

Hitchhiker's Guide to Meta-Patterns

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Purpose and Audience

The purpose of this document is to help business user to understand the notion of meta-patterns. A meta-pattern is not something scary which business users should run away from, but rather something which helps make their lives easier. In addition, understanding the meta-patterns used when building a taxonomy is fundamental to being able to review and make effective use of a taxonomy for business reporting.

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If you recall "The Patterns Document" which was created several years ago, this document takes *The Patterns Document* to the next level. The Patterns Document served some purposes, fell short on others, and is not fairly old. This document builds on The Patterns Document. If you are familiar with The Patterns Document, it will help you absorb this information but we will explain all the background you need to understand the things you need to so there is no need to seek out that older document.

In particular, this document is extremely helpful to business users (and technical users, but it is more focused on business users) who are reviewing on the US GAAP Taxonomy which is now in public review. Understanding the meta-patterns used in the US GAAP Taxonomy will help you understand the taxonomy.

What is a Meta-Pattern

Life is full of patterns. Condensing things down into patterns helps you understand them. A meta-pattern is a pattern which is used to describe patterns.

The US GAAP Taxonomy consists of about 11,000 concepts and 20,000 relations but the entire taxonomy can be condensed down into 4 fundamental meta-patterns.

[CSH: The taxonomy is not yet complete and there are about three specific parts of the taxonomy which do not fall into one of these four specific meta-patterns. Either one of two things will happen with these three parts of the taxonomy: (a) it will be realized that these are, in fact, fits with existing meta-patterns, (b) they will not be fits and one or more new meta-patterns will be created, (c) the existing meta-patterns will be modified slightly to make these other three things fit.]

Neutral Format Table

Discussing XBRL can be challenging if you don't understand XBRL. Working with XBRL does not need to entail working with the angle brackets of XML. Part of the reason working with XBRL can be so challenging is that it can be difficult to render XBRL into a human readable format.

To address these issues, the notion of a "neutral format table" was developed. To understand a neutral format table it is worth understating a few things.

[CSH: I am trying to figure out how the heck to describe both meta-patterns and neutral format tables. Which one do I need to start with? One sort of depends on the other. See the document which is as of yet to be developed "Hitchhiker's Guide to Neutral Format Tables" for additional information.]

First, neutral format tables were inspired by the following:

- The Bank of Spain developed a "template" which allowed users to basically enter information into an Excel template for reporting under the IFRS-GP taxonomy. This template was manually created and took many hours and had to be adjusted every time there was a change to the IFRS-GP taxonomy.
- COREP built similar templates. The templates were created by humans, and therefore it was inconsistently created. This was an issue when software tried to auto generate the Excel templates from the actual COREP taxonomy.
- The FINREP taxonomy likewise created templates, and likewise these were created by humans.
- The Fujitsu Instance Dashboard allows users to read an instance document fairly effectively. The views are not static, but rather can be pivoted like Excel pivot tables.
- The National Association of Insurance Commissioners (NAIC) in the US has a book called the "Quarterly and Annual Statement Blank". There are actually two books for each type of insurance company (there are several types of insurance) one of which is a printed set of what amounts to templates, the second is a set of instructions which go with the book.
- The FDIC call report templates and instructions.
- Accounting Trends and Techniques which is a book published by the American Institute of Certified Public Accountants (AICPA) which amounts to templates for financial reporting (although an accountant would likely not call these templates, that is exactly what they are).

There is one thing which most of the above have in common; they are generally not expandable or extensible. These are closer to what amounts to a form. As accountants know, financial statements are not forms. Neutral format tables take this into account.

Each neutral format table shows within the table precisely where the table can be extended by users. Neutral format tables are not static forms, they are dynamic and can be extended with new concepts, new periods, new business segments, new units and anything else a user which might choose to add to the table within the limitations of XBRL.

First Look at Neutral Format Table

The following is a first look at a neutral format table. This example uses one of the simpler examples from the meta-patterns below, the calculation meta-pattern. We will walk you through this neutral format table to help you understand how to read the table.

