Understanding Why SEC XBRL Financial Information is Hard to Use and How to use Prototype Theory to Solve that Problem

By Charles Hoffman, CPA

This information is inspired by the book *Everything is Miscellaneous: the power of the new digital disorder*, by David Weinberger. In particular chapter 9, pages 173 to 198, which provides an explanation of prototype theory was extremely helpful.

Why Comparison of SEC XBRL Financial Information is Hard

Accessing all that SEC XBRL financial data submitted by filers is not particularly challenging, in fact it is downright easy and frankly amazing that you can read thousands of SEC filings created by thousands of different people because of the XBRL technical syntax and US GAAP reporting semantics. Here is how you can do that:

Step 1: Go to the RSS feeds provided by the SEC (http://www.sec.gov/Archives/edgar/monthly/)

Step 2: Write an application which reads the RSS feed which will take you to an individual filing.

Step 3: Read each filing pointed to by the RSS feed.

Step 4: Do whatever you want with the information.

I have created a number of prototype software applications using Microsoft Excel and Microsoft Access which experiment with using the information in various ways which you can fiddle with, reverse engineer, or use as a basis for creating your own prototype applications:

- Core financial integrity validator: <u>http://xbrl.squarespace.com/journal/2011/10/21/working-prototype-of-financial-integrity-analyzer-tool.html</u>
- Tool for grabbing taxonomy information: <u>http://xbrl.squarespace.com/journal/2011/10/13/handy-tool-for-grabbing-taxonomy-information.html</u>
- Taxonomy comparison tool prototype: http://www.xbrlsite.com/2012/Examples/10K/Viewer.html

Contrasting the taxonomy comparison tool above which shows the taxonomy and XBRL instance information of a <u>specific filer</u> (be it in an HTML human readable form, you can read the same information programmatically using those applications above) with another prototype which compares

information *across filings*, basically a different organization of exactly the same information, highlights the fundamental issue.

Here is the comparison across SEC XBRL filings prototype. I have created two different interfaces into the information being used:

- HTML interface: <u>http://www.xbrlsite.com/2012/Examples/10K/Components/Viewer.html</u>
- Excel interface: <u>http://www.xbrlsite.com/2012/Examples/ComponentBrowser-2011-12-12.zip</u>

Each interface is helpful in seeing the fundamental issue which I will now explain.

Consider a common component of a financial report, the balance sheet. Here are screen shots for three balance sheets:

http://www.xbrlsite.com/2012/Examples/10K/Library/20374.html

AAA B	AAA Best Car Rental Inc						
Ling	abal	Object Class	Period	Palanco	Nama		
1	000020 - Statement - BALANCE SHEETS	[Network]	Type	Dalatice	http://AAAB/20110731/role/idr_BALANCESHEETS		
2	Statement of Einspecial Decition	[Abstract]	_		us-gappi Statement Of Signaphi Desition Abstract		
2	Chatemant [Table]	[Table]	_	-	us gaap.StatementOn mancharostdonnosdact		
3	Statement [Table]	[rable]	_		us-gaapiotatement able		
4	Statement [Line Items]	[Line Items]			us-gaap:StatementLineItems		
5	Assets	[Abstract]			us-gaap:AssetsAbstract		
6	Surrent Assets	[Abstract]			us-gaap:AssetsCurrentAbstract		
7	• Cash	[Concept] Monetary	As Of	Debit	us-gaap:Cash		
8	Prepaid expenses	[Concept] Monetary	As Of	Debit	us-gaap: PrepaidExpense		
9	O Total current assets	[Concept] Monetary	As Of	Debit	us-gaap:AssetsCurrent		
10	O Total Assets	[Concept] Monetary	As Of	Debit	us-gaap:Assets		
11	LIABILITIES AND STOCKHOLDERS' EQUITY:	[Abstract]			us-gaap:LiabilitiesAndStockholdersEquityAbstract		
12	🖙 Current Liabilities:	[Abstract]			us-gaap:LiabilitiesCurrentAbstract		
13	Loan from Director	[Concept] Monetary	As Of	Credit	us-gaap:DueToRelatedParties		
14	Accounts Payable	[Concept] Monetary	As Of	Credit	us-gaap:AccountsPayable		
15	• Total current liabilities	[Concept] Monetary	As Of	Credit	us-gaap:LiabilitiesCurrent		
16	• Total liabilities	[Concept] Monetary	As Of	Credit	us-gaap:Liabilities		
17	Stockholders' Equity	[Abstract]			us-gaap:StockholdersEquityAbstract		
18	• Common stock, \$0.001par value, 75,000,000 shares authorized; 10,400,000 shares issued and outstanding (8,000,000 as of July 31, 2010)	[Concept] Monetary	As Of	Credit	us-gaap:CommonStockValue		
19	Additional paid-in-capital	[Concept] Monetary	As Of	Credit	us-gaap:AdditionalPaidInCapital		
20	Deficit accumulated during the development stage	[Concept] Monetary	As Of	Debit	us-gaap:DevelopmentStageEnterpriseDeficitAccumulatedDuringDevelopmentStage		
1	Total stockholders' equity	[Concept] Mor ary	Alof	Credit	users an Etaphin Iders Equity		

