

Exploring the intellectual capital and financial capital interface: An artefact-based criteria approach to the recognition of ‘organisational’ assets.

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Abstract:

Design: Normative, conceptually based

Purpose: The paper presents asset recognition criteria based on the idea that an asset should be functional, separable and measurable and that financial recognition should be triggered by the recognition of an artefact. We apply these criteria to four organisational assets, that is, those intangible assets that are unlikely to be reported in the accounting domain.

Findings: We do so in order to show how one may expand the basis on which assets can be reported financially to elements of intellectual capital as well as financial capital.

Originality: The criteria have never been applied to organisational assets

Key words:

Asset recognition, separability, artefacts, organisational assets

Introduction

In the accounting domain ‘asset measurement’, notably, transactions-based measurement, drives the ‘asset recognition’ process based on the reasoning that if one can reliably measure an intangible asset (IA), de facto, one has simultaneously recognised it^[a]. In the intellectual capital (IC) domain, though, this logic is rightly reversed otherwise one cannot be too sure of what one is measuring. So, an equivalent opposite stance in the IC domain refers to structuralisation (Johnson, 2002): the a-priori process of turning the unrecognisable, intangible, tacit knowledge in a person’s brain into a recognisable, tangible, explicit form. In this paper we present artefact-based asset recognition criteria as a form of structuralisation. Artefact-based asset recognition criteria could be a conduit through which intellectual capital could enter the accounting domain, a domain dominated by the maintenance of financial capital, not intellectual capital.

[a] An often quoted and humorous analogy used to refute the need to recognise an intangible asset, other than on the basis of a measurement, is that if a thing has some of the characteristics of a dog, for instance, it barks like a dog, then it must be a dog. One does not need to see or physically touch it to be able to recognise it as a dog! However, this is a far from satisfactory way of recognising a dog, let alone the type of dog. What is required is a more precision so that the separable recognition of a dog, according to some criteria, cannot be confused with, say, the separable recognition of a wolf. Worst still, what if it turned out to be a man-made recording of a dog and there was no animal at all. One cannot imagine, for example, the medical profession adopting a similar stance: the illness has some of the characteristics of influenza but then it turns out to be meningitis! The medical profession is able to support operational definitions and assessment criteria for the diagnosis of illnesses through scientific testing, however, in accounting such procedures appear to be less well articulated.

An implication of the introductory paragraph is that the terms IA and IC are interchangeable whereas actually the delineation is unclear - see Figure 1.

Insert Figure 1 here

Nevertheless, we have chosen the IA pathway because we wish to only adopt the money metric of the accounting domain in respect of the asset recognition criteria presented herein.

The epistemological foundation of financial accounting is mostly grounded on definitions and rules of which the definition of an asset is a central feature (ASB, 1999, para4.7-23; FASB, 1985, para6.25-33; IASB, 2001, para49, 53-59), the latest revision being:

“An asset of an entity is a present right, or other access, to an existing economic resource with the ability to generate economic benefits to the entity” (IASB Update, December 2007 at www.iasb.org.uk)

On this basis, IC could be regarded as “...an existing economic resource...”.

However, as Weetman (1989) rightly points out, the need to define a resource simply replaces the need to define an asset. The point is that the above definition is capable of wide interpretation and, therefore, facilitates similarly wide accounting discretion as to what will or will not count as an asset (see Samuelson (1996) and Schuetze (1993) for critiques, historically).

Gerboth (1987) argues that the existence of definitions hardly matters at all in deciding most issues of real-world consequence and in this vain we detach ourselves from the definitional approach to advance instead the case for the use of artefact-

based^[b] asset recognition criteria as presented in the fourteen descriptors (rows) in summary in Table 1.

Insert Table 1 here

There is no single source that could be said to inform on the content of Table 1 though the starting point for its construction was grounded on Honoré (1961). So, the construction of Table 1 is a product of the authors' invention over many years of exposure to multi-disciplinary literatures. Many of the constructed criteria refer to rights but rights are empty without some physical and legal evidence that they are a business entity's rights, otherwise, anyone could potentially claim them. Thus, we refer to the need for a supporting artefact. Our epistemology is criteria-led, as opposed to the definition-led stance outlined above. However, what about the related ontological positioning? The existing definition-led stance, above, is social-constructionist in nature and benchmarked against a claim that the construction is "representative of real world economic phenomena" (IASB, 2008) – a clear economic stance as evidenced, for example, in the definition of an asset previously. In contrast, the ontological stance of this paper is also social-constructionist but any representation of financial reality is both self-referential and grounded on physical and legalistic evidence, which is why we advance the case for artefacts for intangible asset recognition purposes. In this case, the ontology draws upon Wand and Weber's (1995) "fundamental premise" to their work on information systems, specifically, that "a physical-symbol system has the necessary and sufficient properties to represent real-world meaning". Also, that "an information system is an artifactual representation of a real-world system as perceived by someone, built to perform information processing functions". In this regard, we break free from any

abstract notion of “economic phenomena” (whatever that means?) and replace it with one that is physically and, in our case, legally grounded through the medium of artefacts.

As one can see from the columns in Table 1, we apply those criteria to organisational ‘assets’: two intellectual property ‘assets’, that is, trademarks and trade secrets, and two infrastructure assets, that is, management processes and information systems, all taken from Table 2.

Insert Table 2 here

These four ‘assets’ are predominantly intangible in nature and arguably draw their identity from the IC domain (see Edvinson and Malone, 1997) rather than the financial accounting domain where they would be unlikely to be reported as assets (see Upton, 2001, p69 for list of separable intangible assets, also, Seetharaman et al, 2004, p525 for a list of separable and inseparable intangible assets – an alternative to Table 2 perhaps?). There is nothing to stop the criteria being applied to all of the

[b] An artefact is something that is given shape by man, in this case, the intangible intellectual creativity is given a surrogate tangible shape, typically though not exclusively, through documentation that assigns legal rights to an owner and/or user (see Honoré, 1961). In the legal domain, as with the accounting domain, the alternative basis of using definitions are useful for instruction but any attempt to reduce judgements to deductions based on them could easily lead to the occasional miscarriage of justice because there are always exceptions. Nevertheless, the desire for the logic and structure offered by definitions, in whatever domain, is deeply rooted in the human psyche. Consider, for example, those used in medical diagnoses, for as Holmes (1897) suggests, the logical method and form flatter the longing for certainty that is in every human mind. Yet, the quest for certainty in any defined social construction is illusory because it is always contestable. In this regard, artefact-based asset recognition criteria are no different to a definitions-based approach and can only be advanced on the equally contestable basis that they offer a ‘better’ social construction.

items in Table 2 and more. In that latter sense, it is unimportant as to whether Table 2 is comprehensive or not. So, for example, the criteria have already been applied to human assets in another paper (see Tollington and El-Tawy, 2010). We apply the criteria to four identified organisational assets here simply because they have not been assessed before now and the choice is an arbitrary one.

