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Intellectual Capital Accounting Indicators

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Abstract

The recently entrepreneurial discussion let us believe that everything human beings are doing can be apostrophed as “entrepreneurial”. There is almost a range of entrepreneurs, like the capitalistic entrepreneur, the policy entrepreneur, the social entrepreneur, the knowledge entrepreneur and the intellectual entrepreneur. A global anthem full of entrepreneurs, an entrepreneurial paradise on earth offered at discount prices. And last but not least this takes place midst in an uprising world crisis. In fact it is commonly known that in the recent days the traditional entrepreneurial paradigm undertakes among researchers and practitioners a shifting from the more classical to a more knowledge (intellectual capital) based paradigm. It is obviously a shifting from *plutocratic* concept of possessing to a *gnosocratic* human determined value added growth model, whereby intellectual / cognitive (*episteme, logos*) and agentive (praxis, *techne*) entrepreneurial elements confound the new potential for the firm’s source of competitive edge. Through the above mentioned synchrisis of human centered technology (= *techne* and *logos*) elements (intellectual and agentive) the entrepreneurial corporate becomes a non-imitational, learning (perceptive), adaptive (modulating), creative (demodulating) and cooperative (transferring) «*intellectual entrepreneur*». In this way the entrepreneurial synchrisis of the firm’s *tangible resources* like *physical, technological* and *financial* capital with the firm’s *intangible* (Learning Capital- LC, Modulation Capital - MC, Demodulation Capital - DC, Transfer Capital - TC) resources, the intellectual entrepreneurial capital (IEC), “produces” not just tangible products but endogenous determined teleological-intellectual-agentive entrepreneurial competence and expertise system, which leaves its “fingerprints” into the firm’s “intellectual statements” in form of intellectual or knowledge based entrepreneurial performance indicators.[†]

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1. Prolegomena

The entrepreneurial discussion either recent or ancient has early recognized the importance of the entrepreneurial function for any nation's wealth. Much more the discussion is focused on various entrepreneurial aspects in order to disclose their degree or extent to the economic wealth. When the past (historical) discussion was never so easy seems that the present and probably the future researches will get another additional sophisticating aspect – the intangibility factor in general and that of cognitive-informative momentum in part. In short it deals with the shifting from tangible to the intangible entrepreneurial paradigm, from acting to thinking entrepreneur, from (money) “owner” to (many) “knower”, from agentive to intellectual management or from “command and control” organization to “knowledge-based” organization. It is in reality the abandoning from the sinking ship called “mechanistic thinking” which has dominated our world perception since Newton. It has formed widely the views of the propagated “scientific management” which was in reality a managerial “scientific fiction” leading to the “dehumanization” or to the three-shift-spare-part-employee (See Johannessen, J. A. et al, 1999).

But like about any other in-ternal temporalities the discussion about the *intellectual entrepreneur* got an “*intellectualistic*” fashion and almost every related discussion is “dressed” with it. It goes so far that the “*modus intellectualis*” is used mostly or only in the context with universities or with the tertiary education system (Beckmann, G. D. & Cherwitz, R. A., 2009; Cherwitz, R. A. & Sullivan, C. A., 2002 and Cherwitz, R. A., 2005). To our common understanding this is wrong, because we regard the *Intellectual Entrepreneurship* as not having to do (only) with the “academics”, but with all those who “think” before, during and after any performed entrepreneurial activity (see also Beckmann, G. D. & Cherwitz, R. A., 2009). Simply said not exclusively the “possessors” of academic degrees or even stock holders, but mainly all those “processors” or *knowledge folders* are the real intellectual entrepreneurs. In this context must be clearly stressed that “intellectuality” is not a passive (Parmenidean “*psychron*”, intellectual) state only as well as not an active (Parmenidean “*thermon*”, agentive) one too, but the mixture or better say by the syncrasis of both. In this way the *Entrepreneurial Syncrasis* of the firm's *tangible resources* like *physical*, *technological* and *financial* capital with the firm's *intangible* resources or potentials (Learning Capital- LC, Modulation Capital - MC, Demodulation Capital - DC, Transfer Capital - TC), the Intellectual Entrepreneurial Capital (IEC), “produces” not just tangible products but endogenous determined teleological-intellective-agentive entrepreneurial competence and expertise system, which leaves its “fingerprints” into the firm's “Intellectual Statements” (Johannessen, J-A et al, 1999).