http://www.xbrlsite.com/2012/Examples/10K/Library/20380.html

Accent	Accenture pic						
Line	Label	Object Class	Period Type	Balance	Name		
1	103 - Statement - CONSOLIDATED BALANCE SHEETS	[Network]			http://www.accenture.com/taxonomy/role/StatementOfFinancialPositionClassified		
2	Statement of Financial Position [Abstract]	[Abstract]			us-gaap:StatementOfFinancialPositionAbstract		
3	Statement [Table]	[Table]			us-gaap:StatementTable		
4	🕆 Legal Entity [Axis]	[Axis]			dei:LegalEntityAxis		
5	Entity [Domain]	[Domain]			dei:EntityDomain		
6	🕆 Class of Stock [Axis]	[Axis]			us-gaap:StatementClassOfStockAxis		
7	Class of Stock [Domain]	[Domain]			us-gaap:ClassOfStockDomain		
8	Ordinary Shares	[Member]	For Period		acn:OrdinarySharesMember		
9	Class A Ordinary Shares	[Member]			us-gaap:CommonClassAMember		
10	Class X Ordinary Shares	[Member]	For Period		acn:CommonClassXMember		
11	🗄 Statement [Line Items]	[Line Items]			us-gaap:StatementLineItems		
12	S ASSETS	[Abstract]			us-gaap:AssetsAbstract		
13	CURRENT ASSETS:	[Abstract]			us-gaap:AssetsCurrentAbstract		
14	• Cash and cash equivalents	[Concept] Monetary	As Of	Debit	us-gaap:CashAndCashEquivalentsAtCarryingValue		
15	• Short-ter investment	[Commet] Monstary	and the second	Debit			

http://www.xbrlsite.com/2012/Examples/10K/Library/20475.html

ACTU	ACTUANT CORP						
Line	Label	Object Class	Period Type	Balance	Name		
1	00200 - Statement - Consolidated Balance Sheets	[Network]			http://www.actuant.com/2011-02-28/role/StatementConsolidatedBalanceSheets		
2	Consolidated Balance Sheets [Abstract]	[Abstract]			us-gaap:StatementOfFinancialPositionAbstract		
3	Set ASSETS	[Abstract]			us-gaap:AssetsAbstract		
4	Cash and cash equivalents	[Concept] Monetary	As Of	Debit	us-gaap:CashAndCashEquivalentsAtCarryingValue		
5	Accounts receivable, net	[Concept] Monetary	As Of	Debit	us-gaap:AccountsReceivableNetCurrent		
6	Inventories, net	[Concept] Monetary	As Of	Debit	us-gaap:InventoryNet		
7	Deferred income taxes	[Concept] Monetary	As Of	Debit	us-gaap:DeferredTaxAssetsNetCurrent		
8	Prepaid expenses and other current assets	[Concept] Monetary	As Of	Debit	us-gaap: PrepaidExpenseAndOtherAssetsCurrent		
	· Current as	Concer Monetan	and a	Petit_	us-gaap:AssetsOfDistrict Including ontinuedOperDationent		

These three balance sheets of three filings highlight the fundamental characteristics of every SEC XBRL financial filing, and every component within those filings. Basically, this example is only an example of the pervasive characteristic of all components of all filings.

So here is the issue. If you take a look at each balance sheet component of the taxonomy you will notice that each network which contains the balance sheet information has a different network identifier, here they are for the three examples above:

- http://AAAB/20110731/role/idr_BALANCESHEETS
- http://www.accenture.com/taxonomy/role/StatementOfFinancialPositionClassified
- http://www.actuant.com/2011-02-28/role/StatementConsolidatedBalanceSheets

Now, by contrast, this is the network identifier of the balance sheet component for commercial and industrial companies in the US GAAP taxonomy:

http://fasb.org/us-gaap/role/statement/StatementOfFinancialPositionClassified

You can go to this rendering of that balance sheet component at the URL below:

http://www.xbrlsite.com/2012/US-GAAP-2011-As-Released/us-gaap-stm-ci-sfp-cls-pre-2011-01-31_MeasureRelations.html

