1. Logical Systems

This section provides a comprehensive introduction to the notion of a logical system, that a logical theory can describe logical systems, and helps the reader see that a financial report is a logical system.

In order to understand a logical theory, we must first explain the terms we will be using to describe that logical theory. This section provides that explanation in simple terms that is approachable to business professionals. Technical professionals implementing software applications have other methods of describing formalisms of such logical systems such as UML and OWL.

1.1. Area of Knowledge

An **area of knowledge** is a highly organized socially constructed aggregation of shared knowledge for a distinct subject matter. An area of knowledge has a specialized insider vocabulary, underlying assumptions (axioms, theorems, constraints), and persistent open questions that have not necessarily been resolved (i.e. flexibility is necessary).

Accounting is an area of knowledge. You can explain aspects of the accounting area of knowledge, such as the nature of a financial report, using a logical theory which explains a logical model. A logical theory can be tested and proven by providing a proof. When all the details are worked out, you have a best practice based proven method.

Knowledge can be represented in human-readable form, in machine-readable form, or in a machine-readable form that can be effectively converted into human-readable form.

Another term for area of knowledge is a knowledge domain or simply domain.

1.2. System Complexity and Order

Difference systems have different levels complexity. Systems can also be ordered or disordered. The Cynefin Framework[1] is a conceptual framework that helps you understand the dynamics that are at work within different types of systems. The framework was created in 1999 by David Snowden of IBM Global Services to help IBM to manage intellectual capital.

The following graphic helps one understand the different levels of complexity: simple, complicated, complex, and chaotic. The graphic also helps one understand the difference between disorder and order.

The video *Using Cynefin to Prioritize and Analyze Features, User Stories, and Functional Requirements*[2] provides an excellent walk through of these ideas.

[1] Cynefin Framework, http://xbrl.squarespace.com/journal/2021/3/21/cynefin-framework.html

[2] Using Cynefin to Prioritize and Analyze Features, User Stories, and Functional Requirements, https://www.youtube.com/watch?v=L5fnxahydXM

Different skill sets are necessary to be able to create simple, complicated, and complex systems that work effectively.

1.3. Symbolic Systems

Stanford University has a unique undergraduate or graduate major offering called the Symbolic Systems Program[3].

So, what is a symbolic system? Per the associate director of the program when interviewed by The Stanford Daily[4]:

> "[The major is] a combination of studying the human mind … and the intelligence of machines and of the design interaction that happens between them, [as well as] how those things can inform each other," said symbolic systems associate director Todd Davies '84 M.S. '85 Ph.D. '95 in an interview with The Daily.

A **symbolic system** is essentially a system built with symbols such as natural language, programming languages, mathematics, or formal logic. An interesting thing is that symbolic systems are understandable by both humans and by computers.

[3] Stanford University, *Symbolic Systems Program*, https://symsys.stanford.edu/about/span-dig-deep-solve-complex-problems

[4] Stanford University, *The Stanford Daily*, https://www.stanforddaily.com/2019/01/23/unique-to-stanford-symbolic-systems/

You can get a more detailed understanding of symbolic systems from the Stanford Bulletin[5] which describes the course. Cognitive science[6] is somewhat similar to symbolic systems. Computational linguistics[7] is also somewhat similar.

Why is this important?

In his book Saving Capitalism[8], Robert Reich describes three categories that all modern work/jobs fit into:

- **Routine production services** which entails repetitive tasks,
- **In-person services** where you physically have to be there because human touch was essential to the tasks,
- **Symbolic-analytic services** which include problem solving, problem identification, and strategic thinking that go into the manipulation of symbols (data, words, oral and visual representations).

In describing the third category, symbolic-analytic services, Mr. Reich elaborates:

> "In essence this work is to rearrange abstract symbols using a variety of analytic and creative tools - mathematical algorithms, legal arguments, financial gimmicks, scientific principles, powerful words and phrases, visual patterns, psychological insights, and other techniques for solving conceptual puzzles. Such manipulations improve efficiency-accomplishing tasks more accurately and quickly-or they better entertain, amuse, inform, or fascinate the human mind."

Think Computational Law[9] and Computational Audit[10]. Many tasks in accounting, reporting, auditing, and analysis are related to symbolic-analytic services and rearranging abstract symbols. As I pointed out a while back, the "Learn to code" is a hysteria and is misguided. If you want to understand things like how artificial intelligence actually works and how it will impact accounting, reporting, auditing, and analysis; study symbolic systems.

A logical system is a type of symbolic system. A logical theory can describe a logical system; for example, the *Logical Theory Describing Financial Report*[11] describes the financial report logical system. Not only is a financial report a type of logical system; that logical system can be readable and understandable by both humans and by machines.

Let's walk you through a simple explanation of a logical system.

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[5] Stanford University, *Stanford Bulletin*, https://exploredegrees.stanford.edu/schoolofhumanitiesandsciences/symbolicsystems/
[6] Wikipedia, *Cognitive Science*, https://en.wikipedia.org/wiki/Cognitive_science
[7] Wikipedia, *Computational Linguistics*, https://en.wikipedia.org/wiki/Computational_linguistics
[8] Robert Reich, *Saving Capitalism*, page 204-206), https://www.amazon.com/Saving-Capitalism-Many-Not-Few/dp/0345806220
[9] *Computational Law*, http://xbrl.squarespace.com/journal/2020/8/24/computational-law.html
[10] *Computational Audit*, http://xbrl.squarespace.com/journal/2020/8/25/computational-audit.html
[11] *Logical Theory Describing Financial Report*, http://www.xbrlsite.com/mastering/Part02_Chapter05.B_LogicalTheoryDescribingFinancialReport.pdf

1.4. Simple Explanation of Logical System

A **system**[12] is a cohesive conglomeration of interrelated and interdependent parts that is either natural or man-made[13]. When a system is working right, it creates a virtuous cycle.