As you can see from Table 1, the artefact-based asset recognition criteria to be explored in this paper are presented in three groups based on the idea that an asset should be functional, separable and measurable. These three features are presented in the three circles in Figure 2, the intersections between them being where the Table 1 criteria are located in their three groups: separable function, measurable function, separable measurement.

Insert Figure 2 here

The square boundary in Figure 2 encompasses all assets and within it the three intersecting circles represents the separable assets that could or should be recognisable for financial reporting purposes. The space between the circles and the square boundary represents those inseparable assets the recognition and measurement of which are indeterminate for financial reporting purposes. In this latter regard Figure 2 should cause one to think about ‘assets’ that are not separable, for example, goodwill, or ‘assets’ that are probably not measurable, for example, leadership skills, yet, both of these assets (if they be so) may impact upon the bottom line. It follows that the construction and use of artefact-based asset recognition criteria does not imply that they are either exclusive (all the attributes of an asset can be classified) or exhaustive (the attributes of an asset belong only to that

element) in attempting to capture all the attributes of an asset (see Gröjer, 2001 where such approaches are regarded as a process of simplification).

To summarise this introductory section: Table 1 presents asset recognition criteria in three groups drawn from a tripartite structure presented in Figure 2 that will be explained and then applied later on in the paper to four of the organisational assets as extracted from Table 2.

The subsequent structure of the paper

The next three sections of the paper are based upon the three groups of criteria presented in Table 1 as explained and then applied to the four identified organisational ‘assets’. The final section thereafter presents a discussion about the merits, or otherwise, of using artefact-based asset recognition criteria.

An intangible asset’s *separable function* (Table 1, Figure 2)

An asset’s *function* in the accounting domain is typically “...to generate economic benefits to the entity...” per the definition of an asset, previously. However, that function can change as society changes. For example, carbon-offsetting quotas are tradable intangible assets because society decrees that they should be so, but the principal benefit is environmental, not economic. There is no “...*existing* economic resource...” here until it is created by statute and insofar as an intangible resource exists (a contradiction in terms?) the resource actually comprises a legal right to pay, or be paid, to pollute according to fixed quotas. And herein lies a possible tautology in the definition of an asset previously: “An asset of an entity is a present right, or

other access, to an existing economic right” if the resource is effectively a right to pollute. One can extend this resource argument further by saying that the missing resource in respect of an intangible asset is, in effect, as much about preventing others from competing with you as it is about the individual, or company, being the controlling beneficiary of their own intellectual creativity. ‘Rights’ are the pertinent issue here because the above ‘economic benefits’ function of an asset is secondary to the primary function: a right to control how the secondary function is to be fulfilled and to prevent others from doing so.

Now that we have addressed the *functional* aspect let us turn our attention to an asset’s *separable*-ness or separability. The Companies Act 1985 Sch.4A,9(2)) refers to the separable function of an asset as being capable of being disposed of or discharged separately without disposing of a business or the undertaking. However, disposing of or discharging an intangible asset is clearly problematic without some evidence to that effect. Hence, the need for a tangible surrogate: an artefact. And this is the means by which the criteria in Tables 3a – 3h may be applied to the process of intangible asset recognition, which also includes disposing or discharging in a ‘capability of transference’ criterion (Table 3d).

Insert Tables 3a-h here

We define separability differently to the above narrow legal viewpoint. Specifically, all the individual assets of a business are separable from each other when it is possible to aggregate them (Li, 2002) without loss or gain in the recognition and measurement of those individual assets such that the sum of them would always be equal to the whole of the assets of the business (see also IASB 2005b, CL8). The ‘whole’ in this case would only comprise those assets possessing the features of the three circles in Figure 2. A problem, though, is in setting an appropriate lowest level

for the recognition of an individual ‘asset’. Consider, for example, at the lowest level of aggregation one can record labour payroll costs: inputs. However, at a higher level of aggregation, part of those labour costs may then be included in a constructed infrastructure asset – outputs. To record inputs and outputs as assets at the same time is to risk double-counting. It is worth noting, though, that there will be those parties outside the accounting domain who may regard the above ‘inputs’ as investments in human assets (see Offstein, Gnyawali, Cobb, 2005; Carmeli and Schaubroek, 2005): a sentient renewable resource and, as such, double-counting is acceptable: the human asset and the infrastructure asset.

Whilst the ‘sum of the parts’ should theoretically equal the ‘whole’, in practice this is somewhat problematic (see Barth, 2007) particularly when dealing with intangible assets because some of them, like goodwill, are inherently inseparable from the other assets of a business. Napier and Power (1992) do not try to recognise a separable function because they argue that many intangible asset valuation methods “determine, rather than depend upon, separability”. Such comments tend to confirm the introductory assertion that in the accounting domain intangible asset measurement substitutes for intangible asset recognition. We disagree because an artefact may substitute for asset recognition purposes. The use of artefacts represents an expanded boundary for accountants but probably still a restrictive one to other interest groups including those from the IC domain. For example, as any marketer will tell you, a brand is more than its related trademark (see Aaker, 1991). For example, as any HRM person will tell you, an employee is more than what they create. But the boundary has to be drawn somewhere and we do so by using artefacts.

An intangible asset's *measurable function* (Table 1, Figure 2)

Since it is not intangible assets per se that are measurable, rather, their function (notably in respect of 'rights' previously), the specific function envisaged here is the capacity to increase or decrease business value through holding assets (capital gains or losses) or using assets (revenue gains or losses) to increase or decrease income (whether realised or not), the two types of increases or decreases being known together as comprehensive income (Bertoni and De Rosa, 2005; Cauwenberge and De Beelde, 2007; IASB, 2003; Newberry, 2003; Barker, 2004). In accounting terms the recording of comprehensive income represents the increase in the value of all disclosed assets between two balance sheet dates and links directly to the concept of how capital is to be maintained by such means (see Hicks, 1939; Gynther, 1970; Revsine, 1981; Tweedie and Whittington, 1984; Gutierrez and Whittington, 1997; Arden, 2005). Priority is given to balance sheet values rather than the income statement (see Paton and Littleton, 1940). We support the theoretical notion of comprehensive income whilst also practically acknowledging that an intangible 'asset' may increase income and yet be financially un-measurable, for example, a superior management team. In other words, an intangible asset (if it be one in respect of all the other criteria) may have a function but not necessarily a measurable function – see Tables 3i-k.