			Relations			
# Key	Label	Object class	Data type	Period type	Balance	Name
* 🕥	Network: 104000 - Statement - Statement of Financial Position, Classified (http://fasb.c	irg/us-gaap/role/statement	/Statement	:OfFinan	cialPositionClassified)
1	Statement of Financial Position [Abstract]	[Abstract]				us-gaap:StatementOfFinancialPositionAbstract
2	Statement [Table]	[Table]				us-gaap:StatementTable
3	Statement, Scenario [Axis]	[Axis]				us-gaap:StatementScenarioAxis
4	Scenario, Unspecified [Domain]	[Member]				us-gaap:ScenarioUnspecifiedDomain
5	Class of Stock [Axis]	[Axis]				us-gaap:StatementClassOfStockAxis
6	Class of Stock [Domain]	[Member]				us-gaap:ClassOfStockDomain
7	Preferred Stock [Member]	[Member]				us-gaap:PreferredStockMember
8	Common Stock [Member]	[Member]				us-gaap:CommonStockMember
9	Common Class A [Member]	[Member]				us-gaap:CommonClassAMember
10	Common Class B [Member]	[Member]				us-gaap:CommonClassBMember
11	Common Class C [Member]	[Member]				us-gaap:CommonClassCMember
12	Statement [Line Items]	[Abstract]				us-gaap:StatementLineItems
13	Assets [Abstract]	[Abstract]				us-gaap:AssetsAbstract
14	Assets, Current [Abstract]	[Abstract]				us-gaap:AssetsCurrentAbstract
15	Cash Cash Equivalents, and Short-term Investments [Abstract]	[Abstract]	and the second			us-gaap: Cash Cash Equivalents And Short Term Investments Abstract

You will notice that each SEC XBRL filer creates their own network for their balance sheet component making it impossible to identify the balance sheet component of an SEC XBRL financial filing using the

balance sheet network identifier. Whereas, if each filer used the same network identifier, say the FASB network identifier for a classified balance sheet, it would be a trivial task for a computer software application to find a balance sheet and know that it is working with the balance sheet component of an SEC XBRL financial filing because each balance sheet component uses the same network identifier.

Now, taking this further, notice that two of the filings prepared their SEC XBRL taxonomy using the "Statement [Table]" hypercube. One of those three filings did not. It would have been just as easy to identify each companies balance sheet component by using the [Table] or hypercube which configures the balance sheet. So either the network identifier or the [Table] could have been used. Here, neither can be used. In SEC XBRL financial filings, the "Statement [Table]" hypercube is also used for the income statement, cash flow statement, statement of changes in equity, and many other components of an SEC XBRL financial filing.

There is actually a technical term which describes these characteristics: isomorphic and polymorphic. These \$50 technical terms sound hard but are actually quite easy to understand: (for more information see http://xbrl.squarespace.com/journal/2011/6/22/important-nuances-relating-to-tables-axis-members.html)

- **Isomorphic:** Has one meaning.
- **Polymorphic:** Has more than one meaning.

Computers need a way to grab onto information, or "handles" which they can work with. The US GAAP taxonomy does not provide the necessary handles and the way the SEC uses networks and [Table]s, each filer required to create their own networks for each component, makes matters worse.

Another way to say this is that if the US GAAP Taxonomy and SEC XBRL financial filings where modeled using unique, identifiable networks or [Table]s (either would do, [Table]s are better because they provide advantages over using networks), then filers modeling that information could pick those networks and those trying to analyze that information.

It would not matter if different filers added a line item here or there, fundamentally a balance sheet reports "assets", "liabilities and equity", "equity", and such items and SEC XBRL financial filers are reporting all that information consistently as is shown by this analysis of the core financial integrity of these SEC XBRL financial filings:

http://xbrl.squarespace.com/journal/2011/9/21/seeing-core-financial-reporting-semantics.html

#	Core level semantic rule	30 Dow Industrial Companies	Top 100 Companies	Top 1000 Companies	All 5525 Companies
1	Balance sheet must report assets (us-gaap:Assets)	100%	100%	100%	98%
2	Balance sheet must report liabilities and equity (us- gaap:LiabilitiesAndStockholdersEquity, us- gaap:LiabilitiesAndPartnerCapital)	96%	99%	99%	97%
	Note that one concept us-gaap:LiabilitiesAndEquity would be preferable to multiple.				
3	Balance sheet balances (assets = liabilities and equity)	96%	99%	99%	98%
4	Balance sheet must report equity (see concepts in detailed section)	100%	100%	99%	97%

Understanding of Prototype Theory

OK, so think about that core financial information discussed a little earlier. If all balance sheets have assets, liabilities and equity, and equity; shouldn't you be able to identify the balance sheet using those consistently available pieces which always exist on a balance sheet? Income statements don't have assets, liabilities and equity, or equity; they have other things. Same for disclosures.