While episteme flows easily to other national economies (knowledge dissemination) the areas of *techne* (production) and *praxis* (distribution) are pure entrepreneurial domains, where the entrepreneur creates products for human needs and through this consumption he is gathering all those monetary revenues to use them again as an input for the production of goods. In this way the entrepreneur creates wealth for land owners (rent for physical capital), for capital owners (interest for monetary capital) and labor owners (wages for human capital).

*“When a change in perception takes place, the facts do not change.
Their meaning does.” (Peter Drucker)*

2. Intellectual Capital and Knowledge Conversion

2.1 Modes of knowledge conversion

The knowledge subject as part of the knowledge process has been also discussed by the above mentioned philosophers and expressions like “Know-What” and “Know –Who” have been established by Aristotle first (Dierksmeier, C. & Pirson, M., 2009). While the object based knowledge is divided in tacitly or Nooumenon (Plato) and explicitly perceived or Phenomenon (Aristotle) one, the subject based (human) knowledge is for both (Plato and Aristotle) either tacit (T) or explicit (E). Tacitly or explicitly created knowledge pre-assumes living humans (ontology) and nature or cosmos (epistemology) and “the continual dialogue between tacit and

explicit knowledge” dimensions (Nonaka, 1994).

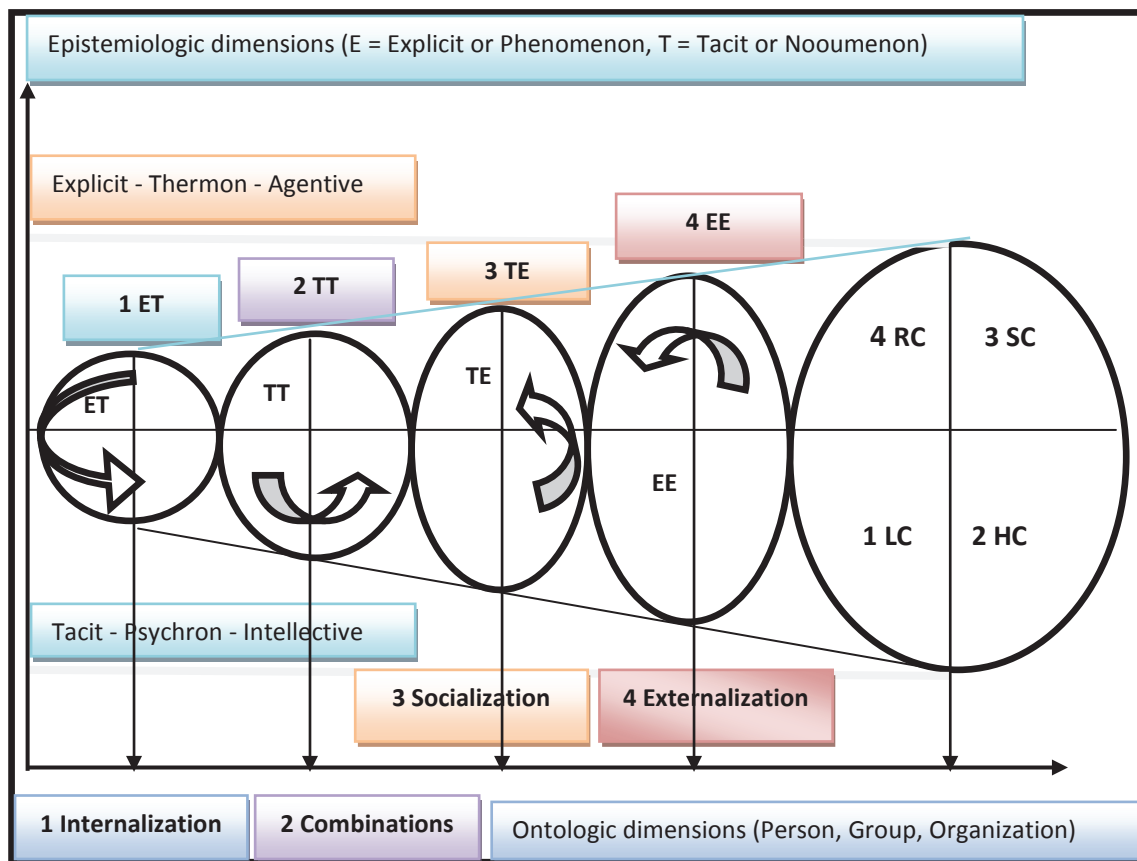


Figure 1: The Spiral of Entrepreneurial Knowledge Conversion, Source: Based on Nonaka (Nonaka, 1994) and Nonaka, I. & Holden, N. (2007)