Insert Tables 3i-k here

An intangible asset's *separable measurement* (Table 1, Figure 2)

Where the income measurement method also determines the value of the asset(s) the right to capital (criterion 2i) and the right to income (criterion 2k) are conflated.

Damant (ASB, 1995), however, would argue that an asset has a separable measurement only if it has a value that is completely independent of what it is earning in the activity under analysis. In other words, there should be a clear separation between the right to capital (criterion 2i) and the right to income (criterion 2k) in terms of the latter determining the value of the former. In a transactions-based approach to accounting this is not a problem: one records the transactions-based capital expenditure as an asset and, subsequently, the transactions based revenue income, less expenses, is recorded separately from the capital (see Tollington, 2001). However, in some valuations-based approaches to recording asset values, such as discounted cash flow methods (DCF), the asset values are based entirely on a predictive, not observable (criterion 3m) assessment of future incomes – the capital and income are inseparable from each other.

Whilst we have briefly focused on one measurement method, DCF, in order to highlight a selective application of the criteria, we do not intend to address the issue of an appropriate measure method because it is primarily an accounting problem. The intention, instead, is to precondition ones view towards the process of asset measurement, which logically follows from the process of asset recognition, per the introductory paragraph to this paper. The relevant three criteria in this regard are presented in Tables 3l-n.

Insert Tables 3l-n here

That preconditioning though is of a normative nature. So, for example, despite our criterion that any measurement should be observable, it is entirely possible to construct an accounting approach based on predictive values if needs be and there

would be plenty of models in the IC domain alone to choose from. In that regard consider the following brief review in Table 4

Insert Table 4 here

The principal feature of a ‘separable measurement’ is that any asset measurement should be both individual and additive so that, in principle, the measurement of ‘the whole’ disclosed picture of financial reality, however that is measured and represented, is equal to the ‘sum of its individual disclosed parts’, whether aggregated or disaggregated (see previous definition of separability). An individually purchased trademark, for example, may be easily aggregated with any other asset (the part is added to the whole) but when it is purchased as part of a business investment it may be somewhat difficult to disaggregate its separable value (splitting the whole into its parts). For the inseparable, non-artefact based intangible ‘assets’ the disaggregation problem is more acute, inherently so. However, if one reports to management at the highest level of a business investment then there is no problem because the overall economic function of that recorded investment potentially incorporates all the synergistic economic benefits from inseparable ‘assets’, such as from management processes (Table 2) and any related human ‘assets’. It is only when that investment is disaggregated for accounting disclosure purposes that the above problem of measuring the inseparable intangible assets arises, which accountants partly try to solve by bundling them together under the generic heading of purchased goodwill.

The aggregation/disaggregation issue and the related double-counting issue, both previously, are clearly not easy ones to resolve. We argue that the lowest level of

aggregation should be disclosed wherever appropriate so that the constituency of expenditures is known (criterion 3n). However, that constituency in respect of an intangible asset is unrecognisable in the absence of an artefact and therefore separately un-measurable if, to repeat, one accepts the previous a-priori logic of asset recognition before asset measurement.

A discussion about the contribution of this paper

If we look at Table 1 then, on the balance of 'No' to 'Yes' responses, we can dismiss trade secrets and management processes as assets. On the same basis we would accept trademarks and information systems as assets but of course the unanswered question is whether all the boxes have to be ticked 'Yes' for an asset to be confirmed. If that is so then the challenge lies in respects of criterion 3l and criterion 3m in Table 1. In this regard, consider again the previous comments of Arthur Andersen (1992) in Table 3m and the observation of compliance with a valuation method established by an accounting rule. This may well satisfy 'criterion m' but any valuation-based measurement is still likely to be non-additive (criterion 3l). Indeed, the accounting profession can never win in that regard because, as soon as one mixes money and time, money measurement over time becomes inherently non-additive if only because of the effects of inflation. All one can do is to limit that non-additivity by choosing one measurement basis in one time frame, for example, the value of an asset realised or replaced today.

Barth (2007, p12) rightly points out in respect of market based fair value measurements, that the sum of the balance sheet assets less liabilities is unlikely to equal the market value of the equity because not every 'asset' is recognisable. So,

for example, we refer to ‘assets’ in the paper but the term lacks clarity such that some assets may have a role that is not only economic, for example, a company car used socially or public monuments (Mautz, 1988; Pallot, 1990) where heritage is as important as income. One may look at the ‘prohibition of harmful use’ criterion (criterion 1f) in a similar vein, that is, first, it appears to be out of character with the economic thrust of the other criteria and, second, it seems unlikely that this criteria would ever be categorised as anything other than a ‘Yes’ response. That said, just as the intangible wealth drivers in our economy have gathered pace over the past few decades (Quah, 1997), it seems likely that, as businesses compete for globally scarce resources, the issue of sustainability will come to the fore. Thus, the concept of ‘harmful use’ may actually spawn a whole subset of legal rights as social norms adjust to changing economic reality and our survival on this planet. We are already seeing that occurring in respect of carbon trading and, like the money metric and the time metric, the carbon metric is likely to be additive individually. There is also the consideration of whether these metrics can be mixed together too to form a completely new way of reporting assets?

In this paper we have stepped outside the accounting domain to look back into it on a fundamental aspect of accounting: asset recognition criteria that was considered once and rejected on the rather dubious grounds of introducing circularity (though no example was identified at the time - ASB, 1999). The advantage of our redrawn artefact-based boundary line, though, is that most transactions have one: an invoice, a payslip etc. In other words, artefact-based recognition is a broader basis for asset recognition, which can capture all that currently exists in the accounting domain and more (see Lev and Zarowin, 1999 on ‘boundaries’). The ‘more’ is what we have

concentrated on here by looking at four problematic organisational intangible ‘assets’ but, of course, the application of these criteria is applicable to all assets. For example, consider whether, if goodwill is inseparable from the other assets of a business, it would pass the separability based criteria presented in this paper? The development work continues.

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Figure 1: Types of IC and IA

Many authors refer to IC in terms of a resource contributing to organisational performance (see Chatzkel, 2000a,b; Brennan and Connell, 2000; Guthrie and Petty, 2000; Carroll and Tansey, 2000; Hunt, 2003; Leliaert et.al, 2003; Guthrie, 2001; Chatzkel, 2001a,b; Seetharaman et.al, 2002, 2004; Lim and Dallimore, 2004; Marr et.al, 2004; Pike et.al, 2005; Boedler et.al, 2005; Flostrand, 2006; O'Donnell et.al, 2006a,b; Jorgensen, 2006).

