, Pursuit, Order, Improvement and Progress. For HITs Principles, Improvement and Progress is significant because a HIT's

> particular effect is to produce *progress*, understood as an improvement in the overall state of a collectivity that is attained through individual *improvement*. …Individual improvements raise the parameter that measures the collective progress; this constitutes the *global information* that leads to the perception of positive and negative gaps that push the individuals to improve in order to increase the gaps (if positive) or eliminate them (if negative) (Mella, 2017, p. 133).

> Stated more simply, *micro-macro feedback* is established between the *micro* and *macro behavior*, which acts to produce progress understood as an improvement in the overall state of a collectivity (according to commonly accepted value judgements). The progress derives from the agents' pursuit of individual improvement (that is, an increase in some parameter judged to be useful or favorable) at the same time it directs the agents to search for new improvements (Mella, 2017, p. 219).

Mella (2017, pp. 221 – 223) establishes some fundamental rules expressed as a general formal model for Combinatory Automaton regarding improvement and progress. One of the important assumptions of this is that "the agents of the system possess a 'will' – that is, some form of influence on the means of controlling their own level of *improvement*" (Mella, 2017, p. 223). This assumption is one of the key reasons HITs are comprised of self-actualizing individuals.

Mella (2017, pp. 41) summarizes the operative logic of combinatory system acting as a combinatory automation as shown in Figure 8, which needs no comment. The functions F, G, f_n and g_n are the fundamental rules of the system and account for its behavior.

- "by chance", at time t_0 some element of the collectivity produces a micro behavior that causes an improvement in the parameter $\pi_n(t_0)$, whose significance must be specified by the observer;
- assuming that the *minimum density* require for an improvement to influence the variable progress is attained at t_1, then progress begins and $P^M(t_1) > P^M(t_0)$;

- by observing the value of $P^{M}(t_1)$, the system's agents can compare the average level of progress for the collectivity with that of their state of well-being; the individual gaps that result activate the necessitating factors, which move the agents to modify their behavior based on the level of progress achieved by the system, thereby obtaining an improvement that raises the parameter $\pi_n(t_1)$ to the level $\pi_n(t_2)$;
- in succeeding moments, additional progress is produced in the system, thus activating the characteristic *micro-macro feedback*.

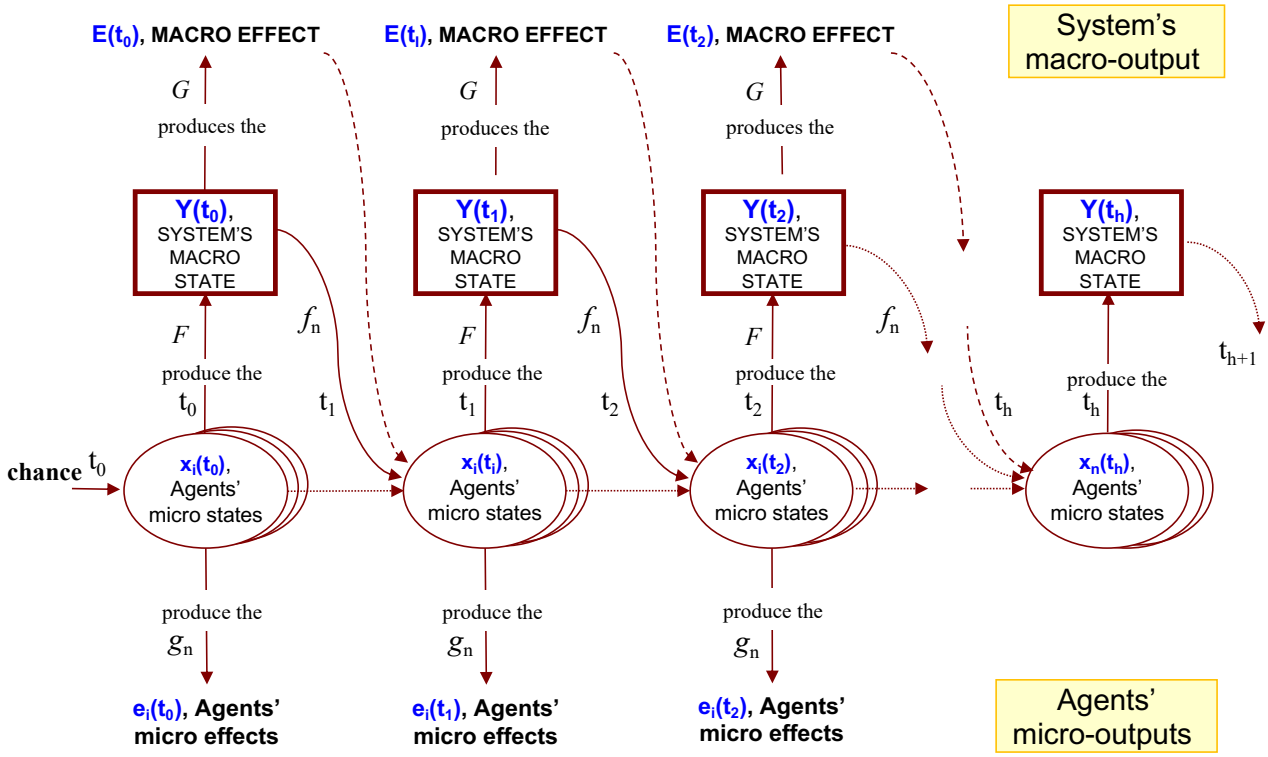

Fig. 8 – The logic of the combinatorial system represented as a combinatorial automaton