This dialogue or process of knowledge creation passes some phases or steps, like (a) knowledge acquisition (information flow), (b) knowledge creation, (c) knowledge manifestation and (d) knowledge application. In the acquisition phase information helps the person to “update” his “data” base, whereby explicit information (E) is converted to tacit (T) knowledge (1.ET) categories (diversity). In the creation phase the person rearranges, re-concepts and updates in his mind his knowledge base concepts according to his intentions, commitments, beliefs and ethical values (2.TT). The knowledge manifestation concerns the transformation of tacit knowledge to the explicit one, whereby the person manifests his tacit knowledge by using the cognitive infrastructure of the enterprise and makes it available to the organization (3.TE). In the last step the explicit made knowledge is distributed to the “stakeholders” or to the society itself by using the relational “knowledge spillover network” (4.EE).

The above mentioned modes or modules of *knowledge conversion* are four different autonomous but also integrated states of knowledge creation and explain four *individual* and *organizational* types of knowledge conversion (Nonaka, 1994):

1. In the first (1.ET) mode the perceived environment (object, “*Know-What?*”) is tacitly individualized (“**internalization**”) as an Aristotelian *eidos* (mental object) (**LC – Learning or Systemic Capital**).

2. In the second (2. TT) one -defined as “**combination**” - the individuals readjust or update their tacit (analogue) knowledge (“*Know-Who*”) base (**HC – Human Capital**).
3. In the third (3. TE) one which is named “**socialization**” the person converts tacit mental models (“*Know-How*”) to common (group or corporate) explicit knowledge patterns (**SC – Structural Capital**).
4. In the fourth (4. EE) phase defined as “**externalization**” the explicit “digitized” (“*Know-When*”) knowledge base is distributed or spilled over to the “Stakeholders” or society or culture (**RC – Relational Capital**) (Kim, D. H., 1993 and Ackoff, R. L., 1971).