The various definitions can be grouped as follows with the distinction between (b) and (c) being a marginal one:

- (a) an Accounting (asset) perspective where IC is variously referred to as knowledge-based items (Carroll & Tansey, 2000) convertible into profit (Harrison & Sullivan, 2000), intellectual assets less intellectual liabilities (Candy, 2000), a moving force for business success (Goh, 2005), stocks of what matters to the creation of enterprise value (Burgman et.al, 2005), as well as, perhaps, the more traditional view of non financial fixed assets that do not have physical substance (Marr et al, 2005).
- (b) a Finance (market) perspective where IC is defined as the difference between the market value of the firm and its book value (see Joia, 2000; Pablos, 2003) arising from the added value (Sudersanam et.al, 2006) of 'assets' contributing to tangible output (Swart, 2006) but which are so embedded that they are not susceptible to a secondary market by which they could be valued (Housel and Nelson, 2005).
- (c) an Economic (wealth) perspective where IC one of the factors of production (Tome, 2004) deployed in the pursuit of wealth creation (Rastogo, 2003; Bygdas et al, 2004).

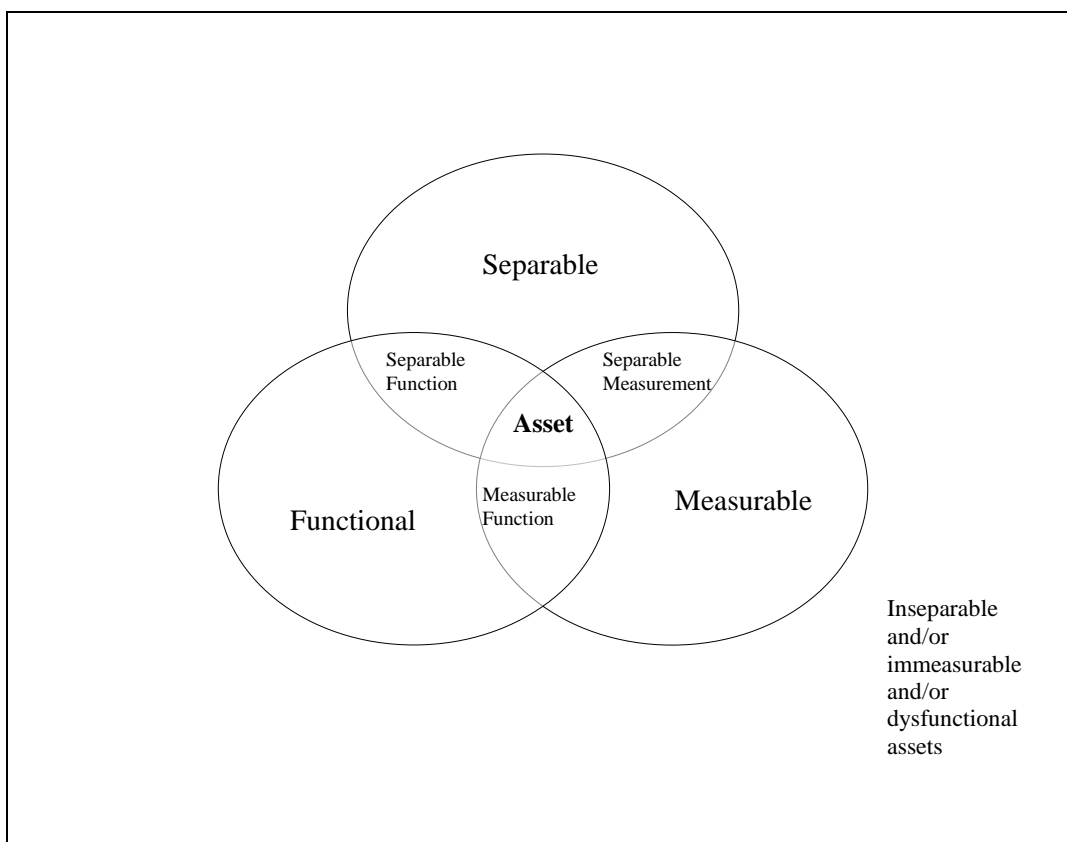


Figure 2: The boundary for asset recognition

Table 1: Asset Recognition Criteria	Trade- marks	Trade Secrets	Mgt. Process	Info. Systems
<i>Separable Function (Tables 1a-h)</i>				
1a. Right to control	Yes	No	No	Yes
1b. Right to future use	Yes	No	No	Yes
1c. Right to security	Yes	No	No	Yes
1d. Capability of transference	Yes	Yes	Yes	Yes
1e. The absence of a duration	Yes	No	No/Yes	Yes
1f. The prohibition of harmful use	Yes	No	Yes	Yes
1g. The liability to execution	Yes	No	No	Yes
1h. The right to residuary character	Yes	No	No	Yes
<i>Measurable Function (Tables 2i-k)</i>				
2i. The right to capital	Yes	Yes	No	Yes
2j. The right to discharge capital	Yes	Yes	No	Yes
2k. The right to income	Yes	Yes	No	Yes
<i>Separable Measurement (Tables 3l-n)</i>				
3l. Additive measurement method	No	Yes	No	No

3m. Observed measurements only	No	No	No	No
3n. Bundles of assets disallowed	Yes	No	No	Yes

Table 2: Types of Intellectual Capital (see Dzinkowski, 2000)

Human capital	Customer (relational) capital
1. Know-how	1. Brands
2. Education	2. Customers
3. Vocational qualifications	3. Company names
4. Work-related knowledge	4. Backlog orders
5. Occupational assessments	5. Distribution channels
6. Psychometric assessments	6. Business collaborations
7. Work-related competencies	7. Licensing agreements
8. Entrepreneurial elan, innovativeness, proactive and reactive abilities, changeability.	8. Favourable contracts
	9. Franchising agreements
Organisational (structural) capital	
Intellectual property	Infrastructure assets
1. Patents	1. Management philosophy
2. Copyrights	2. Corporate culture
3. Design rights	3. Management processes
4. Trade secrets	4. Information systems
5. Trademarks	5. Networking systems
6. Service marks	6. Financial relations

Table 4: IC measurement methods (Pike & Roos, 2004)