In addition to the aforementioned, several kinds of "Improvement & Progress" systems exist, and this paper addresses the following since these directly relate to a HIT:

- *Increasing*-Productivity
- *Increasing*-Quality
- *Scientific*-and-Technical Progress

3.3.1 – Increasing-Productivity

Mella (2017, p. 135) states that productivity is

> the efficiency of [society] in producing, and it can be observed at the level of the individual producer (usually a firm or division)…. The degree of average productivity is measured by the ratio between the quantity of production obtained from a certain productive process and the quantity of labor used in that process over a given period of observation; or even by the inverse ratio, which indicates the average labor requirement per unit of product.

Furthermore, in referencing Adam Smith's *Wealth of Nations* (1776/1952, p. 4), Mella (2017, p. 135) develops a typology for increasing-productivity and identifies four drivers:

- *Passive:* "Increase the production obtained per unit of labor applied to production" and are "connected to fertility in all its forms," e.g. land, water, subsoil, and irrigation.
- *Active:* "Reduce the…quantity of labor needed to produce with fertility held constant" and includes skill, equipment, and specialization as three types of active drivers.
- *Endogenous or Psychological:* "Psychological conditions that lead [people] to supply [their] labor to a given organization" and include motivation and satisfaction.
- *Extrinsic:* "Involve the organization of productive systems, the environment within which the work is carried out, and, in the final analysis, the firm's policies regarding increased productivity" and include continual mechanization and on-line automatic control systems for processes.

For the Jack-Jane-Sarah HIT, each driver is essential. The passive driver for the HIT is the "fertile" innovation environment that allows each person to increase her or his productivity of ideas for innovative tea sets. Furthermore, and this applies directly to value-creation, the application of an Innovation Cycle. Reber (2019, p. 24) developed an Innovation and Plan, Do, Check, Act (PDCA) Cycle that includes both an innovation cycle and a PDCA cycle, as shown in Figure 9.

The Innovation Cycle includes imagination, ideation, decision, value creation, product definition, white paper publication, prototype development, commercialization, and results. Each step in the Innovation Cycle, as well as the Innovation Cycle as a whole system, applies the PDCA cycle for continuous improvement efforts.

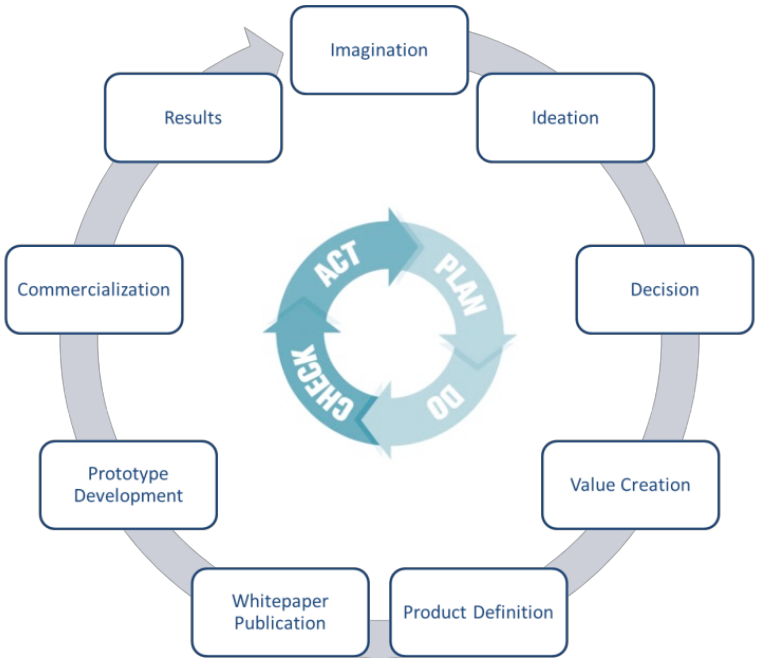

Fig. 9 – Innovation & PDCA Cycles

The active driver skill includes marketing, design, and manufacturing skills. The active driver of specialization is the HIT itself with a mission to *create a perpetual lifespan usage tea set that appeals to tea set connoisseurs*. The active driver of equipment is the materials the HIT needs to produce a prototype tea set.

Endogenous or psychological driver applies directly to self-actualization and *meaningful work* (Reber & Gazzola, 2023; Reber, 2023), and one of the reasons HITs are important. By matching people according to their skills, interests, and personalities, people will be more motivated to create value and achieve a higher level of satisfaction in regards to the work that is their work to do in life. This requires a fundamental *paradigm shift* from the hierarchical paradigm to the holarchical paradigm if we want people to achieve meaningful work.