First, consider the following fragment of a financial statement which we will use for our discussions here:

**Sample Company
December 31,
(thousands of dollars)**

	2007	2006
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Total	295,183	413,441

Above you see something which is quite familiar to you if you are an accountant. We see information about the property, plant, and equipment of a company called "Sample Company". If you look at the information you will notice that it is quite readable but a lot of the information is implicit. For example, notice "(thousands of dollars)". Now, a user understands how to work with that piece of information. A human reader can understand that 5,347 in the information really means 5,347,000. It is also in dollars.

But consider the following:

- Is the information in US dollars, or Canadian dollars, or Australian dollars?
- Which portion of an entity is this about? We can pretty much assume that the information is about the consolidate group.

Now, consider a computer reading that information. It would have a harder time understanding it because computers are not as smart as humans at inferring data or meta-data; in fact a computer can get into trouble. Additionally, XBRL requires you to be explicit about this information. This is because XBRL is intended for computers to read. But the humans creating the data must put in all the meta-data needed by the computer. And as such, the humans need to be able to review the financial report to be sure the correct meta-data is used within the XBRL based financial report.

Consider the first part of the neutral format table, the "Static Information" which applies to all fact values within the table:

Property, Plant and Equipment, by Component		
Perspective:	Presentation	
Scale [Factor]:	1000	
Static Fields (Applies to all Fact Values)		
Entity [Axis]:	http://www.SampleCompany.com	(+) Entity
Business Segment [Axis]:	pattern: Consolidated Group [Domain]	(+) Business Segment
Units [Axis]:	iso4217:USD	(+) Unit

Here we see the name of the table which is "Property, Plant and Equipment, by Component". We see that the perspective of the table is the presentation view of the table (as opposed to the calculation view, which might be some other table). The table has a "Scale [Factor]" of 1000 which is consistently applied to each value within the table, remember the "(thousands of dollars)" on the top of the human readable form.

We also see the "Entity [Axis]" and that then entity uses the identifier "http://www.SampleCompany.com". [CSH: Note that I have to work the scheme and identifier in here, this is incorrect as is.] Note the "Business Segment [Axis]" of "pattern: Consolidated Group [Domain]", and note the "Units [Axis]".

There are a few things worth pointing out here. First, the term [Axis] is equivalent to a dimension within XBRL Dimensions. The term [Table] is equivalent to hypercube, the term [Domain] is equivalent to an effective domain in XBRL and a [Member] is equivalent to a member in XBRL Dimensions. These terms were considered easier for a business user to understand.

Next, notice the green cells with yellow labels to the right of the static information. These are extension points. This shows that a user of the taxonomy can use whatever entity, whatever business segment, and whatever additional units to report information. These "extension points" are explicit points within a taxonomy which can be extended. This has an implicit meaning that other points are NOT extensible.

There is something to keep in the back of your mind as you use these tables and as you use XBRL in general. While the Entity [Axis] and we will see the Period [Axis] are part of the context information of XBRL, they are actually not any different than dimensional information defined by XBRL Dimensions. You can refer to these as "quasi-dimensions". These are "hard coded" dimensions of XBRL, but are still provided within the context of a fact value, just like XBRL Dimensions defined information.

Now, let's consider the next section, the description of the [Axis].

pattern: Business Segment [Axis]
pattern: Consolidated Group [Domain]
company: Company Business Segment A [Member]
company: Company Business Segment B [Member]
(+) company: Member

There are several things going on within this little screenshot. This shows how much information is packed into these neutral format tables. Notice:

- First, notice the "pattern:" and "company:" indicators. This is the namespace from which the concept comes. The "pattern:" namespace means that the concept comes from the base taxonomy. This means there is a high level of comparability possible because users can all use the same concept, and thus comparability across companies is possible. The "company:" namespace indicates that the concept comes from the company's extension taxonomy, therefore the ability to compare across companies is less, however comparability across different reports is possible for a user analyzing the information.
- The "(+) company: Member" indicates an extension point. The reporting company can provide additional members, which makes sense as a company can have any number of business units and there is no way a taxonomy would be able to provide the business unit of each reporting entity.
- The "company: Company Business Segment A [Member]" is just an example. This would be the name of a real business segment of the reporting entity, as with the next.
- Next consider the "pattern: Consolidated Group [Domain]". A [Domain], or called the effective domain in XBRL Dimensions, is the top most concept within an [Axis]. The [Domain] may be sum-able meaning that it is possible and desirable for a user to add up all the [Member]s of that [Domain], or it may not be desirable or possible. How this is defined in the taxonomy is crucial as defining it incorrectly could mean that a total is not capture-able.
- Note that these [Axis], [Domain], and [Member]s may be used only within this single table, or it may be re-used within other tables. The choice of whether to re-use or re-define these components in other tables impacts comparability.

What a reader hopefully sees here is that it is important where the information is defined and how it is defined. The more which is in the base taxonomy, the higher the potential of comparability.

Finally we get to the meat of the neutral format table, the actual fact values themselves. Consider the following:

Property, Plant and Equipment, by Component		Period [Axis]		
A		C	D	*
1	Period [Axis]	[As of] 2007-12-31	[As of] 2006-12-31	(+) Period
2	Propety, Plant and Equipment, by Component [Line Items]			
3	Propety, Plant and Equipment, Net [Total]			
4	Land	5,347	1,147	
5	Buildings, Net	244,508	366,375	
6	Furniture and Fixtures, Net	34,457	34,457	
7	Computer Equipment, Net	4,169	5,313	
8	Other Property, Plant and Equipment, Net	6,702	6,149	
	(+) Concept			
9	Property, Plant and Equipment, Net, Total	295,183	413,441	

First, the neutral format table has line numbers and letters in columns to help you read the information. These are highlighted in light grey. The other light grey cells of the table mean the cell is not applicable.

Let's start by looking at row 2 which has in column A "Property, Plant and Equipment, by Component [Line Items]". This concept is another part of the table meta-pattern. It is simply an abstract concept which holds all the concepts used within that table. This is similar to the line items of a report.

In column C, D and * you can see Period [Axis] for periods, equivalent to the current period, the prior period, and (+) Period indicating that the period can be extended, more periods added.

Line 3 is an abstract concept "Property, Plant and Equipment, Net [Total]". [CSH: This is actually "Property, Plant and Equipment, Net [Abstract]" in the US GAAP Taxonomy, however a proposal exists to change the two uses of [Abstract] which is to express a hierarchy and to express a calculation into two separate abstract concepts, rather than use [Abstract] for both uses.] This concepts holds all the concepts which participate in the calculation. Note that line 9 "Property, Plant and Equipment, Net, Total" is the total in the calculation.

Above line 9 the total, and after line 8 the last participant in the calculation is "(+) Concept" indicating that the user can add additional concepts which would participate in the calculation.

[CSH: There is a question as to whether line 8 "Other Property, Plant and Equipment, Net" should exist in the taxonomy. On one side is the argument that all the other stuff can be placed there without extending the taxonomy. On the other side of the argument the term other generally would never really be used, but an explicit concept for the explicit type of property, plant and equipment should be added to the taxonomy.]

So, in this neutral format table you can see what an instance document or business report would look like without having to understand angle brackets. This is very readable by a business user. A verbose version of this report can be used to show the characteristics of a concept. For example, the balance (debit, credit, none), the periodType (as of a certain point in time or for a period of time), type (such as monetary, decimal, string, etc.) can be printed on this report. This is not shown here as providing too much information clutters the report and we are trying to make this version as similar as possible to a business report.

Meta-patterns are key to generating this neutral format template. This is how a computer application can predict what the organization of the information needs to look like. The more consistent a taxonomy is, the easier to generate a neutral format template from the taxonomy itself. If the taxonomy is created inconsistently, this becomes more challenging or impossible.

Meta-Patterns in US GAAP Taxonomy

Now we will term to meta-patterns. You may have heard of the concept of "data" and "meta-data". An example of data is, say an invoice number or a date on an invoice. The meta-data of an invoice is the fact that an invoice always has an invoice number, always has a date, and that the line items of the invoice always add up to the invoice total. The relation between pattern and meta-pattern are similar. They actual are similar things, simply at different levels.