A **pattern** is any form of correlation between the states of elements within a system. A theory is a tool that can be used to describe a system. A theory essentially describes the patterns within a system.

As such, a logical system can be explained by a logical theory. A logical theory is an abstract conceptualization[14] of specific details of some domain. The logical theory provides a way of thinking about a domain by means of deductive reasoning to derive logical consequences of the theory.

A **logical theory** enables a community of stakeholders trying to achieve a specific goal or objective or a range of goals/objectives to agree on important statements used for capturing meaning or representing a shared understanding of and knowledge in some universe of discourse.

A logical theory is made up of a set of *models*, *structures*, *terms*, *associations*, *rules*, and *facts*. In very simple terms,

- **Logical theory**: A *logical theory* is a set of models that are consistent with and permissible per that logical theory.
- **Model**: A *model*[15] is a set of structures that are consistent with and permissible interpretations of that model.
- **Structure**: A *structure* is a set of statements which describe the structure.
- **Statement**: A statement is a proposition, claim, assertion, belief, idea, or fact about or related to the universe of discourse to which the logical theory relates. There are four broad categories of statements:
    - **Terms**: Terms are statements that define ideas used by the logical theory such as "assets", "liabilities", "equity", and "balance sheet".
    - **Associations**: Associations are statements that describe permissible interrelationships between the terms such as "assets is part-of the balance sheet" or "operating expenses is a type-of expense" or "assets = liabilities + equity" or "an asset is a 'debit' and is 'as of' a specific point in time and is always a monetary numeric value".
    - **Rules**: Rules are statements that describe what tend to be IF…THEN…ELSE types of relationships such as "IF the economic entity is a not-for-profit THEN net assets = assets - liabilities; ELSE assets = liabilities + equity".
    - **Facts**: Facts are statements about the numbers and words that are provided by an economic entity within a business report. For example,

[12] Wikipedia, *Systems Theory*, https://en.wikipedia.org/wiki/Systems_theory
[13] Charles Hoffman, CPA, *Systems Theory: Method to my Madness*, http://xbrl.squarespace.com/journal/2019/12/29/systems-theory-method-to-my-madness.html
[14] Wikipedia, *Conceptual Model*, https://en.wikipedia.org/wiki/Conceptual_model
[15] Wikipedia, *Model Theory*, https://en.wikipedia.org/wiki/Model_theory

> the financial report, a type of business report, might state "assets for the consolidated legal entity Microsoft as of June 20, 2017 was $241,086,000,000 expressed in US dollars and rounded to the nearest millions of dollars.

Fundamentally, a logical theory is a set of statements. Those statements can be represented in machine-readable form. Once in machine-readable form, those statements can be interrogated using software applications. To the extent that this can be done effectively; software tools can assist professional accountants and others working with those statements.

A financial report has a finite set of statements (structures, terms, associations, assertions, and facts) within the report. The set of statements is definite. That definite set of statements forms a model. (With any field of knowledge, the critical concepts of the field are embedded in the definitions of the field's technical terms. The term 'statement' in financial reporting is different than that same term 'statement' as is being used here.)

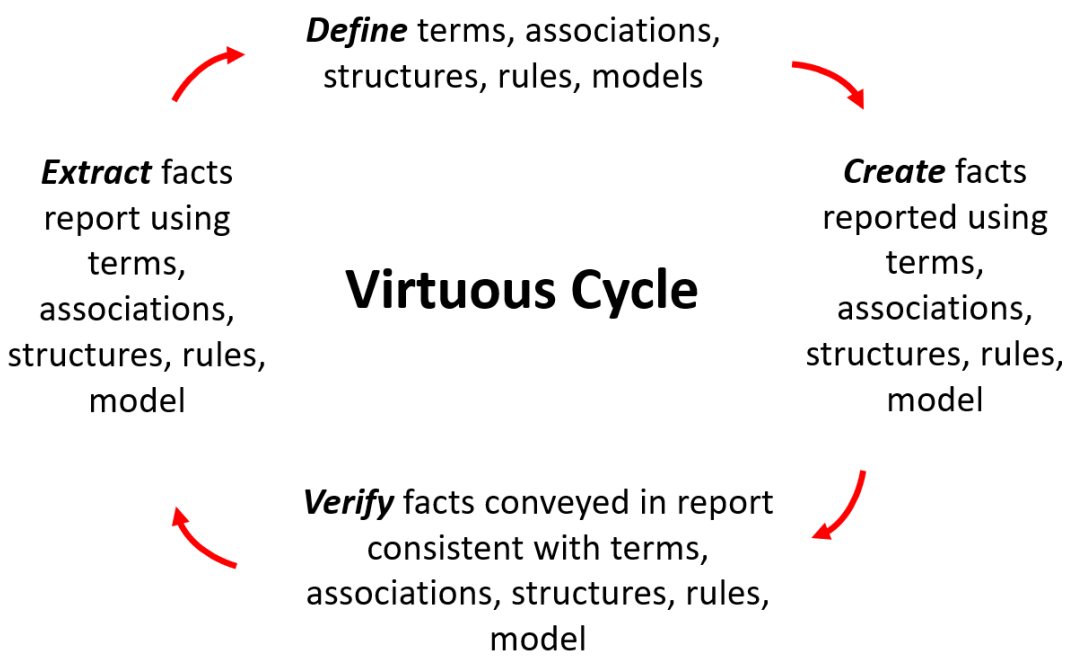
1.5. Proper Functioning Logical System

A logical theory is said to be **consistent** if there are no contradictions with respect to the statements made by the logical theory that describes the logical system (i.e. reality).