Enter prototype theory.

Fundamentally there are two perspectives to understanding what something is. Aristotle's definition view perspective was that "A thing is a member of a category if it satisfies the definition of the thing." The second perspective, prototype theory, is that we can know what something means even if it can't be clearly defined and even if its boundaries cannot be sharply drawn; concepts can be clear without having clear definitions if they're organized around undisputed examples, or prototypes, as Eleanor Rosch the inventor of prototype theory calls them.

As an example, one can understand that something is a "chair" by understanding as many properties as possible about the thing you are looking at, looking at the properties of a chair as defined by a prototype (the undisputed example), and then predicting whether the thing you are looking at is a "chair" by comparing the properties you are looking at with the properties of a chair.

By contrast, the definitional view "draws sharp lines" whereas the prototype view works because "things can be sort of, kind of in a category. Prototype theory relies on our implicit understanding and does not assume that we can even make that understanding explicitly.

When is a Network used, when is a [Table] used?

Think about this for a moment. Pretend you are explaining to someone when to use a network and when to use a [Table] as you model an SEC XBRL financial reporting taxonomy. What are the rules which drive that? Can you point to them in the US GAAP Taxonomy documentation? How about in the SEC Edgar Filer Manual? You cannot. Something which does provide a clue is the SEC interactive data rendering. Networks show up in the table of contents on the left, [Table]s show up on the right as such:



But what if you have two [Table]s in a network? Or three. If you don't use a [Table] how does something show as compared to if you do use a [Table].

The point here is that there are no real rules for when something should be modeled as a network and what that means, when something should be modeled as a [Table] and what that means and how that differs from not using a [Table] at all. That makes in difficult to grab onto a network or [Table] as a handle to query information from an SEC XBRL financial filing.

Problems with SEC XBRL filings

SEC XBRL filings provide basically no top level foundation for comparability. Two candidates as a basis for comparison are networks and [Table]s. However, each SEC XBRL filing defines its own networks and no two networks are the same. That rules networks out as a basis of comparison. Within an XBRL taxonomy [Table]s can be used for expressing different sets of information, for example the "Statement [Table]" is used on the balance sheet, income statement, statement of cash flows, and a number of other statements. A few other [Table]s are used multiple times within the US GAAP taxonomy and define different sets of information. Most [Table]s though as you get into the disclosures are unique, but there are some exceptions, therefore some [Table]s have more than one meaning.

As such, there is no real higher level mechanism to define a set of information. It would be better if there were, in my view; that could occur by simply using unique [Table]s within the US GAAP Taxonomy, making each unique, rather than using the same table, like "Statement [Table]" to mean multiple different things.

Looking at this situation from the bottom up, there are approximately 15,000 concepts within the US GAAP Taxonomy, too detailed a perspective for any useful comparison at the individual concept level. Generally when you do a comparison groups of things, I call them components, are what is compared. For example, a balance sheet is compared with another balance sheet or the defined benefit obligation of one company is compared with that of another. Individual concepts are compared some times.

To exacerbate this situation, SEC filers can extend the US GAAP taxonomy adding additional networks, explicit [Table]s, implicit tables (i.e. everything within a network which is not within an explicit table can be defined as being within an unnamed implicit table), [Axis], [Line Items] or concepts, and so forth.

Looking deeper in to SEC XBRL financial filings

If you look deeper into SEC financial filings you realize that there are patterns within the information. For example, consider this small slice of the 2011 US GAAP Taxonomy which is used to express nonmonetary transactions:

Network: (840000 - Disclosure - Nonmonetary Transactions)
us-gaap:Nonmonetary Transactions [Abstract] {ID1}
- us-gaap: Nonmonetary Transaction, by Type [Table] {ID2}
+ dei:Legal Entity [Axis] {ID3}
us-gaap:Nonmonetary Transaction Type [Axis] {ID6}
us-gaap:Nonmonetary Transaction [Line Items] {ID22}
us-gaap:Details of Nonmonetary Transactions [Table Text Block] $\{ {\rm ID23} \}$
added:Nonmonetary Transaction [Hierarchy] {ID24}
${\tt us-gaap}: {\tt Nonmonetary Transaction, Basis of Accounting for Assets Transferred \{{\tt ID2}$
us-gaap:Nonmonetary Transaction, Name of Counterparty {ID26}
${\tt us-gaap}: {\tt Nonmonetary Transaction, Gain (Loss) Recognized on Transfer \{{\tt ID27}\}$
${\tt us-gaap:} Nonmonetary Transaction, Amount of Barter Transaction \{{\tt ID28}\}$
us-gaap:Nonmonetary Transaction, Fair Value Not Determinable {ID29}
us-gaap:Nonmonetary Transaction, Gross Operating Revenue Recognized $\{ {\rm ID30} \}$