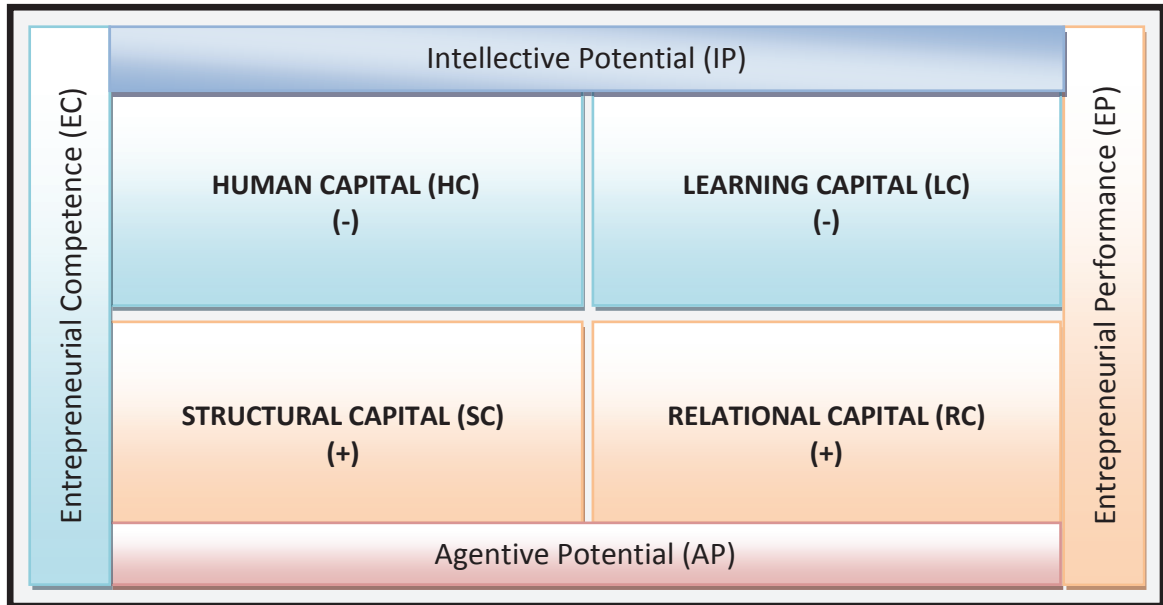


Figure 2: Modes of Knowledge Conversion

Existing knowledge (prior knowledge) as an explicit, digitized or documented knowledge is declared as a “stock” of knowledge which can be transferred or disseminated (“flow” knowledge). This *knowledge flow* enables creation of new knowledge “under production” or “under construction”. This type of knowledge is called learning or systemic knowledge (LC). The meeting of both knowledge types (old and new “tacit” knowledge) takes place in the brain of the “*knowledge capitalist*”, which forms the *human capital (HC)* (Kong, X. & Li, X., 2007). Since tacit knowledge became explicit or documented, it can be used to create value in form of products, services, methods or even new knowledge and is part of hardware (matter), software (methods, algorithms) or brain ware (ideas, concepts, attitudes, values). This type of tacit knowledge expressed as technology capital is regarded as *structural capital (SC)* (Ackoff, R. L., 1971). Every firm usually wants to distribute the own produced values (products, services, methods, ideas or knowledge) to customers and other “stakeholders” and also needs to receive from suppliers their produced values (products, services, methods, ideas or knowledge). This type of knowledge working behind is in reality an exchange enabler and is called relational network or *relational capital (RC)*. The sum of learning capital (LC), human capital (HC), structural capital (SC) and relational capital (RC) is defined as the intellectual capital (IC). Structural capital (SC) and relational capital (RC) are mainly visible or explicit and therefore form the tangible part of the intellectual capital (IC) while the human capital (HC) is its intangible part. In-warded knowledge tend to addresses self-administrative issues, which deal more with the firm (internal environment) itself. Discussing about the specific contribution of intellectual capital on growth it is necessary to understand it, to express its *structure* and finally to *measure* it. Still now the wish of the academic community to

understand IC is more than apparent so that many writers have discussed about the essence of human capital, knowledge or intellectual capital (Bontis, 1998; Nonaka & Takeuchi, 1995; Mouritsen, 1998; Sveiby, 1997; Edvinsson & Malone, 1997; Mavridis, 2004, 2006, 2009b, 2010b, 2011).