A pattern is something which can be applied to many things. This is similar to a pattern on the fabric of a shirt, nothing more. Patterns and meta-patterns are about consistency and defining things. Inconsistency for no reason is bad.

The US GAAP Taxonomy is comprised of thousands of concepts and relations, but these concepts and relations can all be expressed using four patterns: calculation, hierarchy, movement (or roll forward), and table. There are rules for how these patterns can relate to one another, for example:

- A hierarchy may contain another hierarchy, a calculation, a roll forward, or a table.
- A calculation can contain only other calculations.
- A roll forward can contain calculations.
- A table may contain hierarchies, calculations, and roll forwards; but not other tables.

This is by no means a formal set of rules, however a formal set of rules has been created for the US GAAP Taxonomy. These rules are enforced by testing tools to ensure they are being followed. Thus, the taxonomy is quite consistent. Human testing alone could never achieve this level of consistency.

The following is a summary of the four basic meta-patterns which are used to build the entire US GAAP Taxonomy. We will briefly explain each of these meta-patterns. Users should not have to understand the details and subtleties of these patterns; this is the job of software applications. If the meta-patterns exist and documented, then software can enforce these rules for the business user. If the rules exist but are not documented, software developers must figure out the rules. If the taxonomy does not follow a set of meta-patterns of whatever number, the taxonomy is random and computer applications cannot make the lives of business users making use of the taxonomy easier. Meaning, meta-patterns equate to easier to use software applications.

Everything Exists is within a Table

[CSH: Note that this is not the case currently in the US GAAP Taxonomy. However, it should be the case based on the reasons stated here.]

One final thing to note is that everything exists within a table. A table is an XBRL Dimensions hypercube. Having all concepts exist within a table means that all concepts participate in XBRL Dimensions. This is very important for a technical reason. XBRL Dimensions provide information which is used within the context of a business report or instance document. If some concept participate in XBRL Dimensions and others do not, it makes comparisons difficult and/or makes the lives of users more challenging. The US GAAP Taxonomy architecture prohibits the use of XML Schema-based contextual information as mixing XBRL Dimensions and XML Schema-based contextual information is technically a very bad idea as it causes many problems. The same problem exists when some concepts participate in an XBRL

Dimension and some do not. This problem can be totally eliminated by simply requiring all concepts to participate within at least one hypercube, or table using our terminology here.

[CSH: Note that there is a big difference between a context with empty scenario information simply because no scenario information is provided and an empty scenario because the concept participates within an XBRL Dimension hypercube, but the default dimension is being used.]

The second reason that all concepts should participate within a table is consistency. There is a way to define tables within the US GAAP Taxonomy. That approach is used for all statements (statement of financial condition, statement of income, statement of cash flow, etc) and it is used to articulate information within disclosures which contains tables. However, many of the disclosures have concepts which are not organized into tables physically in the presentation linkbase, but they are tables (or should be for the technical reason above).

While it is the case that the presentation linkbase has no real impact on whether concepts participate within XBRL Dimensions or not, for consistency reasons, all information which is expressed as an XBRL Dimension should be organized in the same manner. This makes a taxonomy easier to understand. Again, there is no technical reason for the presentation linkbase to be organized in this manner, this is only related to consistency in presenting information to the business user.

[CSH: Note that one reason which has been given for not organizing everything into table is that would mean a lot of tables. This is a true statement, but why is lots of tables a bad thing? The NAIC Quarterly and Annual Statement Blank contains about 300 separate tables. The second reason for given for not doing this is that the taxonomy cannot be organized exactly as one might like, a certain amount of grouping would cause concepts to appear in slightly different areas of the taxonomy. While this is true, it is a very small price to pay for being able to generate these neutral format tables and for humans to be able to read the taxonomy and instance documents created from the taxonomy.]