Consider the following:

 The [Line Items] could be expressed as a "text block" (i.e. HTML fragment) or "detail tagged". The HTML fragment would use the concept "Details of Nonmonetary Transaction [Table Text Block]" and if the information were detailed tagged it would use some combination of the six concepts within the "Nonmonetary Transaction [Hierarchy]. But either way, the information is the same. Both the [Text Block] and the six detailed concepts are used to express a nonmonetary transaction.

- The concepts within the "Nonmonetary Transaction [Line Items] are used nowhere else in the US GAAP Taxonomy. As such, if one sees one or more of these concepts within an SEC XBRL filing, then one can assume with a high level of confidence that the thing which contains one or more of those concepts is highly likely to be a nonmonetary transaction.
- Financial reporting rules and logic demand that certain concepts be present. In financial reporting rules certain information is always required to be disclosed, certain information is required to be disclosed if a certain event or circumstance occurs during a financial period, certain information is common practice, and certain information is reported at the option of the filer. The base set of information will always exist though, it will always be logical based on financial reporting disclosure requirements and logic. For example, an SEC filer would be highly unlikely to report "Nonmonetary Transaction, Fair Value Not Determined" as the only concept within a nonmonetary transaction.
- If additional required disclosures which expand the base disclosure is presented, if common practice disclosures are provided, or additional optional information is disclosed; it will always exist with that base, supplementing that base information.
- Additional information in the form of XBRL calculations enhances the relationships between information within a set of reported information and providing additional clues.
- Certain base relationships between sets of information further enhance the ability to predict the nature of an information set. For example, there are relationships between the balance sheet, income statement, statement of changes in equity, and cash flow statement which will always exist and can be leveraged. This "financial integrity" type information can further enhance the ability to predict the nature of a set of information which you are within when you analyze information within an SEC XBRL financial filing.

Prototypes for Creation and Analysis are the Same

The "prototypes" or undisputed examples for creation of SEC XBRL filings are the same as the undisputed examples used for analysis of SEC XBRL filings. These prototypes can be hard to see within the US GAAP Taxonomy because that taxonomy tends to be inconsistent, not uniform. However, if you were to reorganize the US GAAP Taxonomy, as this example does, you begin to see the components that actually exist:

http://www.xbrlsite.com/US-GAAP-2011/Reorganize/Viewer.html

It is not the case that there is only one "undisputed example", nor does their need to be. For example, there are many different types of balance sheets: classified, unclassified, deposit based operations, insurance based operations, securities based operations, and others for specific industries and financial reporting needs. Or, a classified balance sheet could have a noncontrolling interest or not have a noncontrolling interest. However, it is not the case that there are an infinite number of balance sheets. Basically, financial information is not random or infinite in nature. Patterns exist and those patterns can be leveraged.

This screen shot is a fragment of a report available which shows a preliminary set of examples of the prototypes which could be created from the commercial and industrial companies entry point of the 2011 US GAAP Taxonomy. There are a total of 1,104 such prototypes in that preliminary list. This is an example to provide an example of the granularity:

Information Sets Available

Number	Network	[Table]	Information Set
730000	Compensation Related Costs, Retirement Benefits	Defined Benefit Plans and Other Postretirement Benefit Plans Disclosures [Table]	Schedule of Health Care Cost Trend Rates [Table Text Block]
			Schedule of Net Benefit Costs [Table Text Block]
			Schedule of Net Funded Status [Table Text Block]
			Schedule of Net Periodic Benefit Cost Not yet Recognized [Table Text Block]
740000	Compensation Related Costs, Postemployment Benefits	Postemployment Benefits [Table]	Postemployment Benefits Disclosure [Text Block]
			Postemployment Benefits [Hierarchy]
			Supplemental Unemployment Benefits [Roll Up]
750000	Other Income and Expenses	Other Income and Expenses Disclosures [Table]	Other Income and Other Expense Disclosure [Text Block]
			Interest and Other Income [Text Block]
			Interest and Other Income [Table Text Block]
			Schedule of Other Nonoperating Income (Expense) [Table Text Block]
			Other Cost and Expense Disclosure, Operating [Hierarchy]
			Other Income Disclosure, Nonoperating [Hierarchy]
			Other Expense Disclosure, Nonoperating [Hierarchy]
			Interest and Other Income [Roll Up]
			Other Nonoperating Income (Expense) [Roll Up]
			Other Income [Roll Up]
		Component of Other Expense, Nonoperating [Table]	Schedule of Other Nonoperating Expense, by Component [Table Text Block]
			Component of Other Expense, Nonoperating [Hierarchy]
		Component of Other Income, Nonoperating [Table]	Schedule of Other Nonoperating Income, by Component [Table Text Block]
			Component of Other Income, Nonoperating [Hierarchy]
		Component of Other Operating Cost and Expense [Table]	Schedule of Other Operating Cost and Expense, by Component [Table Text Block]
			Component of Operating Other Cost and Expense [Hierarchy]

rptLineItemInformationModels

Exemplars: More Flexible Alternative to Prototype Theory

Concept learning (<u>http://en.wikipedia.org/wiki/Concept_learning</u>) is used by cognitive physiologists in "the search for and listing of *attributes that can be used to distinguish exemplars from non exemplars of*

various categories." Concept learning has the notion of exemplar theory which is more flexible than prototype theory in that prototype theory allows for only one prototype whereas exemplar theory calls for any number of prototypes, or "examples" or "exemplars" which identify specific instances of some category.

For example, this prototype of exemplars (<u>http://www.xbrlsite.com/US-GAAP-2011/Exemplars/Viewer3.html</u>) shows:

- Two specific balance sheet examples, one with noncontrolling interest reported and another without noncontrolling interest reported
- Six different income statement examples with various items being reported
- Five cash flow statement examples, with and without discontinued operations; this set of prototypes also shows contra examples, or examples how NOT to model a financial statement component

Applying Prototype Theory and Exemplars to SEC XBRL Financial Filings

Prototype theory and exemplars can be used to both make creation of SEC XBRL financial filings easier and to enable high-quality automated comparisons of the information reported by public companies. Here are some examples of how prototypes and exemplars can be leveraged:

- 1. **Taxonomy maintenance**: When a new version of the US GAAP Taxonomy is released, if the taxonomy is many small components rather than one gigantic structure with unidentifiable or distinguishable sub structures, maintenance is easier.
- Ease of use: No SEC filer models any taxonomy component they use combining the massive number of structures which are modeled together as the US GAAP Taxonomy models structures. Filers disclosures are usually a small piece of some larger US GAAP Taxonomy structure. Why not model the US GAAP Taxonomy the way filers report information.
- 3. **Specific examples**: Today the US GAAP Taxonomy is provides what amounts to one general monstrous and combined example rather than multiple explicit examples. For example consider again the balance sheet. The US GAAP Taxonomy models the classified balance sheet with all possible options which would never exist in the real world a the single example of how to construct a balance sheet. That one general example is not as usable as say 50 specific examples of different specific possibilities.
- 4. **Business rules**: Each taxonomy component has business rules which further enforce the construction of the component. For examples, a roll up never has two totals, it only has one.

Roll forwards always reconcile a beginning and ending balance. Software can leverage these characteristics helping those creating taxonomies.

5. **Integrity between components**: Different components interact with other components. These interactions are easier to see if taxonomy information is not duplicated. Again, software can leverage that fact to make modeling taxonomies easier.

Another Look at the Comparison Prototype

If you take another look at the comparison prototype application again with the thoughts and ideas raised in this document you can begin to see the advantages of using prototype theory and exemplars.

In either the HTML version or the Excel version of the interface, find example number 64 which relates to the maturities of long term debt, a rather simple disclosure (see the URL http://www.xbrlsite.com/2012/Examples/10K/Components/Viewer.html which looks, go to line 64, click that and you should see this contents page in the left pane:

Schedule of Long-term Debt Maturities (Back) Component: Schedule of Long-term Debt Maturities 1 AIP PROVUTS & CHEMICALS 1 AIP PROVUTS & CHEMICALS 1 AIP CODE (41405 - Disclosure - Debt (Schedule Of Maturites of Long-Term Debt Disclosure) (Details)) [20759] 2 <u>Covidien ptc</u> (41103 - Disclosure -Debt (Maturities of Long-Term Debt Disclosure) (Details)) [23684] 3 <u>GREEN MOUNTAIN COFFEE</u> ROASTERS INC (41004 -Disclosure - Liabilities (Schedule Of Maturites of Long-Term Debt) (Details)) [25727] 4 <u>HEADWATERS INC</u> (40711 -Disclosure - Detl) (Maturites Of Long-Term Debt) (Details)) [31185] 6 <u>WALT DISNEY CO</u>/ (1074 -Disclosure - Total Borrowings Excluding Market Vale Adjustments, Schedule Maturities (Detail)) [22330]