<p>Direct Intellectual Capital methods: Caddy (2000): Intellectual Capital Formula McPherson & Pike (2001) Inclusive Valuation Methodology Rodov & Leliaert (2002): Financial Method of Intangible Assets Measurement Andriesson (2005): Value Explorer Housel & Nelson (2005): Knowledge Valuation Analysis (KVA)</p>
<p>Market Capitalization methods: Housel & Nelson (2005): Market or Value Based Approach Tobin J: [adapted by Housel & Nelson (2005)]: Tobin's q Sudersanam et.al (2006): Real Option Models (ROM)</p>
<p>Return on Assets methods: Lev (2001): Residual Income Model [adapted by Housel & Nelson (2005)] Chen et.al (2005): Value Added Intellectual Coefficient (VAIC) Burgman et.al (2005): Future Value Management Methodology (FVMT)</p>
<p>Scorecard methods: Liebowitz & Suen (2000): Proposed Knowledge Management Metrics Carroll & Tansey (2000): Metrics to measure human capital & structural capital Low (2000): Value Creation Index-VCI Hunt (2003): Self-Assessment Computer Analyzed testing (SACAT) Bonfour (2003): Dynamic Valuation of intellectual capital (IC-DVAL) Bontis (2004): National Intellectual Capital Index Pike et.al (2005): Conjoint Value Hierarchy (CVH)</p>

Oliver & Porta (2006): Intellectual Capital Cluster Index (ICCI)
Kaplan & Norton (2006): Balanced scorecard
Voelpel (2006): Systematic Scorecard (SSC)

Table 3a: The right to control an intangible asset				
General Description	Trademarks	Trade Secrets	Management processes	Information systems

Control is exercised for a purpose: appropriation -	Control over logo's appropriating capabilities	There can be no control over tacit knowledge.	Management is centred on the actions of human beings* even with	Human beings and hardware: both tangible – irrelevant here. Since
Table 3b: The right to the future use of an intangible asset	may be established through custom and practice and be accepted as use or loss of IP	Equally, there can be no control over the person whom that tacit knowledge can use a	automated processes – tangible – irrelevant here. The management process is	software information is intangible, control is physical control over an
General Description If the asset is not scarce it may alternatively, lending without recompense or holding assets to prevent control by others. In the absence of an artefact there is little control over who may appropriate. (See Booth, 2003, pp312-314 for other aspects of control). There is no control over the tacit knowledge held in a person's head. Control is exercised over the artefact: the visible representation of explicit knowledge held physically and separately from the individual creating it.	Trademarks such without challenge (no artefact). However, constructive control is over the legal property rights, which can be established by trademark registration or by a successful action (and court order) for the tort of 'passing-off' - both artefact based. Record 'yes'	Trade Secrets is still resident unless one believes in slavery. Even then control is dependent on voluntary compliance. It is axiomatic that where a trade secret is made explicit it is no longer secret unless physically secured somehow, for example, a written recipe or drug formula kept in a safe. The artefact is created thereby but, unlike a patent, there is nothing in principle to prevent copying once the secret is shared – no proscription. Record 'no'	Management processes *Little control anyway without voluntary compliance, which may be selectively and repeatedly modified or withdrawn according to circumstance and inclination despite the existence of a contract of employment – the artefact. Record 'no'	Information systems inextricably reliant on the physical carrier for the magnetic or laser coding, such as a CD or laptop – the artefact. Exclusive control may be lost at the touch of a button unless the copyright is protected – the artefact too. Even then, control may be impossible if enough people are prepared to infringe copyright. Thus, control is becoming increasingly dependent on security protocols. Record 'yes'

be used freely by many users – seawater, deserts, atmospheric nitrogen. With a scarce asset future use is linked to restrictive controls, often contractual ones	clause to trademark registration (the legal artefact). Absence of an artefact does not prevent others from	trade secret but there is no right to use it or right to prevent others from using it if	vested in human beings and there is no right to use a human being, even where contractual obligations arise, without voluntary compliance. But a	artefact typically rests in one entity’s hands whilst the future <i>use</i> may be in many hands at the same time – not a scarce resource.
Table 3c: The right to security in an intangible asset				
General Description	Trademarks	Trade Secrets	Management processes	Information systems
Security is in the way one tries to ensure that future use is controlled by the user alone, who may, or may not, be the owner too. Also, involuntary use is not necessarily restricted to income generation, as would be the case in the financial reporting domain. For example, use to prevent competition.	Security in long-lived artefact deters copying but use cannot be prevented unless court sanctioned. Renewal of right to future use upon expiration of the trademark or franchise term. Record ‘yes’	Inherently, no security in nature of the secret. Record ‘no’	As regards what managers do, any manager can use a management process but there is no right to use it or right to prevent others from using it unless an artefact exists for a unique process that is protected, for example, by a patent. Processes like TQM, JIT etc are not unique. Record ‘no’	In some instances, such as domain names, there may be a ‘use it or lose it’ clause to the registration documentation – the artefact in this case. It follows in these circumstances that, unlike many other assets, one cannot just to hold on to the asset with or without a view to capital holding gains. Record ‘yes’

General Description	Trademarks	Trade Secrets	Management processes	Information systems
<p>Assumes the existence of an artefact so that the business entity acquiring the intangible expectation that appropriation will run in perpetuity unless determined otherwise, such as by statute.</p> <p>A contract or some other artefact may secure for a lending institution access to future appropriations eg. royalty income from securitised assets, such as Robbie Williams music copyright.</p>	<p>super-brands like Cadburys particularly where it is capable of being sold or franchised to other businesses, as with, for example, Cadburys cakes.</p> <p>Security is probably less likely in an obscure brand.</p> <p>Record 'yes'</p>	<p>trade secret. For example, no one in their right mind would securitise against an income stream coming from an unknown source.</p> <p>Record 'no'</p>	<p>centred on the actions of human beings even with automated processes.</p> <p>Same as trade secrets and information systems.</p> <p>There is very little security here, unless one believes in slavery. However, not so respect of the patented idea created by them – the artefact. That said, in most cases, variants of those ideas would probably be easy to execute without infringing any rights.</p> <p>Record 'no'</p>	<p>artefact but it is uncertain as to its long-lived nature because of rapid technological change eg. Windows software upgrades. Appropriation may be direct or indirect, as with a banking information system, but, nevertheless, central to the security and survival of the business.</p> <p>Record 'yes'</p>