A logical theory can have high to low **precision** and high to low **coverage**. *Precision* is a measure of how precisely the information within a logical theory has been represented as contrast to reality of the logical system for the universe of discourse. *Coverage* is a measure of how completely information in a logical theory has been represented relative to the reality of the logical system for a universe of discourse.

When a logical system is consistent and it has high precision and high coverage the logical system can be considered a properly functioning logical system. When a system is working right, it creates a virtuous cycle[16].

[16] Charles Hoffman, CPA, *Virtuous Cycle*, http://xbrl.squarespace.com/journal/2020/4/29/virtuous-cycle.html



1.6. Very Simple Example of Logical System

A very simple example of a logical system is the accounting equation. Here is a description of the accounting equation logical system in both human-readable terms and machine-readable terms using XBRL[17]:

Terms: Three simple terms are defined: Assets, Liabilities, Equity. One complex term is defined, balance sheet.

Structure: One structure is defined, the balance sheet, and identified using the term balance sheet.

Associations: The three terms Assets, Liabilities, and Equity are associated in that they are all PART-OF the structure balance sheet.

Rules: A mathematical assertion is made that "Assets = Liabilities + Equity".

Facts: Instances of three facts are established to exercise the model: Assets of $5,000; Liabilities of $1,000; Equity of $4,000.

Model: All of the terms, associations, assertions, structures, and facts describe the model. We created only one model, or permissible interpretation, of the logical theory. (As accountants know, if you reverse the equation using the rules of math to "Equity = Assets - Liabilities" and change the term "Equity" to "Net Assets"; then you get another permissible interpretation or model.)

Because this is a very simple example with only a few statements it is easy to get your head around this system and see that it is consistent, complete, and precise. As expected, you see three facts described by three terms which are related to one structure and the one rule is consistent with expectation:

[17] Charles Hoffman, *Accounting Equation*, http://xbrlsite.azurewebsites.net/2020/master/ae/

Balance Sheet [Abstract]	Period [Axis] 2020-12-31
Balance Sheet [Abstract]	
Assets	5,000
Liabilities	1,000
Equity	4,000