Finally, the extrinsic driver of a HIT is the Spectrum of Work introduced in Figure 5. The Jack-Jane-Sarah HIT operates within the Wedgwood Company ecosystem of value-creation, organization, and rewards for its members. By tailoring the Spectrum of Work in alignment with a HITs organizational framework, Wedgwood is able to increase productivity within its ecosystem.

For example, let us suppose in terms of rewards Wedgwood establishes a policy that allows each HIT to receive 20% of the net profits from the products the HIT creates. This financial incentive should lead to improvement and progress within the HIT as well as throughout the Wedgwood ecosystem.

3.3.2 – Increasing-Quality

Mella (2017, pp. 138 – 139) identifies three distinct notions that reflect the majority of definitions in regards to the literature on quality: Functional (Market), Design (Intrinsic, Productive), and Environmental (Context).

He further asserts that quality and productivity are essential for the "efficiency and effectiveness of a productive process" and that quality is a "fundamental element in the production and sales strategies of every firm" (Mella, 2017, p. 138). These are Mella's aspects of quality:

- *Functional (Market):* Set of characteristics which, from the customer's point of view, make the *product* appropriate for *use*; that is, capable of satisfying a specific *use or utility function* of the good or service, taking into account a desired standard of *reliability* (the product must provide use that is not interrupted due to imperfections and safety) (Mella, 2017, p. 138).
- *Design (Intrinsic, Productive):* Set of characteristics that, from an internal point of view (in terms of production processes) make all the *product units* conform to a *standard* of reference (prototype, sample, model, design). These forms of quality refer not so much to the product as to the *production*; that is, to the flows of production units obtained during a process (Mella, 2017, p. 139).
- *Environmental (Context):* Set of characteristics which, from the point of view of external impact, make the product compatible with the environment, both in terms of pollution, waste disposal, environmental risks, or suitability for introduction into the context in question (ibidem).

Section 3.4 addresses each of these. King Charles' Coronation is a worthy example to employ in which people from all over the world (*the market*) want commemorative tea sets for the Coronation.

Furthermore, since the mission includes creating a perpetual lifespan tea set, this comports with the *environmental* aspect of quality. In turn, the mass production of the Wedgwood King Charles Coronation Commemorative Tea Set conforms to Wedgwood production standards (*design*).

3.3.3 – Scientific-and-Technological Progress

Research and Development (R&D) is a key part of what many companies do. IBM is probably one of the most reputable companies that have contributed to the progress of scientific-technological progress as well as tertiary institutions such as Harvard and MIT. According to Mella (2017, p. 145), scientific progress or discovery usually occurs by chance

> even if it often results from teamwork and concludes a research program undertaken specifically to reduce the scientific or technological gap…[and]…if the discovery is useful it increases the stock of knowledge and makes other research necessary, thereby setting off feedback between the micro and macro behavior.

In the case of the Jack-Jane-Sarah HIT, they may in fact be engaged in scientific-technological progress if the Wedgwood King Charles Coronation Commemorative Tea Set increases the "stock of knowledge and makes other research necessary" in how tea sets are designed and manufactured. For example, investors on Wall Street and London know that demand is high for the Wedgwood King Charles Coronation Commemorative Tea Set; as a result, they invest in Wedgwood to incentivize the company to design manufacturing processes that greatly improve the quality of tea sets.

3.4 – *Social Combinatory System*

Reber and Gazzola (2023, pp. 83 – 85) assert that a HIT is a social combinatory system and accept Mella's (2017, pp. 61 – 62) definition and *modus operandi* (simple description in words) of a social combinatory system. Furthermore, Reber and Gazzola (2023, p. 85 – 86) provide a heuristic model that includes an illustration for the formation of a HIT, that is a model observers build "to understand the logic of specific combinatory systems, or a class of combinatory systems" and "try to simulate the system's dynamics by stating – or constructing ad hoc – a set of rules necessary, and perhaps sufficient, to produce observable collective phenomena" (Mella, 2017, p. 60). These "rules" that are applied to a HIT are summarized by Mella (ibidem) as:

(1) the micro, or *necessitating rules* producing the micro behavior of agents; these rules interpret the action of the necessitating factors;
(2) the macro, or *recombining rules*, which explain the action of the recombining factors in producing the system's macro behavior;
(3) the modus operandi of the *micro-macro feedback*, which allows the system to generate the observed phenomena;
(4) the strengthening, weakening and *control actions*, when possible or admitted, and their effects on the micro and macro behavior.

Let us again apply the Jack-Jane-Sarah HIT of Wedgwood Company to illustrate the principles. In the Secondary Principle of Combinatory Action, the members "consciously or unconsciously act, exclusively or prevalently, based on global information that the members themselves directly produce and update." Mella (2017, p. 61) refers to this as social combinatory system action where

> the micro state of the agents represents a value that, in the presence of *necessitating* factors, the agents try to optimize after comparing them with the macro state of the system. In fact,

through a succession of decisions the agents try to harmonize their state in order to eliminate or increase the perceived gap of the macro state.