Now we discuss the four meta-patterns which make up the entire US GAAP Taxonomy. [CSH: Again, I point out that there are three specific areas of the taxonomy which don't exactly follow these meta-patterns. The first is retained earnings where there are two roll forwards stacked together. The second is within accumulated other comprehensive income where an adjustment is made to the beginning balance. This seems similar to the adjustment of retained earnings, meaning both of these could fall into the same pattern. The third relates to the insurance industry disclosure of the insurance reserve. I don't totally understand this, but how it is modelled does not seem correct. All three of these things will get resolved and either (a) they will fall into existing patterns, (b) the existing patterns will be adjusted so they CAN fit or (c) new patterns will be created.]

Hierarchy

The hierarchy meta-pattern expresses categorization-type relationships. There are no calculations. The hierarchy simply helps organize information similar to how the sections and sub sections of a document organize a book.

Consider the following example of a hierarchy as it might look in a financial report.

Accounting Policies

The financial statements have been prepared on the historical cost basis, except for the revaluation of land and buildings and certain financial instruments. The principal accounting policies adopted are set out below.

Inventories

Inventories are stated at the lower of cost and net realisable value. Cost comprises direct materials and, where applicable, direct labour costs and those overheads that have been incurred in bringing the inventories to their present location and condition. Cost is calculated using the weighted average method. Net realisable value represents the estimated selling price less all estimated costs to completion and costs to be incurred in marketing, selling and distribution. Inventories are comprised of raw materials and work in progress.

Financial Instruments

Financial assets and liabilities are recognised on the Group's balance sheet when the Group has become a party to the contractual provisions of the investment.

Trade receivables

Trade receivables are stated at their nominal value as reduced by appropriate allowances for estimated irrecoverable amounts.

Investments in securities

Investments in securities are recognised on a trade-date basis and are initially measured at cost.

Bank borrowings

Interest-bearing bank loans and overdrafts are recorded at the proceeds received, net of direct issue costs. Finance charges, including premiums payable on settlement or redemption, are accounted for on an accrual basis and are added to the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.

Provisions

Provisions are recognised when the Group has a present obligation as a result of a past event which it is probable will result in an outflow of economic benefits that can be reasonably estimated.

Notice the indentations which make reading the information easier. Hierarchies are not necessary really, except for organization purposes. But imagine the difference between list of 1000 concept. What might be better, a flat list of 1000 concepts or 10 sets of 100 concepts or 20 sets of 50 concepts, broken out in some logical way?

Now we look at the static information about the meta-pattern.

Accounting Policies		
Perspective:	Presentation	
Scale [Factor]:	NOT APPLICABLE	
Static Fields (Applies to all Fact Values)		
Entity [Axis]:	http://www.SampleCompany.com	(+) Entity
Business Segment [Axis]:	pattern: Consolodated Group [Domain]	(+) Business Segment
Units [Axis]	NOT APPLICABLE	

Above the screen shot shows that all the Scale [Factor] and Units [Axis] are not applicable here, this is because all these accounting policies shown are strings, therefore no scale or units is required. However, it is the case that some hierarchies contain both string and numeric type information, requiring a scale factor and units.

Notice the extension points, again indicated as "(+) Entity, for example.

Now we look at the [Axis] for the table, in this case only one [Axis], the reporting entity or rather the business segment of the reporting entity. Again, notice that the report preparer can add a [Member] for their specific business segments.

pattern: Business Segment [Axis]
pattern: Consolidated Group [Domain]
company: Company Business Segment A [Member]
company: Company Business Segment B [Member]
(+) company: Member

Imagine if this [Axis] were not provided in the taxonomy and that the accounting policies as in this example is not assigned to an [Axis]. Or, perhaps a reporting company created their own [Axis] to indicate which reporting entity the information was being disclosed for. This may not seem so bad, but consider trying to compare two different entities who reported this with inconsistent [Axis]. If each entity has a different way to denote the consolidated group, you may seem you have automated comparability, but you really will not. And as such, human intervention of some sort will be required to ensure the information is, in fact, reported for the same portion of an entity and is comparable.

Now lets look at the line items for this meta-pattern, which is articulating information about the accounting policies of an entity.