Result	Rule
Pass	$Assets = $Liabilities + $Equity

Balance Sheet

Consistent

Complete

Precise

1

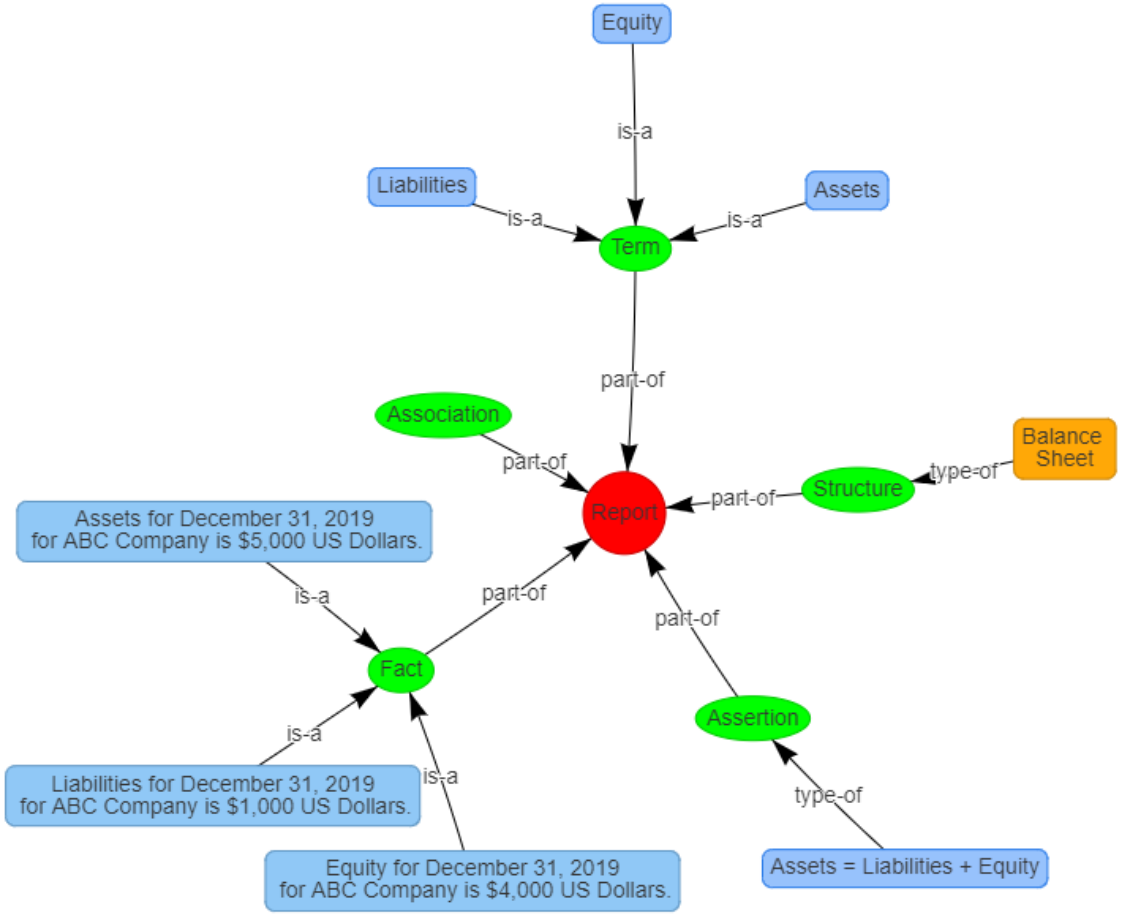
Assets = 5,000

Liabilities = 1,000

Equity = 4,000

Assets = Liabilities + Equity

As the size of the logical system increases it becomes increasingly more challenging to verify that the logical system is properly function using manual processes. But, covering the impediments to a properly functioning logical system are beyond our scope here[18]. Essentially, the models, terms, structures, rules, and facts form a directed acyclic graph such as:



[18] Charles Hoffman, CPA, *Impediments to Creating Properly Functioning XBRL-based Reports*, http://xbrlsite.azurewebsites.net/2020/core/master-ae/Documentation.pdf

While a typical financial report is significantly larger (i.e. the Microsoft 2017 10-K is made up of 194 structures) every financial report works the same as this very simple example but just has more pieces.

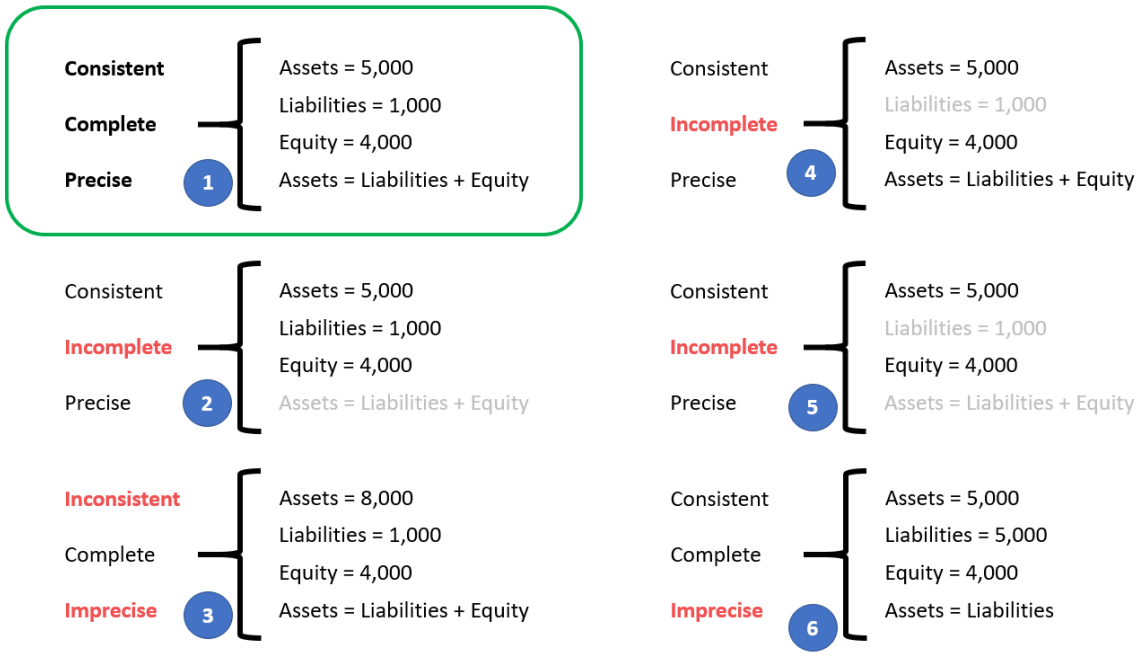
1.7. Impediments to a Properly Functioning Logical System

A good way to understand properly functioning logical systems is to understand the impediments to a properly functioning logical system. In this section we will start with a very simple logical system, the accounting equation which was described above, show the properly functioning version of that system, and then describe several states where that logical system becomes an improperly functioning logical system.

1.7.1. Properly and Improperly Functioning Logical Systems

Below you can see examples of each of six possible states of the accounting equation logical system. For example, the logical system can be functioning improperly if a single statement is left out, if one statement contradicts another statement within the logical system, if a statement is imprecise with respect to reality; all of these situations impact (a) the logical system and (b) what information is necessary to include within the logical system.

Here is a graphic depicting the first 6 states including the first which is a properly functioning logical system:



In the following sections I want to make some adjustments to the logical system which make the logical system either inconsistent, incomplete, or imprecise and explain why the system is then not a properly functioning logical system. To the six examples above I will add three additional examples. I made videos that explain

each of these impediments to a properly functioning logical system which you can see in this video playlist, Understanding the Financial Report Logical System[19].

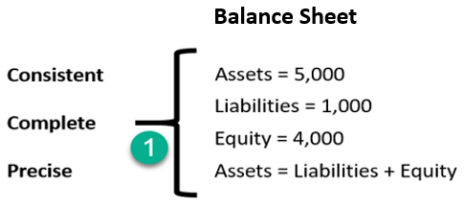
Before we get to the improperly functioning logical systems, let's take one final look at the properly functioning logical system so that you can compare and contrast the properly functioning and improperly functioning logical systems.