The statement can be rephrased into a HITs Necessitating Factors Principle that holds

***A HIT** IS A MICROSTATE OF SELF-ACTUALIZING INDIVIDUALS WHO SELF-ORGANIZE TO CREATE A PARTICULAR VALUE FOR SOCIETY AND NECESSITATING FACTORS CONDITION THE MICRO BEHAVIORS OF THE INDIVIDUALS.*

In terms of the Jack-Jane-Sarah HIT of Wedgwood Company, the necessitating factors to produce the tea set include "uniqueness, attractiveness, and utility." Jane's desire to create a unique, attractive, and highly utilitarian tea set is what attracted Jack and Sarah to the project. These criteria become design, manufacturing, and marketing standards and condition their *micro behaviors* in the HIT. In addition, their micro behaviors create a *micro effect* that is a prototype tea set. Figures 10 and 11 provide a heuristic model of the Jack-Jane-Sarah HIT of Wedgwood Company to illustrate the necessitating factors, micro behaviors, and micro effect.

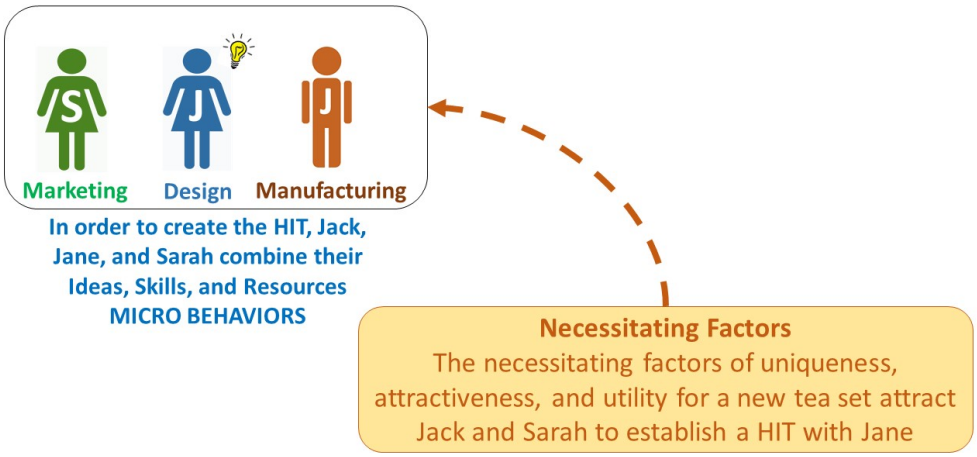

Fig. 10 – Necessitating Factors of Jack-Jane-Sarah HIT

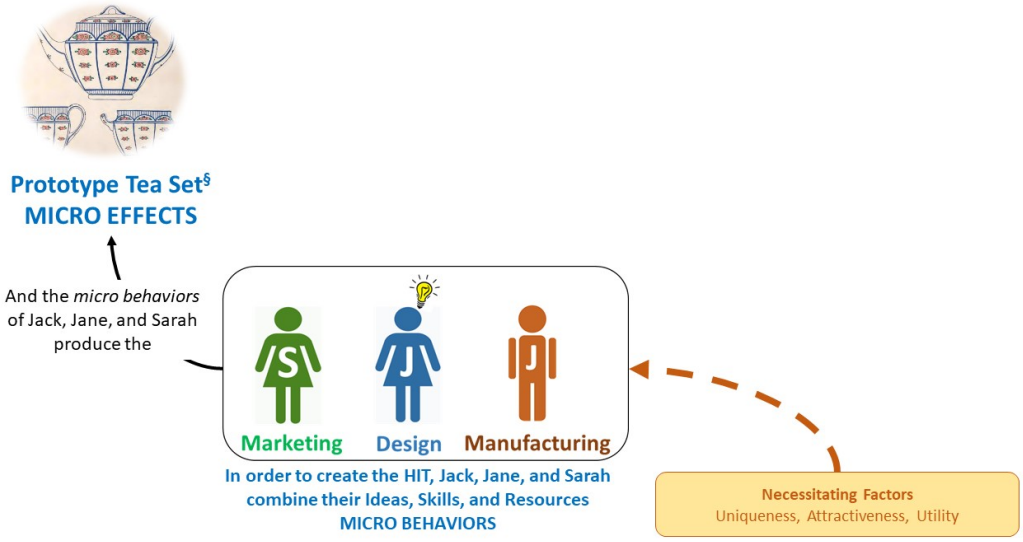

Fig. 11 – Micro Effect of Jack-Jane-Sarah HIT

(adaptation of Mella's Figure 1.8, 2017, p. 19, § is adaptation of "1915 Belleek Tea Set Keramic Studio" by the cmn is marked with Public Domain Mark 1.0. To view the terms, visit https://creativecommons.org/publicdomain/mark/1.0/?ref=openverse)

In addition to the *necessitating factors*, the *recombining factors* are present that modify the state of the system with each decision the independent agents make (Mella, 2017, p. 61). Mella (2017, p. 19) states that the recombining factors are

> the "elements" or causes that *allow* or force the system to *notice* and *recombine* the micro behavior (or the *micro* effects) in order to produce and maintain the *macro* behavior (or the *macro* effect).