asset can demonstrate that the right to its future use has passed to them. No actual transference is necessary, as with a business transaction. The capability is sufficient. Asset measurement is independent of this capability.	of a trademark registration document – both artefacts. Transference can occur independently of the other assets to which it may have been originally tied, for instance, the ‘Virgin’ brand. Record ‘yes’	so that the trade secret remains in a tacit form. No artefact is required, just a good memory. Record ‘yes’	Record ‘yes’	remaining behind for others to use – another exception to the ‘general description’. However, with any form of storage or other means of recording the information the artefact then exists. It is by this means that one can prove the right to use. Record ‘yes’
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[c] They are all capable of transference with or without an artefact. The artefact, however, provides evidence in the same way that an invoice or payment transfer provides some evidence in the accounting domain, except that no actual business transaction has to necessarily occur. An accounting transaction is one form of actualisation of the ‘capability of transference’, a subset that probably has more to do with establishing a reliable separable measurement than this specific separable function. Thus, a eureka moment by someone working on a new cyclonic vacuum cleaner in his garden shed or the farmer who gains from the birthing of a calf or some unexpected find of mineral deposits on his land are all non-transactions-based assets capable of transference and future use. It can be reasonably argued, though, that the attachment of an artefact to each asset’s ‘capability of transference’ is no better than the accounting approach in terms of establishing a separable function. All it does is to provide the aforementioned evidence: the patented cyclonic vacuum cleaner, the compulsory registering and tagging of the calf with DEFRA, the geologists technical report on the size, quality and value of the mineral deposit (except that in the case of the last two assets this is additional to their obvious tangible existence).

Table 3e: The absence of a duration				
General Description	Trademarks	Trade Secrets	Management processes	Information systems
Where the function of an intangible asset can be	The absence of visual awareness is no	There are no social norms, legalistic or otherwise.	Where the function remains with the human being the	Intangible information often has a short duration but may

separated from the human being and is vested in an	guarantee that the brand is 'dead' eg.	Despite secrecy there is nothing to prevent	duration is indeterminable, as with tacit knowledge, and	be continuously renewed eg. weather reports, customer
Table 31: The prohibition of harmful use	flaming motorcycles.	duplication eg. a drug	expires with the person.	lists, Windows '98/Xp/Vista
General Description	Trademarks	Trade Secrets	Management processes	Information systems
norms, notably, legalistic ones...	And a trademark may be renewably long-lived even where exposure to the brand is minimal.	formula. The duration is then 'zero' and any advantage may be extinguished by competitor patent registration.	When the process is automated it may be managed by another human being for the foreseeable future. Difficult one!	Information system based with or without copyright protection which would ensure a long duration (but not necessarily re use).
And where longer use of an asset is usually more valuable than shorter use.	Record 'yes'	Record 'no'	Record 'no/yes'	Record 'yes'

Asset usage can impose costs on others eg pollution costs.	‘Harmfulness’ is a matter of social judgement. So, for example, a ‘Auschwitz’ brand would probably	A potentially harmful trade secret harms no one until it is used and when it is used, generally speaking, it is no longer a secret. An analysis of what has been used is usually sufficient in that regard.	It is axiomatic that a harmful management process invites the possibility of legal sanctions. Equally, whatever is created or used by a person should not, in principle, be harmful to others. However, civil law is replete with instances where the principle fails in practice. Instances like Enron and Worldom show that management processes are often insufficient to combat errant social action. Indeed, they may even encourage it.	There are plenty of examples of harmful information, for example, computer viruses, adult video gaming, illegal downloading, Chinese censoring of Google website etc. However, in each case prohibition is subject to the changeable social norms of the society using the information – harm to one party may be protection or a warped sense of fun to another.
Table 3g: Liability to execution	Trademarks	Trade Secrets	Management processes	Information systems
Because social norms, notably, statutory ones, indicate who must pay to have their interests protected against the costs imposed by another party, improper use of an asset is often prohibited. Consider, for example, the creation of ‘carbon credits’ (documented artefacts) where pollution quotas may be traded within and between countries, in the same manner as fishing quotas, in order to sustain life.	regarded as being harmful, at least to the Jewish community, whereas, the ‘FCUK’ brand might be regarded a being clever, rather than harmful, through its similarity to a sexual swearword. Only a fool would deliberately set out to instigate a hostile response to a brand – a self-imposed prohibition. Record ‘yes’	Record ‘no’	Record ‘yes’ in principle	Record ‘yes’ in principle

<p>Comprehends a particular use: settling debt. The sufficiency of an intangible asset for that purpose is a matter of agreement between the parties and social norms.</p> <p>The artefact is important otherwise the intangible asset could potentially become a vehicle for defrauding creditors, and national income would suffer accordingly as those with liquid capital would be wary of lending it to those with assets lacking this proviso.</p>	<p>A high profile trademarked brand may well be accepted in settlement of a debt. Anyone with enough money can create a luxury car but there is only one Rolls Royce brand and it clearly had worth to BMW or they would not have bought it. A lender would know this too.</p> <p>Record 'yes'</p>	<p>No artefact, no sufficiency for intended purpose.</p> <p>Record 'no'</p>	<p>Management is vested in human beings and human beings cannot to used to settle debt unless one believes in slavery.</p> <p>Record 'no'</p>	<p>Social norms governing privacy of information are central to establishing the worth available to settle debt. A banking IT system, whilst the mainstay of the business, probably has no value to anyone else. But the information contained therein (customer details), is a different matter providing privacy laws allowed access. Other systems eg. Windows Vista – the artefact – could probably be securitised on the basis of a recognisable income stream, which could then be used to settle debt.</p> <p>Record 'yes'</p>
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Table 3h: Right to a residuary character				
General Description	Trademarks	Trade Secrets	Management processes	Information systems
Refers to a situation where the rights to use or control lapses. There must be social rules for deciding what to do, for whatever reason, where the pre-existing legal rights to an intangible asset are no longer present. For some intangible assets there is no residuary character eg. expiration of a patent. For others, they may be periodically renewed eg. trademark registration. For others, the right may be passed after death eg. copyright.	The statutory expiration of a trademark unless renewed. Brands may still be protected under the tort of passing off.	No artefact, no sufficiency for intended purpose.	Management is vested in human beings and there is no residuary character if a person decides to manage nothing (or even dies!). The right must be of an involuntary nature.	The right must of an involuntary nature separate from the person, such as copyrighted documents (the artefact), which can endure beyond death.
	Record 'yes'	Record 'no'	Record 'no'	Record 'yes'