1.7.2.State 1: Properly Functioning Logical System

For completeness, I want to start by mentioning again our properly functioning logical system which is consistent, complete, and precise. It can be helpful to contrast other states to this state to understand the difference between properly functioning logical systems and improperly functioning systems.

Balance Sheet [Abstract]	Period [Axis]
	2020-12-31
Balance Sheet [Abstract]	
Assets	5,000
Liabilities	1,000
Equity	4,000

Result	Rule
Pass	$Assets = $Liabilities + $Equity



Again, this is considered a properly functioning logical system because (a) all the statements within the system are **consistent**; (b) the set of statements that describe the system is **complete**; and (c) the information conveyed by the system is **precise** in its representation of reality. Further, we are formally declaring this "reality"[20] to be our base understanding.

Also, we need to be explicit. We defined three terms "Assets", "Liabilities", and "Equity".

Now, you may know what those three terms are; but a computer does not. You have to define what you work with relative to something that you know. Imagine our system defines four terms, "fac:Assets", "fac:Liabilities", "fac:Equity", and "fac:LiabilitiesAndEquity"[21]. You understand your system but you have to map every external system into your system[22]. Your internal system understands more that the accounting equation system (i.e. you have LiabilitiesAndEquity). You have to be able to compute that value based on some other system's information[23]. It is perfectly reasonable for our system to create a concept LiabilitiesAndEquity and compute that value even though the accounting equation logical system does not have that explicit value.

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[19] Understanding the Financial Report Logical System, https://www.youtube.com/playlist?list=PLqMZRUzQ64B7EWamzDP-WaYbS_W0RL9nt

[20] YouTube, *Reality*, https://youtu.be/eq2Jw6waaCI

[21] Fundamental accounting concepts, http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac.xsd

[22] Mapping from accounting equation to fundamental accounting concepts in our system, http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml

[23] XBRL Formula to derive the value for LiabilitiesAndEquity, http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-ImputeRule-LiabilitiesAndEquity-formula.xml

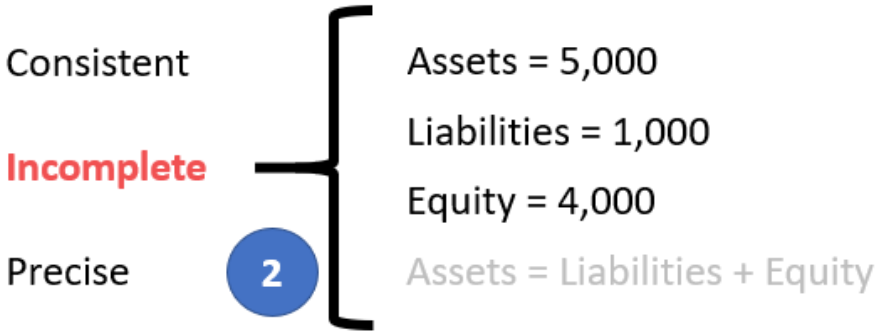
The point is that different economic entities have different models; but all models of a financial reporting scheme are reconcilable from/to one another in some manner[24].

1.7.3.State 2: Incomplete Coverage by Rules

The logical system #2 below is intended to show exactly the same information as our #1 properly functioning logical system, except that #2 leaves out the rule "Assets = Liabilities and Equity" which is showed as grayed out (i.e. because it is assumed to be missing from the logical system.

Coverage is a measure of how well you do or can represent a domain of information within a logical system. "Do" is about using the tools you have correctly and effectively. "Can" is about the capabilities of the tools you are using to represent the rule.

For example, if your logical system neglects to include the rule "Assets = Liabilities + Equity" or if your tools don't provide the capabilities to allow you to represent that rule; then there is the possibility that the facts being represented to be represented incorrectly and the system will not detect the inconsistency. As such, that logical system has **incomplete coverage**.

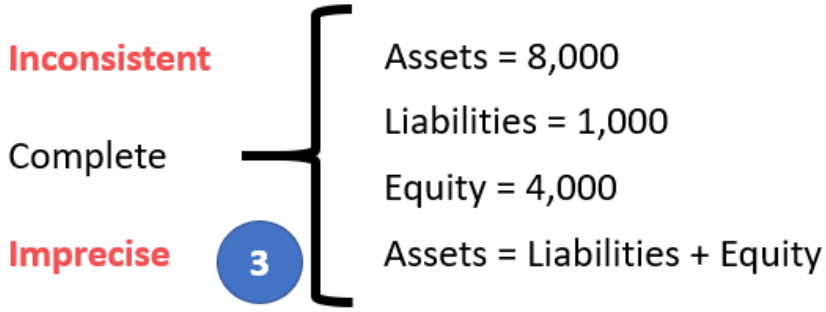


While this specific state #2 does have the Assets, Liabilities, and Equity facts consistent with the absent rule; the system is still incomplete because the coverage can be improved by adding the missing rule. If that missing rule is added, then the logical system can be considered complete again.

1.7.4.State 3: Inconsistent and Imprecise

All the statements in the system must be consistent for the logical system to be considered properly functioning. If statements are inconsistent, the logical system is not is not properly functioning. In this system #3, the values for Assets, Liabilities, and Equity are inconsistent with the rule "Assets = Liabilities + Equity". From looking at the information provided, it is impossible to know exactly which of the three facts are incorrect; it is only possible to understand that the statements made within the logical system is inconsistent. It could be the case that the rule is incorrect.