Furthermore, an element of chance exists in addition to the recombining factors that influence the macro behavior of the collectivity (Mella, 2017, p. 19). Based on the aforementioned, a HITs Recombining Factors and Chance Principle can be developed that holds

> ***A HIT contains recombining factors and an element of chance or initial random micro behaviors that force the HIT to notice and recombine its micro behaviors or micro effects to produce and maintain the macro behavior of the collectivity.***

In terms of the Jack-Jane-Sarah HIT, the recombining factors are the various kinds of formal feedback the HIT receives from the Wedgwood Company ecosystem. Furthermore, an element of chance occurs when members of the HIT informally meet at a party with some of the top tea set connoisseurs from *Tea Time Magazine*, *House Beautiful*, and *Country and Town House* who tell the HIT members their personal opinions on what an exquisite tea set should have. Together, these produce and maintain the macro behaviors of Wedgwood Company to decide to add or remove resources from the HIT in creating a new and better tea set. Figure 12 is a heuristic model of recombining factors and chance for the HIT.

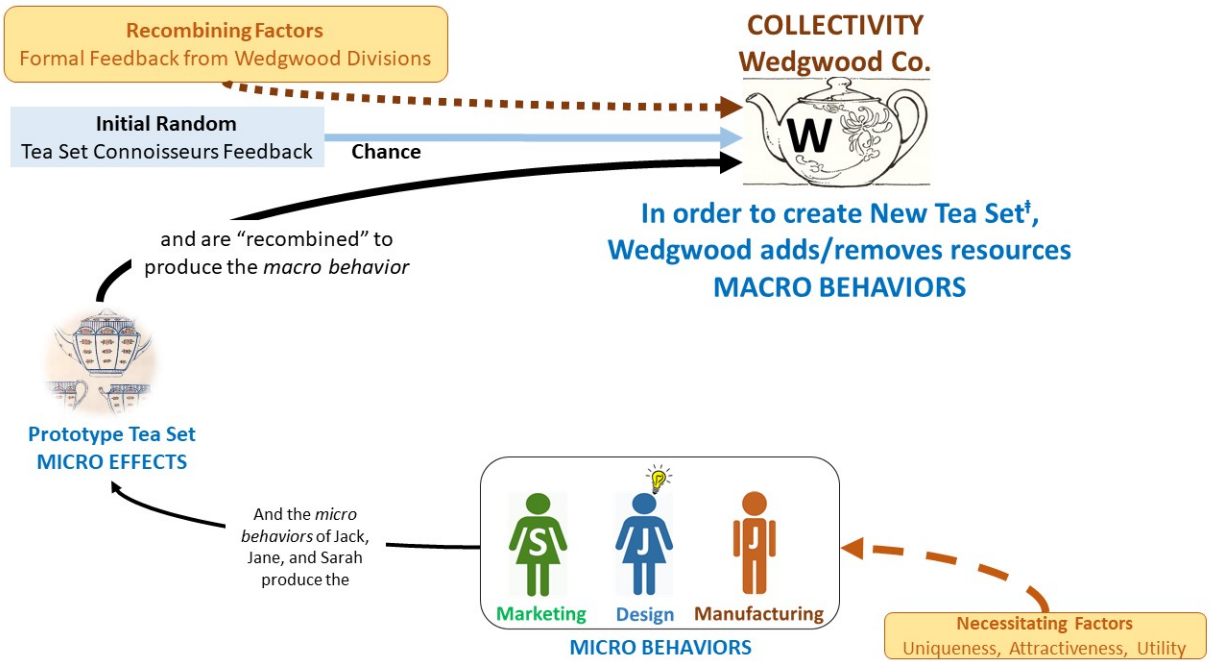

Fig. 12 – Recombining Factors and Chance of Jack-Jane-Sarah HIT
(adaptation of Mella's Figure 1.8, 2017, p. 19, ł is adaptation of "tea pot" by the cmn is marked with Public Domain Mark 1.0. Visit https://creativecommons.org/publicdomain/mark/1.0/?ref=openverse)

Because of the recombining factors and the initial random event, the larger system produces the *macro behavior* and this produces a *macro effect* (Mella, 2017, p. 18, p. 60). The macro effect

serves as global self-produced information that "conditions, drives or directs the *micro* behaviors" (Mella, 2017, p. 19). A *micro-macro feedback* is created and this is the modus operandi that "allows the system to generate the observable phenomena" (Mella, 2017, p. 60). In the micro-macro feedback loop, a "*mutual relationship*" exists between the micro and macro behaviors where the macro behavior

> *derives* from the micro behaviors of the component elements, but on the other it, in turn, *conditions* these micro behaviors as part of a feedback between *micro* and *macro* behaviors (Mella, 2017, p. 233).