Accounting Policies		<i>Period [Axis]</i>	
A		B	*
1	Period [Axis]	[For period:] 2007-01-01 to 2007-12-31	(+) Period
2	Accounting Policies [Line Items]		
3	Basis of Presentation [Text Block]	The financial statements have been prepared on the historical cost basis, except for the revaluation of land and buildings and certain financial instruments. The principal accounting policies adopted are set out below.	
4	Basis of Presentation	Historical Cost	
5	Inventory Policy [Text Block]	Inventories are stated at the lower of cost and net realisable value. Cost comprises direct materials and, where applicable, direct labour costs and those overheads that have been incurred in bringing the inventories to their present location and condition. Cost is calculated using the weighted average method. Net realisable value represents the estimated selling price less all estimated costs to completion and costs to be incurred in marketing, selling and distribution. Inventories are comprised of raw materials and work in progress.	
6	Inventory Valuation Method	Cost	
7	Description of Inventory Components	weighted average method	
8	Financial Instruments Policy [Text Block]	Financial assets and liabilities are recognised on the Group's balance sheet when the Group has become a party to the contractual provisions of the investment.	
9	Trade Receivables Policy	Trade receivables are stated at their nominal value as reduced by appropriate allowances for estimated irrecoverable amounts.	
10	Investments in Securities Policy	Investments in securities are recognised on a trade-date basis and are initially measured at cost.	
11	Bank Borrowings Policy	Interest-bearing bank loans and overdrafts are recorded at the proceeds received, net of direct issue costs. Finance charges, including premiums payable on settlement or redemption, are accounted for on an accrual basis and are added to the carrying amount of the instrument to the extent that they are not settled in the period in which they arise.	
12	Provisions Policy	Provisions are recognised when the Group has a present	
*	(+) Concept		

This is rather straight forward. Note the two extension points indicated in green above and that information is disclosed for only one period.

Keep in mind that calculations, roll forwards, and tables can exist within a hierarchy.

Calculation

The calculation meta-pattern is used to express calculations which are within the same context. Here we look at a very simple example. Consider the following:

Sample Company December 31, (thousands of dollars)

	2007	2006
ASSETS		
Property, Plant, and Equipment, Net		
Land	5,347	1,147
Buildings, Net	244,508	366,375
Furniture and Fixtures, Net	34,457	34,457
Computer Equipment, Net	4,169	5,313
Other Property, Plant, and Equipment, Net	6,702	6,149
Total	295,183	413,441

The information above shows detail of property, plant, and equipment for two periods, similar to what a balance sheet might look like, although this is simplified to focus on the meta-pattern rather than the accounting aspect.

This is the static information for this meta-pattern which is a common form, although not necessarily the only form, in which this type of information is disclosed.

Property, Plant and Equipment, by Component		
<i>Perspective:</i>	Presentation	
<i>Scale [Factor]:</i>	1000	
Static Fields (Applies to all Fact Values)		
<i>Entity [Axis]:</i>	http://www.SampleCompany.com	(+) Entity
<i>Business Segment [Axis]:</i>	pattern: Consolidated Group [Domain]	(+) Business Segment
<i>Units [Axis]:</i>	iso4217:USD	(+) Unit

There is nothing really new to point out here. Note though that the scale factor and units are used in this case.

Now the [Axis] information.

pattern: Business Segment [Axis]
pattern: Consolidated Group [Domain]
company: Company Business Segment A [Member]
company: Company Business Segment B [Member]
(+) company: Member

Again, nothing new here to point out.

And finally the actual concepts, or [Line Items] for the table of "Property, Plant and Equipment, by Component" are shown below.