[24] Charles Hoffman, CPA, *Special Theory of Machine-based Automated Communication of Semantic Information of Financial Statements*, http://xbrl.squarespace.com/journal/2019/12/30/special-theory-of-machine-based-automated-communication-of-s.html

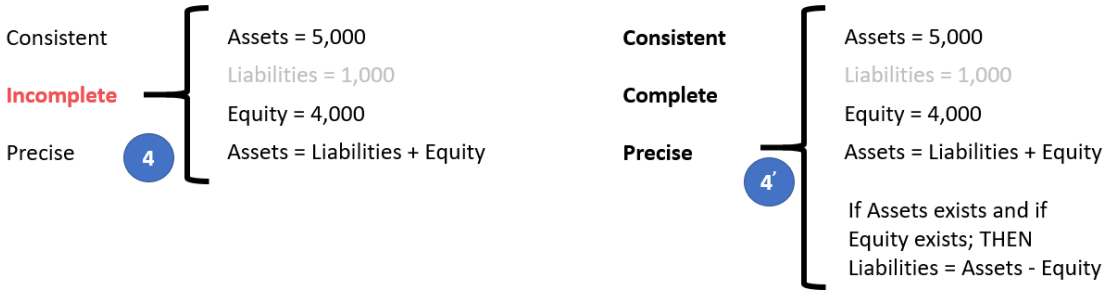


However, given that we know from state #1 that the value for Assets is 5,000 and not 8,000; the facts in this system is imprecise because the fact for Assets does not reflect reality.

1.7.5.State 4: Unreported Facts

In state #4, the situation is that the economic entity representing information in their report neglected to include the fact for Liabilities. Whether it is the case that a fact can, or cannot, be left unreported is a decision that can be made by the stakeholders of the system.

If it is the case that it is decided that the fact "Liabilities" can be omitted if both Assets and Equity are reported; then you must provide a rule to derive the value of Liabilities when that fact is not reported. Below you see that the system has been adjusted in state #4' to add the rule "IF Assets exists and if Equity exists; THEN Liabilities = Assets - Equity"[25].



If it were likewise true that either Assets[26] or Equity[27] could also be left unreported, similarly derivation rules could be created for each of those facts. Note that XBRL Formula chaining[28] can be used to physically derive unreported facts if any one of these three facts remain unreported. Note that it is impossible to derive missing information if any two of the facts remain unreported. Adding the derivation rule makes the system complete.

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[25] Here is the impute or derivation rule that would be added to the accounting equation logical system for this situation, http://xbrlsite.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-1-Code-BS-Impute-01-formula.xml

[26] XBRL Formula rule for deriving Assets, http://xbrlsite.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-3-Code-BS-Impute-03-formula.xml

[27] XBRL Formula rule for deriving Equity, http://xbrlsite.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-2-Code-BS-Impute-02-formula.xml

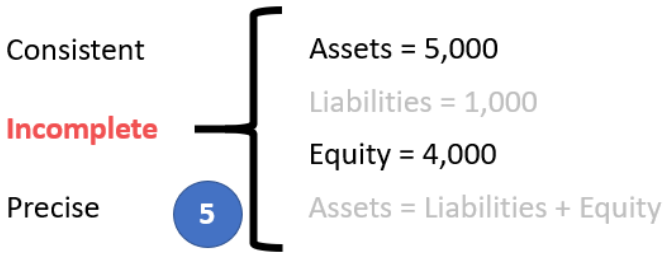
[28] Deriving Facts Using XBRL Formula Chaining (Example), http://xbrl.squarespace.com/journal/2019/4/24/deriving-information-using-xbrl-formula-chaining-example.html

Allowing certain line items of a report to go unreported specifies the need to create rules to derive missing information. Or saying this another way, omitting the possibility of unreported facts negates the need for creating derivation rules.

A second downside of allowing unreported facts is that you lose the parity check or cross check if facts can go unreported. Said another way, it would be considered best practice to not leave important high-level financial report line items to go unreported.

1.7.6.State 5: Incomplete

Similar to state #4, in state #5 the logical system is incomplete because both (a) the fact Liabilities is unreported and also (b) the consistency rule "Assets = Liabilities + Equity" is missing from the logical system. Because both a fact and the rule are missing from the logical system, it would be impossible to deduce the value of Liabilities in this case. There is not enough information in the logical system to allow Liabilities to be derived. At a minimum, a consistency crosscheck rule[29] plus the derivation rule to impute Liabilities[30] would be necessary.



Again, consistent with state #4; Assets and Equity would require similar rules and there is no parity check of reported information.

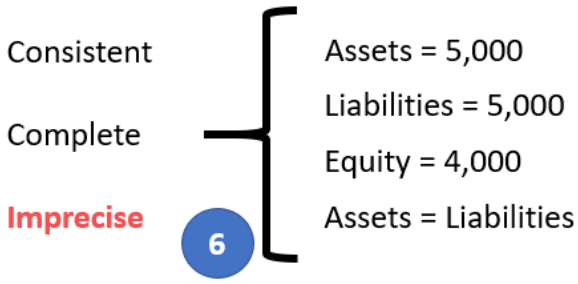
1.7.7.State 6: Imprecise

A logical system is a true and fair representation of some agreed upon realism. **Precision** is a measure of how precisely you do or can represent the information of a domain within a logical theory. The reality that we formalized in state #1 indicates that "Assets = Liabilities + Equity". Yet, in the state #6 example, the rule "Assets = Liabilities" was provided. Further, the values of Assets and Liabilities are, in fact, consistent with the rule that has been provided.