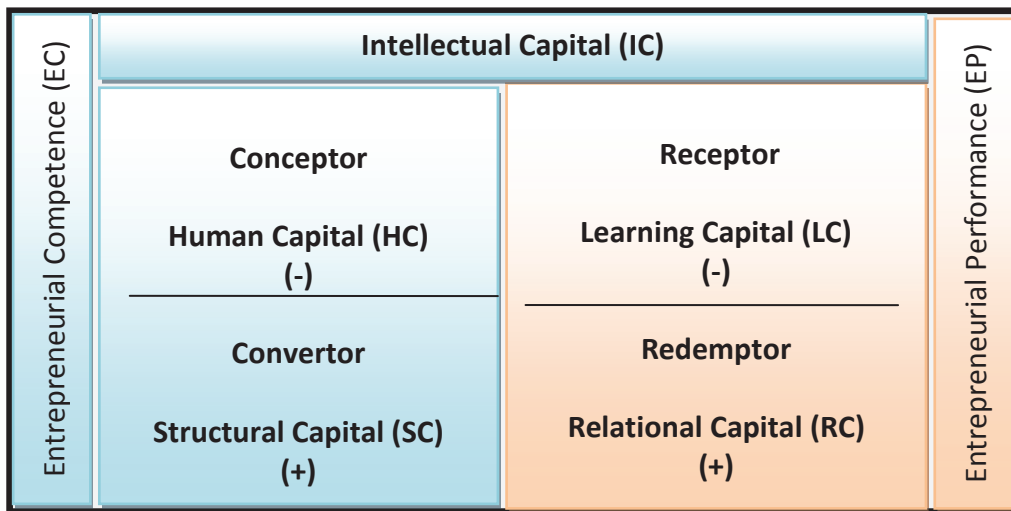


Figure 3: Intellectual Capital & Entrepreneurship

All of them accepted commonly that the main parts of IC are the human capital (HC as competencies of the employed staff), the organizational capital (OC as firmware in form of procedures, documentations, systems and methods) and the relational capital (RC expressed as customer / supplier based advantages). Intellectual capital (IC) is therefore the sum of individual competencies (HC), structural (SC), organizational structures (OC) and relational capital (RC) as the sum of dynamic relationships (like “supplier and customer” relations in its broader cast). Organizational capital (OC) and customer (supplier) capital (RC) are said to be the structural capital (SC) or the expressed or manifested knowledge, while the firm’s total IC is equal to the HC and SC (Scandia’s IC system) (Viedma Marti, J. M., 2003). When the individual *tacit* human capital (latent capital) is getting transformed to *explicit* collective capital (structural or manifested capital) then the knowledge capital is a *flow*, otherwise a *stock capital* - stock or structure (Bontis, 1998). As a resultant of all these thesis and antithesis the synthesis seems to be a pragmatic path melting (grinding and / or polishing) all the extreme tensions. The question is like in Parmenides work the *analogy* or portions of the *syncrasis* mixture (*psychron* = cold and *thermon* = warm) (Andriopoulos, 1995). This addresses the problem of the dominating or subordinating streams or the question of supremacy of episteme or that of techne, this of spirit or that of matter, mind or body, science or technology, sophia or phronesis.

We are trying therefore when taking into consideration the *syncratic* dimensions (“*hypervallori*”= *additive*) of Parmenides, the Aristotelian ontologic and Socratic epistemologic aspects mentioned by Nonaka (Nonaka, 1994) to reshape a new intellectual concept for the entrepreneurial activity- *The Concept of Intellectual Entrepreneurship (CIE)*. Due to the above *syncrasis model* we distinguish between four types (indicators) of *intellectual thinking* (episteme) or *agentive doing* (techne) concerned with the *epistemological* dimension (Figure 1):

- (1) Learning capital (*psychron* / intellectual) as the *perceptive* or understanding indicator (De Smet R. et al, 2001)
- (2) Human capital (*psychron* / intellectual) as the *conceptive* or methodology indicator
- (3) Structural capital (*thermon* / agentive) as the *applicative* or solution indicator
- (4) Relational capital (*thermon* / agentive) as the *integrative* or dissemination indicator

In the level of the individual or ontological knowledge the synchrisis equivalents are expressed as the following indicators (see also Figure 1):

- (5) Know-What (knowledge, science, *psychron*) equivalent to the Learning capital (LC)
- (6) Know-Who (person, authority, *psychron*) equivalent to the Human capital (HC)
- (7) Know-How (skills, methods, *thermon*) equivalent to the Structural capital (SC)
- (8) Know-When/Where (time, frequency, extension, *thermon*) equivalent to the Relational capital (RC)

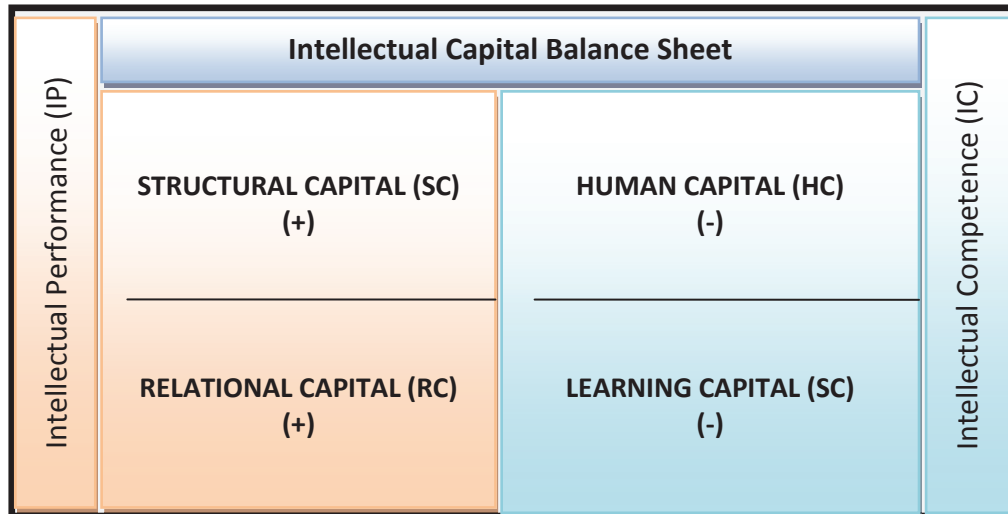


Figure 4: Intellectual Capital Balance Sheet

The above types or indicators 1, 2 and 5, 6 form the *individual human centered knowledge* in its tacit (episteme) and explicit (techne) dimension. The indicators 3, 4 and 7, 8 form the *collective organizational knowledge* with their embedded tangible and intangible aspects. Individual as well as collective knowledge are determined by the subject (knower), the object (known) and the related indicators competence (know-how) and performance (know-when). The possible combinations of the above Matrix on the related axis points (Competence as micro dimension indicator and Performance as macro dimension indicator) are shown in the Figure 2:

With an additional restructuring and in order to provide the familiar balance sheet scheme with extensions to a better prognostic and diagnostic accountability we get *vertically* the left side or the source of intellectual capital (HC, SC) and the right side or the usage of the intellectual capital (LC, RC) of the balance sheet. The so created balance between HC, SC and LC, RC expresses the *Entrepreneurial Competence* ($EC = HC + SC$) and the *Entrepreneurial Performance* ($EP = LC + RC$) as shown in Figures 2 and 2. When turning or changing the sides we get a *horizontal* division in two equivalent parts which are apostrophed as *Technology* (SC, RC) and *Methodology* (HC, LC) as shown in figures 2 and 3: *Agentive (Entrepreneurial) Potential* (active Technology, $AP = SC + RC$) and the *Intellective (Entrepreneurial) Potential* (proactive Methodology, $IP = HC + LC$). When *crossing* again the balanced sides we get the following four entrepreneurial competence / value node combinations: *Agentive Entrepreneurial Competence* (Human Competence & Agentive Potential), *Agentive Entrepreneurial Value* (Stakeholder Performance & Agentive Potential), *Intellective Entrepreneurial Competence* (Human Competence & Intellective Potential) and *Intellective Entrepreneurial Value* (Stakeholder Performance - Intellective Potential).