Navigate to each component and you will notice the following. You can use the links below to view the actual HTML pages if the screen shots are hard to read.

http://www.xbrlsite.com/2012/Examples/10K/Library/20759.html

AIR PRODUCTS & CHEMICALS INC /DE/

Li	ine Lab	sel	Object Class	Period Type	Balance	Name
	1 © 4 De	41405 - Disclosure - Debt (Schedule Of Maturities Of Long-Term bt) (Details)	[Network]			$\label{eq:http://airproducts.com/role/DisclosureDebtScheduleOfMaturitiesOfLongTermDebtDetails} s$
	2	Pebt [Abstract]	[Abstract]			us-gaap:DebtInstrumentsAbstract
	3	• 2012	[Concept] Monetary	As Of	Credit	$us-gaap: {\tt LongTermDebt} Maturities {\tt RepaymentsOfPrincipalInNextTwelveMonths}$
	4	· 2013	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearTwo
	5	· 2014	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearThree
	6	· 2015	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFour
	7	• 2016	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFive
	8	• Thereafter	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterYearFive
	9	Long-term debt	[Concept] Monetary	As Of	Credit	

This filer uses the concept "us-gaap:LongTermDebt" as the total for the maturities of long term debt. Notice how easy this component is to read as compared to larger components with this smaller section buried amongst many other disclosure components.

http://www.xbrlsite.com/2012/Examples/10K/Library/23684.html

C	ovidi	en plc				
	Line	Label	Object Class	Period Type	Balance	Name
	1	 41103 - Disclosure - Debt (Maturities Of Long-Term Debt Disclosures) (Details) 	[Network]			http://www.covidien.com/2011-03- 25/role/DisclosureDebtMaturitiesOfLongTermDebtDisclosuresDetails
	2	🖾 Debt	[Abstract]			us-gaap:DebtDisclosureAbstract
	3	Debt maturing in fiscal 2012	[Concept] Monetary	As Of	Credit	$us-gaap: {\tt LongTermDebtMaturitiesRepaymentsOfPrincipalInNextTwelveMonths}$
	4	• Debt maturing in fiscal 2013	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearTwo
	5	Debt maturing in fiscal 2014	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearThree
	6	• Debt maturing in fiscal 2015	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFour
	7	Debt maturing in fiscal 2016	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFive
	8	Debt maturing thereafter	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterYearFive

Not that this filer does not even report a total for maturities of long term debt, but the center line items are the same.

http://www.xbrlsite.com/2012/Examples/10K/Library/25272.html

GREEN MOUNTAIN COFFEE ROASTERS INC

Line	Label	Object Class	Period Type	Balance	Name
1	 41004 - Disclosure - Long-Term Debt (Maturities of Long-Term Debt) (Details) 	[Network]			http://www.greenmountaincoffee.com/2011-06- 25/role/DisclosureLongTermDebtMaturitiesOfLongTermDebtDetails
2	🖙 Long-Term Debt	[Abstract]			us-gaap:LongTermDebtAbstract
3	• 2012	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInNextTwelveMonths
4	· 2013	[Concept] Monetary	As Of	Credit	gmcr:LongTermDebtMaturitiesRepaymentsOfPrincipalVearOne
5	• 2014	[Concept] Monetary	As Of	Credit	gmcr:LongTermDebtMaturitiesRepaymentsOfPrincipalVearTwo
6	· 2015	[Concept] Monetary	As Of	Credit	gmcr:LongTermDebtMaturitiesRepaymentsOfPrincipalVearThree
7	• 2016	[Concept] Monetary	As Of	Credit	gmcr:LongTermDebtMaturitiesRepaymentsOfPrincipalVearFour
8	• Thereafter	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterYearFive
9	Total long-term debt	[Concept] Monetary	As Of	Credit	gmcr:LongTermDebtMaturitiesRepaymentOfPrincipal

This filer created a mixture of extension concepts for the total and the reported line items, but two are the same allowing for this component to be identified by software applications. The total is an extension concept for some reason.