Remember that in state #1 we formalized our truth to be that "Assets = Liabilities + Equity". As such, this logical system can be described as being imprecise. To make this logical system precise, all that needs to be done is to fix the rule.

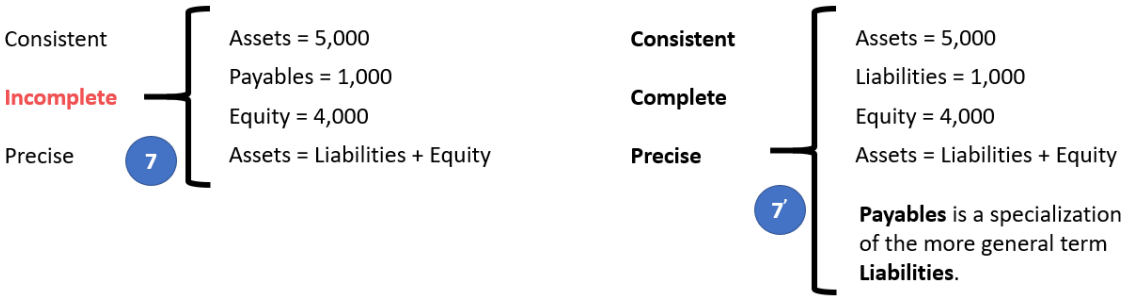
[29] XBRL Formula consistency crosscheck rule Assets = Liabilities + Equity, http://xbrlsite.azurewebsites.net/2020/core/master-ae/Consistency-5-Code-BS01-formula.xml

[30] XBRL Formula derivation rule to impute Liabilities, http://xbrlsite.azurewebsites.net/2020/core/master-ae/ImputeRule-Key-1-Code-BS-Impute-01-formula.xml



1.7.8.State 7: Extension Concept

In state #7 on the left, what we are trying to convey is that the economic entity reported the fact for Liabilities using the extension concept "Payables" that it had created. If a fact is represented using an extension concept created by a reporting entity; then a "general-special" or "wider-narrower" or "class-equivalentClass" association must be created to indicate to software applications of the relationship so that information can be used correctly. State #7' on the right, the rule "Payables is a specialization of the more general term Liabilities" has been added to the logical system which allows the system to operate effectively[31].



1.7.9.State 8: Base Taxonomy Wider/Narrower Concept Use

State #8 on the left below is similar to state #7 in that a different concept is used to report a fact; but while state #7 focuses on using an extension concept; state #8 points out that using a wider or narrower base taxonomy concept gives exactly the same result.

Now, our base state #1 does not have the concept "Payables"; but let's assume for a moment that it does have the concept "Payables". Also suppose that there was no information in the base logical system indicating the relationship between "Payables" and any other concept. If a fact is represented using a BASE TAXONOMY CONCEPT by a reporting entity; then a "general-special" or "wider-narrower" or "class-equivalentClass" association must exist in that base taxonomy to indicate that some concept is a permissible alternative for some other concept.

State #8' on the right adds the rule "Payables is a specialization of the more general term Liabilities"[32].

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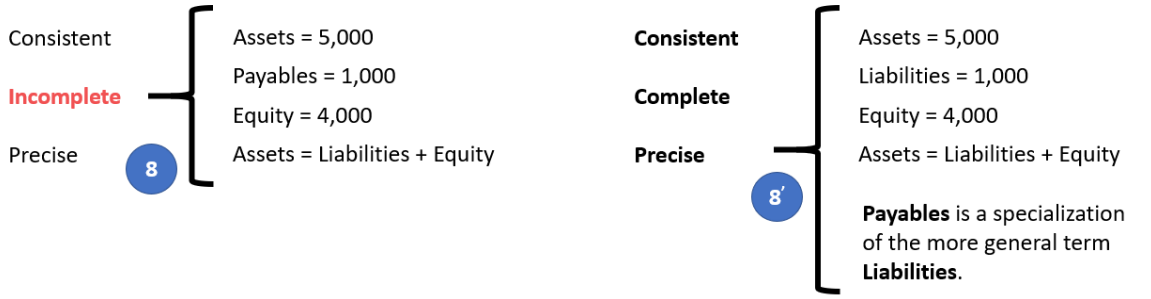
[31] XBRL Definition relations showing example of a mapping rule, http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml

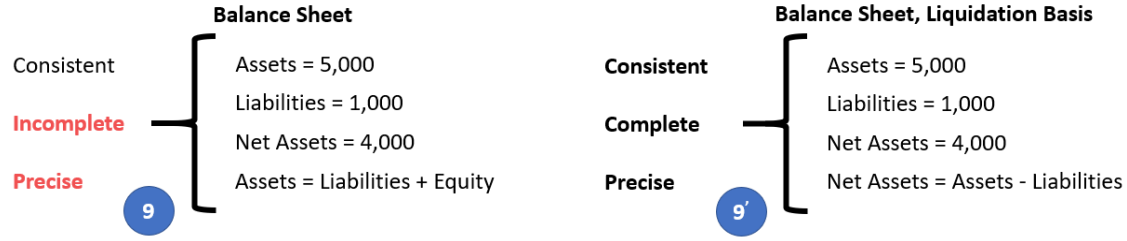
[32] XBRL Definition relations showing example of a mapping rule, http://xbrlsite.azurewebsites.net/2020/core/master-ae/fac-mapping-definition.xml



1.7.10. State 9: Defining a Completely New Structure

State #9 below on the left focuses on the structure as contrast all the prior examples which focused on the terms and rules. If a new structure is created, the new structure must be referenced to the base taxonomy and the new structure needs to be explained using machine-readable rules[33]. Even base taxonomy structures need to be defined in order to be referred to[34]. When you say "Balance Sheet" you know what that means. But a machine does not know.