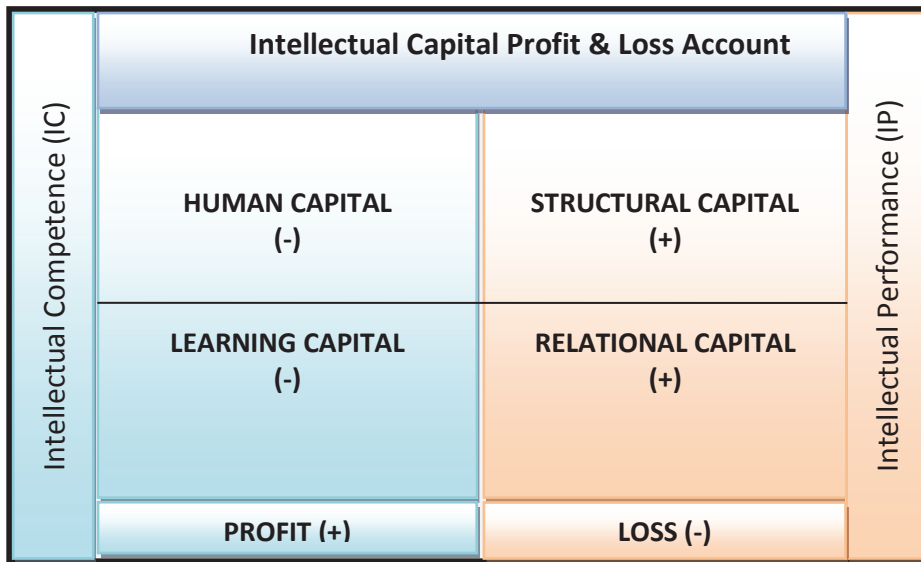


Figure 5: Intellectual Capital Profit / Loss Account

All nodes are synchrisis points of more properties and expresses cognitive dimensions dealing with the *person*, the *knowledge*, the *system* and the *relations*. The model combines personal (individual) and organizational (collective) attributes in order to express *individual entrepreneurial competence* and collective or *organizational entrepreneurship performance*. The succeeding synchrisis mixture (cold - warm) states, like the conceptive (cold), the perceptive (cold), the applicative (warm) and the integrative (warm) deliver the four basic IC parts (Figure 2): HC - Human Capital , SC - Structural Capital, LC - Learning Capital and RC - Relational Capital. HC and SC are the basis for the *Entrepreneurial Competence*, while LC and RC the basis for the *Entrepreneurial Performance*. The active *agentive potential* has its source in the out-warded SC and RC, while the *intellective potential* in the in-warded HC and LC. In other words to every (intellective and agentive) competence element exists an equivalent performance or value element (balance sheet principle), so that we can say (Harvey, M. G. & Lusch, R. F., 1999) that *Entrepreneurial Competence (EC)* is equal to *Entrepreneurial Performance (EP)* (Figure 3). Furthermore the above indicators of the matrices in Figures 3 and 4 could be restructured in such a manner that the same partial indicators for intellectual capital express another dimension concerning accounting and accountancy, the Intellectual Capital Balance Sheet (ICBS, Figure 4) and the related Intellectual Capital Profit and Loss Account (ICPL, Figure 5). The sides of the ICBS as mentioned express the sources (“springs”)of capital and their usage (“deltas”) or in other words they are showing how the intellectual capital performance ($IP = SC + RC$) is “financed” through the Intellectual Competence ($IC = HC + LC$). In a similar way in the related Intellectual Capital Profit and Loss Account (ICPL, Figure 5) the Intellectual Performance ($IP = SC + RC$) indicates on the intellectual returns or intellectual revenues which has been managed within the period, while their counterpart the knowledge based expenses are represented through the indicator Intellectual Competence ($IC = HC + LC$). In both intellectual statements (ICBS, ICPL) Intellectual Performance expresses the active, agentive or explicit part, while Intellectual Competence the tacit, intellective or “passive” dimension of intellectual capital account ($Intellectual Competence = Intellectual Performance$, Figure 5).

“There is no such thing as a ‘resource’ until man finds a use for something in nature and thus endows it with economic value. Until then, every plant is a weed and every mineral just another rock”.

(Peter Drucker)

3. Conclusions

So long innovation and the related entrepreneurial opportunities have been regarded as an exogenous factor directed through an imaginative “*invisible hand*” there was no need to think about the source of innovativeness and changes so far. Since it is recognised that entrepreneurial opportunities and technological change are determined by endogenous caused and knowledge determined innovations the “*causa*” knowledge management and intellectual capital has advanced to non-plus-ultra topic. Although it is easy to realise that some firm could not exist if its personnel would leave suddenly its jobs, the new (old) concept of the “*knowledge firm*”, “*knowledge entrepreneur*” or “*knowledge society*” remains still a wishful dream in the daily entrepreneurial praxis. It is not intended to explain all the possible reasons now, but it seems that one of the most important reasons is the inability of understanding the essence, provenience and emergence of the topic itself.

Having in mind Nonaka’s approach, Aristotle’s epistemological and ontological diacritics but also considering the syncrasis theory of Parmenides we developed a spiral model of knowledge modes which is fully applicable to the entrepreneurial concept. In this way we developed the typology or taxonomy of knowledge production and divided the related intellectual capital into four categories (LC – Systemic or learning capital, HC- Human Capital, SC – Structural Capital and RC – Relational Capital). Through arrangements and rearrangements of the basic concept we construct a taxonomy able to show some distinguished entrepreneurial aspects, like intellective and agentive potential, entrepreneurial intellectual capital and its competence and performance dimensions, entrepreneurial intellectual capital balance sheet (cognitive balance sheet, Figure 5), entrepreneurial intellectual capital profit & loss account (cognitive profit & loss account, Figure 5). Due to the above mentioned results the entrepreneurial activity acquires (ET / LC), concepts (TT / HC), documents (TE / SC) and distributes (EE / RC) knowledge initiated innovation capital necessary for every economy. In fact entrepreneurs could be divided into perceptrors, conceptors, converters and distributors of intellectual capital based innovation and invention processes.

Having all above in mind the *harmonizing* (not *equalizing* – downwards or upwards) of the proportions of the cognitive elements first and *forcing* the intellective (cold) and agentive (warm) elements in order to create a reasonable entrepreneurial intellectual capital value is the indicated reasonable intellectual entrepreneurship strategy. The crucial point is the difference (Parmenides called it “*hypervallon*” = surplus, the “*value-added*”) between the cold (intellective or cognitive) / warm (agentive or active) states and its relative percentage (Andriopoulos, 1995).

The results of such a strategy like the above and even of every strategy or lethargy are leaving strong fingerprints in the intellectual capital based accounting in general and in the intellectual capital based “*financial*” statements (ICBS, ICPL) in particular.

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