From this short description, a HITs Micro-Macro Feedback Principle can be developed that holds

> ***A HIT** GENERATES A MICRO-MACRO FEEDBACK LOOP THAT IS A MUTUAL RELATIONSHIP BETWEEN THE MICRO BEHAVIORS AND THE MACRO BEHAVIORS*

In regards to the Jack-Jane-Sarah HIT, the micro-macro feedback shows that recombining and chance factors influence Wedgwood Company's resource allocation decisions for the HIT. The resource allocation decisions create the macro effect of a completed tea set product for sale. The global information created from the completed tea set product conditions the HIT's micro behaviors. Therefore, one would expect, based on thorough data collection from Sarah on the marketing side, this global information helps the HIT improve upon the next tea set the HIT produces.

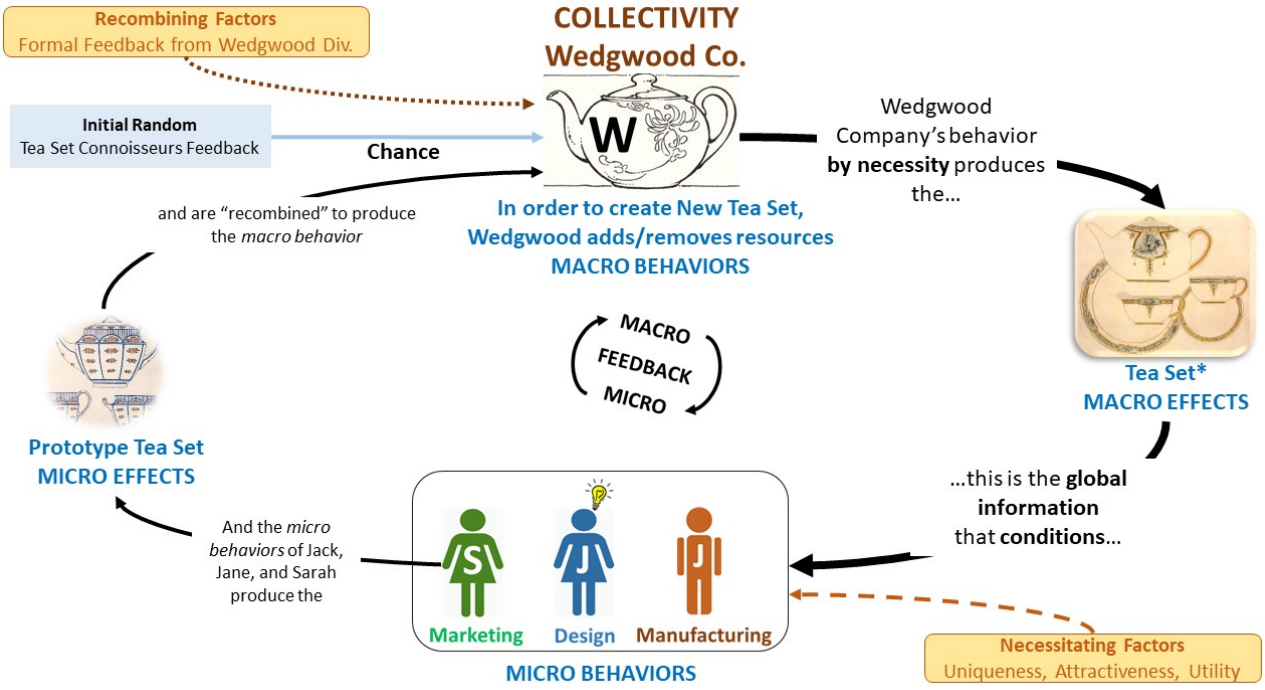

Fig. 13 – Micro-Macro Feedback of Jack-Jane-Sarah HIT
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The final combinatory system rule to explore is the control actions that come in the form of endogenous and exogenous controls and either strengthen or weaken actions within the

combinatory system (Mella, 2017, p. x). Endogenous controls operate directly on the micro behaviors (ibidem) and "allow agents to adapt their individual states to the global information arising from the macro state/effect of the system as a whole" (Mella, 2017, pp. 66 – 67).

Exogenous controls can operate on both macro and micro behaviors through the proper use of the *necessitating* and *recombining factors* (Mella, 2017, p. 67). The *exogenous macro control* acts "directly on the *recombining* factors" and "tries to modify the *macro behavior* of the collectivity as a whole" (ibidem). The *exogenous micro control* acts "on the *necessitating* factors" and "seeks to modify the agents' *micro behavior*" (ibidem).

Based on this brief explanation of combinatory control actions, a HITs Combinatory System Controls Principle can be developed that holds

> ***ENDOGENOUS AND EXOGENOUS CONTROLS CAN INFLUENCE THE MICRO AND MACRO BEHAVIORS OF A HIT PRODUCING A USEFUL MACRO EFFECT TO ACCELERATE THE FORMATION OF THE MACRO EFFECT.***

In terms of the Jack-Jane-Sarah HIT, this principle when applied positively can help the HIT create a successfully selling tea set, as illustrated in Figure 14.