A base taxonomy should (a) provide all necessary structures separately, not intermingle different models in the same set of associations and (b) define what each structure must look like. Remember, computers are like babies and need to be led by the hand in order to understand the details you need them to understand.



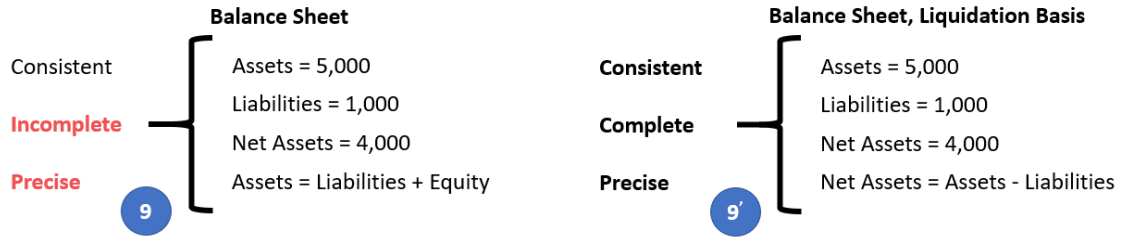
Finally, in our case we have only one disclosure, the Balance Sheet. In our case, the Balance Sheet is always required to be reported per this logical system. As such, that rule is stated in a machine-readable reporting checklist[35]. Other logical systems with more disclosures will have more rules relating to when a disclosure is required to be provided in a report.

1.7.11. State 10: Organizing Disclosures Using Topics

State #10 points out that while the accounting equation logical system has one structure, the balance sheet, ultimately if a complete financial reporting scheme were represented one might have hundreds or even thousands of disclosures.

[33] XBRL Definition relations used to represent structure rules, http://xbrlsite.azurewebsites.net/2020/core/master-ae/dm-1355-rules-def.xml
[34] XBRL taxonomy schema used to define "Balance Sheet", http://xbrlsite.azurewebsites.net/2020/core/master-ae/disclosures.xsd
[35] XBRL Definition relations used to represent a reporting checklist or disclosure rules, http://xbrlsite.azurewebsites.net/2020/core/master-ae/reporting-checklist-rules-def.xml

Disclosures can be organized into topics[36]. Then, rather than having one flat list of disclosures, they can be organized into a handy hierarchy[37].



1.8. Standard Business Report Model (SBRM)

The Object Management Group (OMG) is taking XBRL-based business reports to a new level, leveraging what has been learned from creating XBRL-based financial reports over the past 10 years. The Standard Business Report Model (SBRM)[38] is described as follows:

> "SBRM formally documents a logical conceptualization of a business report in both human-readable and machine-readable models."

SBRM goes on to explain that through the use of standard models, business experts can define the structure and content of their reports and extensions using high-level logical business report objects, possibly presented in the form of semantic spreadsheets and pivot tables rather than with lower level technical syntax.

While XBRL has mainly been employed for financial reporting, leveraging the nature of financial accounting rules[39]; digital business reporting will benefit from the capabilities pioneered by XBRL-based financial reporting. Further, business reporting will not be limited to only one syntax but rather the arbitrary preferred syntax of can be used and systems can still be consistent with one conceptual model of a business report.

Financial reporting will likewise benefit from SBRM because SBRM helps business professionals and technical professionals constructing systems where flexible reporting is a requirement to effectively control variability and still have high-quality information exchanges.

2. Further Reading

For more information please see:

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[36] XBRL taxonomy schema used to represent topics, http://xbrlsite.azurewebsites.net/2020/core/master-ae/topics.xsd

[37] XBRL definition relations used to create a hierarchy of disclosures, http://xbrlsite.azurewebsites.net/2020/core/master-ae/disclosures-with-topics-def.xml

[38] *Object Management Group and Standard Business Report Model (SBRM)*, http://xbrl.squarespace.com/journal/2019/6/25/object-management-group-and-the-standard-business-report-mod.html

[39] Charles Hoffman, *Leveraging the Theoretical and Mathematical Underpinnings of a Financial Report*, http://xbrlsite.azurewebsites.net/2018/Library/TheoreticalAndMathematicalUnderpinningsOfFinancialReport.pdf

- **Logical Theory Describing Financial Report**[40]
- **Processing Logical Systems**[41]
- **Computer Empathy**[42]

[40] *Logical Theory Describing Financial Report*, http://www.xbrlsite.com/mastering/Part02_Chapter05.B_LogicalTheoryDescribingFinancialReport.pdf
[41] *Processing Logical Systems*, http://www.xbrlsite.com/mastering/Part05_Chapter08.A_ProcessingLogicalSystems.pdf
[42] *Computer Empathy*, http://www.xbrlsite.com/mastering/Part00_Chapter01.C_ComputerEmpathy.pdf