General Description	Trademarks	Trade Secrets	Management processes	Information systems
<p>Fisher (1906, p52) refers to capital as “a stock of wealth existing at an instant in time”, Salvary (1997) refers instead to a “stock of money” expressed in nominal terms. In both cases <i>capital</i> is interpreted in financial reporting terms as a positive difference of assets over liabilities at the year-end. The amount of that positive difference depends on ones view of capital maintenance.</p> <p>A measurable function is triggered by the existence of, and is traceable to, an artefact: the separable product of utilising the human ‘asset’ - the process of structuralisation (Johnson, 2002): turning human capital into structural capital (see also Edvinson and Malone, 1997; Johnson, 1999; Stewart, 1997, Carson et al, 2004) though this is not always associated</p>	<p>The constituent nature of brand equity (Aaker, 1991, p16) is more broadly based than in respect of the artefact based focus of this paper. Wood (1995, p550), though, in referring to de Chernatony and McDonald (1992), adopts the ‘stock of wealth’ argument in that brands represent a source of “added value” (see also Wood, 1996). However, where marketers and accountants differ would undoubtedly be in the recognition of the added value from such abstract sources as identified by Aaker (1991) - see Keller, (1993) about the different motivations of accountants and marketers. From the accounting perspective the only physically verifiable brand equity attribute is in</p>	<p>A well known leading cancer specialist who declares that he/she may has a cure for the disease may well be paid a considerable sum for what only they know – the drug formula - but as soon as they reveal their secret the capital is instantly dissipated, the right then being held in many hands unless someone quickly establishes a patent right instead. There is no right to capital in the secret but there may be a right in a secret that is then revealed. In that instance in time the capital is immediately converted into income and both are lost</p>	<p>Adam Smith (1776) argued the case for “investments” in human beings – an input orientation (see also, Alfred Marshall, 1890, p469; OECD, 1996). However, with an output orientation, it is what human beings do: manage processes in this case, rather than the human beings themselves or what they tacitly know, that constitutes the measurable function^[d] here. It follows, that if a human being decides to do little or nothing or to do it badly then there is, in principle, little or nothing to manage and measure. The above input investment, if it is one, is wasted - the argument being reducible to one of ‘control’ (Table</p>	<p>One can capitalise labour on an input basis (eg. cost of salaries of those inputting or constructing info. systems) and it is clearly measurable but it does not necessarily mean from the argument re management processes that a measurable <i>function</i> exists. The function lies in the subsequent wealth creating use of the artefact created by labour eg. the encoded/printed weather report, credit report etc. That is electronic transference that requires physical retention (eg. a CD) to evidence the ‘right’. It is the value of the artefact that is problematic, labour cost being a poor but easily measured substitute in that regard.</p>

with the existence of an artefact in the intellectual capital domain.	respect of the trademark. Record 'yes'	thereafter. Record 'yes'	1a). Record 'no'	Record 'yes'
Table 3j: Right to discharge capital				
General Description	Trademarks	Trade Secrets	Management processes	Information systems

[d] It is acknowledged though that this output orientation cannot be completely divorced from an input orientation because there is an obvious 'chicken and egg' type argument here: without the human being in the first place there is no thought, no purpose and no possibility of action.

Copyright: Right to alienate	Brand capital or brand equity	A secret	If there is no capital then	Few people want old
General Description	Trademarks	Trade Secrets	Management processes	Information systems
<p>destroy or waste it, or by any other means, discharge it and thereby deny oneself the right to appropriate.</p> <p>The oil rich owners of a patent for a safe, cheap, compact and highly efficient source of generating electricity may, in their own interest, simply not use it. Thus it may exist as an artefact and it may have the potential to produce great wealth and yet, in practice, never do so – an entity specific, not a market specific viewpoint (see IASB, 2005b, p51).</p>	<p>can be discharged</p> <p>inadvertently, for example, Gerald Ratner of Ratners Jewellers talking about his “crap products”. However, previously damaged brand equity, like John West foods, can successfully reappear on retail shop shelves many years after they were first withdrawn. It is hard to establish a norm but that would not remove the right to eliminate a brand, and thereby any capital in it, simply by permanently removing it from public attention.</p> <p>Record ‘yes’</p>	<p>revealed is</p> <p>instantly discharged. The right to do so will typically be vested in only a few hands or just one.</p> <p>Record ‘yes’</p>	<p>there is nothing to discharge.</p> <p>Management is a human centred process even with automated ones – someone has to press the on/off button! With human ‘assets’ one can certainly alienate them but their destruction, consumption or wasting is not an option unless, perhaps, one respectively subscribes to execution, cannibalism, starvation.</p> <p>Record ‘no’</p>	<p>information (historians academics?). In many cases the capital tied to the artefact will waste quickly: old weather reports, old personal addresses, old exchange rates. Other systems, such as gaming systems, may endure. In both cases one can destroy the artefact easily or simply not use it. Knowing how much capital is discharged thereby is the problematic ‘separable measurement’ issue.</p> <p>Record ‘yes’</p>

The right to income is linked to the right to capital, notably, in respect of capital maintenance (see, for example, Whittington, 1974).	Refers to the primitive	There can be income from a trade secret but no right to it in the absence of the artefact. One man's secret Cola drink-recipe is another man's opportunity to copy and appropriate income for themselves unless prevented by the existence of an artefact, for example, a patent. The artefact removes secrecy but, at the same time, establishes the <i>right</i> to income from it. The <i>rights</i> to capital and income are in effect linked in the artefact.	There is no right to income if people, for example, decide not to manage or manage incompetently or become sick or die, in which case a measurable function will not exist. Most management processes are, at least, initiated by people.	The measurable function relates to the right to income from the artefact, for example, a CD of encoded software. That is what the customer pays for. The income is not from person creating or updating the information despite the obvious 'chicken and egg' type argument ^[d again] .
<p>The income is from what people create, the artefact, which is then used to appropriate or prevent others from appropriating. It is prevention that is perhaps the more important feature here. The right to income is strengthened by the existence of an artefact but the right can also be established by custom and practice.</p>	<p>income appropriated by the brand but separating it from the income attributable to product to which it is attached is difficult. However, it is entirely possible to reconstruct charts of accounts to one that is market and brand orientated, instead. So, prima facie, there can be a reasonable attempt to establish brand related net incomes if there was the political will to do so.</p> <p>Record 'yes'</p>	<p>Record 'yes'</p>	<p>Record 'no'</p>	<p>Record 'yes'</p>