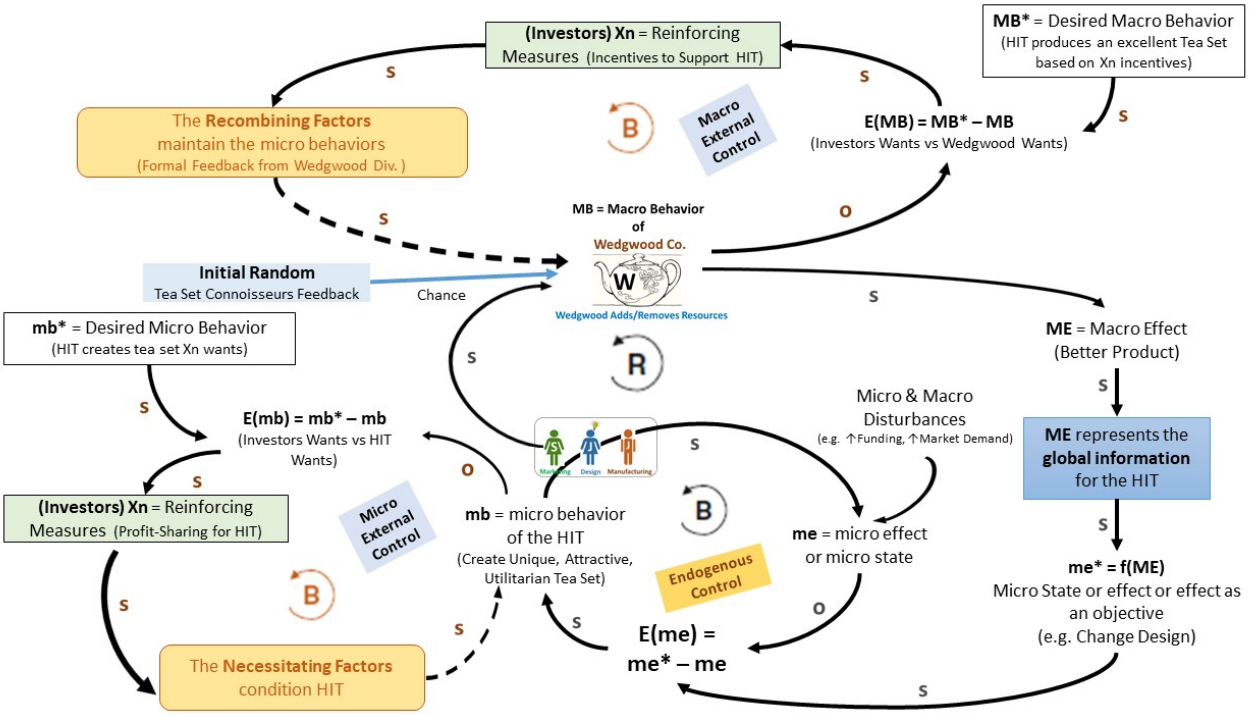

Fig. 14 – Endogenous & Exogenous Controls of Jack-Jane-Sarah HIT
(adaptation of Mella's Figure 1.16, 2017, p. 68)

Recalling that Jane wants to create a newly unique, attractive, and utilitarian tea set, she attracts Jack and Sarah to form a HIT. Therefore, the three of them *create an idea for a prototype* (*mb*) and "by chance" they are at a party where several prominent tea set connoisseurs are attending who give informal feedback on what would make an excellent tea set. Jack, Jane, and Sarah share the tea connoisseurs' feedback with Wedgwood Company that then allocates resources (*MB*) to Jack, Jane, and Sarah for their HIT. This formally creates the HIT that in turn creates the product (*ME*) (Notice that the line between the HIT (*mb*) and Wedgwood Company

(*MB*) moves in the same direction (s) because the prototype (+) is intended to attract (+) Wedgwood resources for the HIT. If the prototype (+) causes Wedgwood not to provide resources to the HIT (-), meaning Wedgwood hates the entire idea, then the line would be symbolized with (o). If a loop has the same number of (s) or (o) lines, then this is a Reinforcing Loop with the symbol ®. If a loop does not have the same number of (s) or (o) lines, then this is a Balancing Loop with the symbol Ⓑ). Furthermore, the *necessitating factors* of uniqueness, attractiveness, and utility encourage Jack, Jane, and Sarah to establish marketing, design, and manufacturing standards to create an excellent prototype and the *recombining factors* provide valuable feedback to influence Wedgwood Company to provide the necessary resources. This creates a positive Reinforcing Loop ®. The HIT's behavior *by necessity* produces the tea set. The development of the tea set and market demand for its use is the *global information* that *conditions* Jack, Jane, and Sarah to produce a better tea set.

As Jack, Jane, and Sarah are busily working to develop a tea set, an unforeseen event occurs. Prince Charles becomes King of the United Kingdom (*Macro Disturbance*). Across the globe, public euphoria ensues and people want Wedgwood tea ware. Wall Street and London investors identify a *need* for a great Wedgwood tea set (*ME*) that can do what Jack, Jane, and Sarah are working on, and quickly. After identifying this need, current Wedgwood investors give Wedgwood funding (*micro disturbance*) that allows the HIT to do key market research. The market research shows a gap (*E(me)*) exists between Jack, Jane, and Sarah's current tea set idea (*me*) and the market demand for a King Charles Coronation Commemorative Tea Set (*me**). The funding that causes the research is illustrated as a line with (o) since it produces a gap. Jack, Jane, and Sarah must change course, and quickly, based on the *micro-macro feedback* (® & Ⓑ) in order to close the gap (meet the market demand). The line moving between the gap (*E(me)*) and the HIT (*mb*) moves in the same direction (s) as the results of the market research in order to close the gap to create a new (*me*). In other words, Jack, Jane, and Sarah implement countermeasures to close the gap.