http://www.xbrlsite.com/2012/Examples/10K/Library/25429.html

HE.	ADW	ATERS INC				
L	ine L	abel	Object Class	Period Type	Balance	Name
	1 C T	40711 - Disclosure - Liabilities (Schedule Of Maturities Of Long- erm Debt) (Details)	[Network]			http://www.headwaters.com/2010-06- 30/role/DisclosureLiabilitiesScheduleOfMaturitiesOfLongTermDebtDetails
	2	🖾 Liabilities	[Abstract]			us-gaap:LiabilitiesAbstract
	3	• 2014	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearThree
	4	· 2016	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFive
	5	• 2019	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterYearFive
	6	O Total long-term debt	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebt

This filer uses fewer concepts, but they are the same concepts as the others and the total concept is the same, thus allowing for identification of the component. Uses the existing concept "us-gaap:LongTermDebt".

http://www.xbrlsite.com/2012/Examples/10K/Library/31185.html

Trans	Digm Group INC				
Line	Label	Object Class	Period Type	Balance	Name
1	 41105 - Disclosure - Debt (Future Maturities Of Long-Term Debt) (Details) 	[Network]			http://www.transdigm.com/role/DisclosureDebtFutureMaturitiesOfLongTermDebtDetails
2	🖼 Debt [Abstract]	[Abstract]			us-gaap:DebtDisclosureAbstract
3	Vear ended September 30, 2012	[Concept] Monetary	As Of	Credit	$us-gaap: {\tt LongTermDebt} Maturities {\tt Repayments} Of {\tt PrincipalInNextTwelveMonths}$
4	Vear ended September 30, 2013	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearTwo
5	Year ended September 30, 2014	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearThree
6	Vear ended September 30, 2015	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFour
7	Vear ended September 30, 2016	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFive
8	• Thereafter	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterVearFive
9	• Total	[Concept] Monetary	As Of	Credit	us-gaap:DebtInstrumentFaceAmount

This filer uses the existing concept "us-gaap:DebtInstrumentsFaceAmount" for the total, but again, the other line items are the same.

http://www.xbrlsite.com/2012/Examples/10K/Library/32330.html

WALT DISNEY CO/					
Line Label		Object Class	Period Type	Balance	Name
	 1074 - Disclosure - Total Borrowings Excluding Market Value Adjustments, Scheduled Maturities (Detail) 	[Network]			http://corporate.disney.go.com/taxonomy/role/DisclosureTotalBorrowingsExcludingMa rketValueAdjustmentsScheduledMaturities
3	Disclosure - Total Borrowings Excluding Market Value Adjustments, Scheduled Maturities [Abstract]	[Abstract]			${\tt dis:} {\tt DisclosureTotalBorrowingsExcludingMarketValueAdjustmentsScheduledMaturitiesAbstract}$
4	Long Term Debt Maturities Repayments Of Principal [Table]	[Table]			dis:LongTermDebtMaturitiesRepaymentsOfPrincipalTable
	Cegal Entity [Axis]	[Axis]			dei:LegalEntityAxis
	entity [Domain]	[Domain]			dei:EntityDomain
	Statement, Scenario [Axis]	[Axis]			us-gaap:StatementScenarioAxis
- 3	Scenario, Unspecified [Domain]	[Domain]			us-gaap:ScenarioUnspecifiedDomain
4	Before International Theme Parks Consolidation	[Member]	For Period		dis:BeforeConsolidationMember
1	 International Theme Parks and Adjustments 	[Member]	For Period		dis:ConsolidatingAdjustmentsMember
10	h Long Term Debt Maturities Repayments Of Principal [Line Items]	[Line Items]			dis:LongTermDebtMaturitiesRepaymentsOfPrincipalLineItems
1	· 2012	[Concept] Monetary	As Of	Credit	$us-gaap: {\tt LongTermDebtMaturitiesRepaymentsOfPrincipalInNextTwelveMonths}$
13	· 2013	[Concept] Monetary	As Of	Credit	$us\-gaap\+LongTermDebtMaturitiesRepaymentsOfPrincipalInYearTwo$
13	· 2014	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearThree
14	• 2015	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFour
13	• 2016	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalInYearFive
10	• Thereafter	[Concept] Monetary	As Of	Credit	us-gaap:LongTermDebtMaturitiesRepaymentsOfPrincipalAfterYearFive
17	Long-term Debt, Gross, Total	[Concept] Monetary	As Of	Credit	us-gaap:DebtInstrumentCarryingAmount

This filer models this comonnent using a [Table], the total concept is different, but the other line items are the same. Uses existing concept "us-gaap:DebtInstrumentCarryingAmount" for the total.

The point is that you can see that software could probably figure out that each of these disclose maturities of long term debt whether the network identifier is the same on each, whether the filer uses a table or not, or which total concept they use.