Table 3m: A measurement should be based on observation				
General Description	Trademarks	Trade Secrets	Management	Information systems
General Description	Trademarks	Trade Secrets	Management processes	Information systems
<p>Generally, the money metric (£/p) and the time metric (hrs/mins) are individually additive but not when they are mixed together at different points in time (ASB, 1999, p79; IASB, 2001, para.100, IASB, 2005a) or when they are mixed with non-financial metrics.</p> <p>Choose one financial measurement basis at one point in time (now, not past, not future). “As a rule, human potential is not expressed in terms of monetary units... The same applies to investments in human potential (Milost, 2007, p124)”. Therefore, measure output from a human being, not their inputs – salaries etc.</p>	<p>Various measurement methods are employed (price premium, royalty payments, P/E multipliers etc) and therefore they are not additive.</p> <p>Record ‘no’</p>	<p>At the point in time where money is paid to the cancer specialist to reveal his/her secret cancer curing drug formula then, at that time, the amount may be added to other transactions based amounts. Immediately thereafter the secret is lost and with it the capital and future income. But, at one point in time the measurement is additive – interesting!</p> <p>Record ‘yes’</p>	<p>Management processes are linked to the concept of the use of a human ‘asset’, in this case, their use in managing processes. A few related measurement methods have remained within the money metrics of the financial reporting domain: the capitalisation of historical costs (Likiert, 1967), opportunity cost approaches (Hekimian and Jones, 1967), discounted wages and salaries approach (Lev and Schwartz, 1971), a replacement cost approach (Flamholz, 1973) but they all mix money and time, even with historical costs. These methods are all input centred upon the person anyway, not output centred upon the artefact created by the person.</p> <p>Record ‘no’</p>	<p>Output centred upon what a person creates: artefacts. As with trademarks, multiple valuation based methods can be applied. Where an information system is purchased, for example, a registered website domain name, the value can be added to other transactions- based values at that time only. Thereafter, value can be enhanced (as with Amazon or Google) or disappear quickly, as GEC Plc found to their cost with the 1990’s internet bubble crash.</p> <p>Record ‘no’</p>

			processes	
<p>One can <i>currently</i> observe a transaction based cost or a readily ascertainable market value or an event such as a court order where the damages can be reasonably estimated from documents. The same cannot be said for many valuation based methods where the time frame is often future based and therefore not observable. It is the time frame that is pertinent because even transactions-based cost becomes a sub-set of valuation-based methods over time. The obvious problem of observing something that is intangible is obviated through the use of physical substitutes: artefacts. Whether one would be prepared, for example, to accept the observed securitisation of a music copyright artefact or the observed royalties paid for the use of a trademark artefact or the options to do so as a valid approach for all such assets is unclear, but it is not beyond the ‘wit of man’ to make it so, or some other model, through the accounting regulatory process.</p>	<p>The observation process can be one of verifying regulatory compliance in the use of a ‘selected valuation method’ without material error in the way the measurement is conducted – a process of indirect verification. Of course, the unresolved problem is which method constitutes ‘the best’ measurement method in the first place – a process of direct verification (see IASB, 2006b; Barth, 2007, p14). See Arthur Andersen & Co. (1992) for political lobbying to this effect. A difficult one to categorise. On balance, currently...</p>	<p>If it is secret then it is not observable except when it is revealed in connection with a one-off transaction.</p>	<p>Most observations of human beings are in respect of what they do or have done, such as, manage processes. Their potential is currently observable but it is not necessarily an indicator of future potential. Anything that is future based is predictive rather than observable^[e] (see Aitken, 1990, p229 for further reasons). That said, what we want to measure here are the observed labour outputs: the created artefacts that subsist separately from the person (and their future potential) – not applicable.</p>	<p>The separable measurement of past and current income from some artefacts, like CD-based gaming software, may be easy to observe. For other information systems, the income may be non-existent, for example, encoded NHS patient records – an observed zero value perhaps? In both cases the artefacts are observed and based on labour outputs, not inputs. The issue then becomes whether the measurement of capital should be based on the observed measurements of income, above. The short answer is ‘no’ – see Damant (ASB, 1995, previously). It follows that any observation of the value of the artefacts will have to be a process of indirect verification – same as trademarks. Again, a difficult one to categorise. On balance, currently...</p>
	Record ‘no’	If secret... Record ‘no’	Record ‘no’	Record ‘no’

[e] The implications for future based valuations such as value-in-use, forecasts, some allocations and even some accounting standards (for example, cash generating units as part of impairment reviews) are extensive. It is interesting to note that a recent IASB definition of an asset provides some tentative support for this point: “An asset of an entity is a present right, or other access, to an existing economic resource with the ability to generate economic benefits to the entity” (IASB, 2006c, IASB Update, December 2007)

Reference is made in this quote to “present” and “existing” and no mention is made to “future” economic benefits. However, those “economic benefits” are still not articulated in terms of a single measurement method. So, for example, if a net realisable value method to accounting is chosen by standard setters (see IASB, 2006a), then, in implicitly referring to a *future* sale (unless actually realized today), the mix of time frames (present and future) would still apply even though this *future* is not explicitly contained in the above definition. Also note that the element of “control” is now missing from the definition: a criterion in this paper. Note, also the opposite situation: that the issue of a “resource” (see Hall, 1991, 1992) is missing as a criterion herein because, to repeat, the need to specify what a resource is by nature simply replaces the need to specify what an asset is by nature (see Weetman, 1989).

Table 3n: Bundles of assets should be avoided (wherever possible)				
General Description	Trademarks	Trade Secrets	Management processes	Information systems

<p>A separable measurement should be tied to a single asset, rather than as a bundle, otherwise, it may be possible to inadvertently dispose of or discharge individual assets, <i>notably the intangible ones</i>, whilst leaving the measurement of the bundle intact.</p> <p>In the absence of an artefact (the traceable object) there is a danger, particularly in respect of intangible assets, that one may end up disclosing the measurement of something that has little or no function let alone a separable function. It is acknowledged, though, that this could be a practical problem for many compound financial derivatives.</p>	<p>The most controversial criterion because, according to Aaker (1991), brand equity is a “set of assets” ie. bundled, and virtually impossible to un-bundle and measure separately. We do not try. Politically one must decide an appropriate lowest level of aggregation or, perhaps more appropriately, disaggregation at which to report assets (is it bricks and mortar or is a building?). Our decision is based upon the trademark artefact. Whatever marketing “asset” that may or may not be attached thereto (eg. name awareness) is ignored in the accounting domain. Record ‘yes’</p>	<p>No need to do so. Record no</p>	<p>No artefact, therefore, nothing to bundle. Record ‘no’</p>	<p>The sum of the value of the CD copyrights on the individual Harry Potter films will probably be greater than the boxed set when all of them have been released. And a clever business person knows how to obtain value individually and/or when bundled. Likewise with any component software of an integrated system. The key feature is the artefact (the traceable object) because this establishes user rights to the intangible asset whether individual or bundled. The unresolved problem though is how to remove duplication when trying to establish a separable measurement for one or the other or, perhaps, both at the same time. Record ‘yes’</p>
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