Because Jack, Jane, and Sarah produce an excellent King Charles Coronation Commemorative Tea Set prototype, the magazine tea set connoisseurs interview them (another chance element). The magazine reporting influences the BBC, GB News, and Sky TV to interview Jack, Jane, and Sarah about their tea set. This catches the attention of outside investors (*Xn*) who buy shares in Wedgwood. The investors (*Xn*) investment creates incentives for *desired macro behavior* (*MB**) and *desired micro behavior* (*mb**) for the King Charles Coronation Commemorative Tea Set. At the *macro* level, investors (*Xn*) buy shares of Wedgwood (*Xn* working on the *recombining factors*) for the desired purpose of developing a King Charles Coronation Commemorative Tea Set (*MB**). At the *micro* level, investors (*Xn*) lobby the Board of Directors to give profit-sharing to the HIT (*Xn* working on the *necessitating factors*) for ensuring Jack, Jane, and Sarah produce the tea set (*mb**). *The Wall Street Journal*, too, reports on the big investments investors (*Xn*) made to support the HIT. This in turn creates positive *micro-macro feedback* (® & Ⓑ) that reinforces the *recombining factors* and the *necessitating factors* which is observed as a flood of orders into Wedgwood by customers all over the world for the King Charles Coronation Commemorative Tea Set (*MB**).

For both the *macro external control* and *micro external control* loops, we have balancing loops. The gap of *E(MB)* is a gap between *what Investors want (MB*)* vs *what Wedgwood Company wants* (*MB*). The gap of *E(mb)* is a gap between *what Investors want* (*mb**) vs *what HIT wants* (*mb*). The gaps are signified by the (o) lines. To close the *E(MB)* gap, investors (*Xn*) buy shares in

Wedgwood to create the King Charles Coronation Commemorative Tea Set and is signified by an (s) line between (*MB**) and the formula *E(MB) = MB* - MB*. Since closing the gap activity moves in the same direction as the incentives, an (s) line is drawn between *E(MB) = MB* - MB* and (*Xn*) as well as between (*Xn*) and the *recombining factors* (Formal Feedback from Wedgwood Divisions). These *recombining factors* feed back into Wedgwood Company and is illustrated as a dotted (s) line. This in turn helps (*Xn*) reach its (*MB**) and an (o) line is drawn between (*MB*) and the formula *E(MB) = MB* - MB*. This creates a balancing loop in which an ↑(*Xn*) Incentives => ↓(*MB**) and (*MB*) Gap.

To close the *E(mb)* gap, investors (*Xn*) lobby the Board of Directors to give Jack, Jane, and Sarah profit-sharing for very specific desired behavioral outcomes, i.e. create the King Charles Coronation Commemorative Tea Set. Since closing the gap activity moves in the same direction as the investor incentives, an (s) line is drawn between *E(mb) = mb* - mb* and (*Xn*) as well as between (*Xn*) and the *necessitating factors* which is the *need* to create a unique, attractive, and utilitarian tea set. These *necessitating factors* feed back to Jack, Jane, and Sarah's behavior and is illustrated as a dotted (s) line. This in turn helps (*Xn*) reach its (*mb**) and an (o) line is drawn between (*mb*) and the formula *E(mb) = mb* - mb*. This creates a balancing loop in which an ↑(*Xn*) Incentives => ↓(*mb**) and (*mb*) Gap.

4 – Conclusion

In this paper the author expanded upon "Holarchical Innovation Teams: Philosophy" by addressing in-depth the final principle of the HITs Philosophical Context: Holarchical Combinatory Value-Creation.

To summarize, holarchical combinatory value-creation occurs when self-actualizing individuals form themselves into a holarchical unit within a combinatory manner as a means to establish synergies that in turn create a value-added product for society. Self-actualization is the *inner driver* of a person that allows one to identify a need in the world and satisfy that need while at the same time satisfying the conditions for one to be *happy* in the world through the *meaningful work* that is one's work to do in life. Here is an expression of *noblesse oblige* that calls upon each one of us to act upon both the cardinal and distributive virtues to manifest distributive justice and human dignity. Furthermore, the creation of value requires people to apply the science of combinatory systems in which people act upon global information that their systems produce through the ubiquitous dance of micro-macro feedback loops. Hence, the best kind of social combinatory arrangement to create value is that of the holarchical innovation team since it can move easily across the spectrum of work.

In closing, the Principle of Holarchical Combinatory Value-Creation espoused here completes the tripartite model of the Philosophy of HITs. It is the role of other researchers of the nascent discipline to refine and expand upon these principles in order to shape them into a cohesive philosophical foundation. Finally, to demonstrate the application of these principles, the author will propose methodologies in future papers.

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