Property, Plant and Equipment, by Component		Period [Axis]		
A		C	D	*
1	Period [Axis]	[As of] 2007-12-31	[As of] 2006-12-31	(+) Period
2	Propety, Plant and Equipment, by Component [Line Items]			
3	Propety, Plant and Equipment, Net [Total]			
4	Land	5,347	1,147	
5	Buildings, Net	244,508	366,375	
6	Furniture and Fixtures, Net	34,457	34,457	
7	Computer Equipment, Net	4,169	5,313	
8	Other Property, Plant and Equipment, Net	6,702	6,149	
	(+) Concept			
9	Property, Plant and Equipment, Net, Total	295,183	413,441	

Again, not much new. Note the point at which this calculation can be extended. It makes no sense to extend after the total, what would that mean within the taxonomy? It might make sense to allow additional detail after each of the components of PPE, but here we have chosen not to allow that. If we wanted to allow that, we could put an indicator of an extension point.

Movement (Roll Forward)

The movement or roll forward meta-pattern is used to express what is commonly referred to a "movement analysis" or "roll forward". This type of relationship is where a beginning balance of some amount at one period is added to the changes during a period to arrive at an ending balance of that same amount.

Consider this simple example, again focusing on the pattern rather than the accounting:

Sample Company December 31, (thousands of dollars)

	<u>2007</u>	<u>2006</u>
Movement in Land		
Land, Beginning Balance	1,147	1,147
Additions	1,992	400
Disposals	-193	-200
Translation difference	2,401	-200
	<hr/>	<hr/>
Land, Ending Balance	<u>5,347</u>	<u>1,147</u>

We see the beginning and ending balances of land with reconciling items for two years.

And below we see that the neutral format table would show, first the static information.

Movement in Land		
Perspective:	Presentation	
Scale [Factor]:	1000	
Static Fields (Applies to all Fact Values)		
Entity [Axis]:	http://www.SampleCompany.com	(+) Entity
Business Segment [Axis]:	pattern: Consolidated Group [Domain]	(+) Business Segment
Units [Axis]	iso4217:USD	(+) Unit

Again, nothing really new in terms of the static information.

Here the [Axis] information:

pattern: Business Segment [Axis]
pattern: Consolidated Group [Domain]
company: Company Business Segment A [Member]
company: Company Business Segment B [Member]
(+) company: Member

Again, nothing new really. We will point out that the [Axis] here is the same as the [Axis] of the other patterns thus far. This is important for two reasons. First, if you wanted to get all the information for the "pattern: Consolidated Group [Domain]" and different [Axis] and/or domains or members were used, how would you know the pieces were related, being the same reporting entity component? Understanding when to use the same [Axis] or [Domain] or different pieces is important. The impact will be different within the business report.

Now, the line items.

	Movement in Land	Period [Axis]	Scale [Factor]	Business Segment [Axis]/pattern:Consolidated Group [Domain]
	A	B	B	B
1	Movement in Land [Line Items]			
2	Land, Beginning Balance	[As of] 2005-12-31	1,000	1,147
3	Land, Additions	[For Period] 2006-01-01 to 2006-12-31	1,000	400
4	Land, Disposals	[For Period] 2006-01-01 to 2006-12-31	-1,000	-200
5	Land, Translation Difference	[For Period] 2006-01-01 to 2006-12-31	1,000	-200
6	(+) Concept			
7	Land, Period Increase (Decrease), Total	[For Period] 2006-01-01 to 2006-12-31	1,000	0
8	Land, Ending Balance	[As of] 2006-12-31	1,000	1,147
9	Movement in Land [Line Items]			
10	Land, Beginning Balance	[As of] 2006-12-31	1,000	244,508
11	Land, Additions	[For Period] 2007-01-01 to 2007-12-31	1,000	1,992
12	Land, Disposals	[For Period] 2007-01-01 to 2007-12-31	-1,000	-193
13	Land, Translation Difference	[For Period] 2007-01-01 to 2007-12-31	1,000	2,401
14	(+) Concept			
15	Land, Period Increase (Decrease), Total	[For Period] 2007-01-01 to 2007-12-31	1,000	4,200
16	Land, Ending Balance	[As of] 2007-12-31	1,000	248,708

Notice that the information is presented differently. Here the Period [Axis] and the Scale [Factor] are shown in different places in the body of the report. This is because the periods of the beginning balance, the changes, and the ending balance are different.

Now imagine being able to pivot your business report so that it looks like the following:

	Movement in Land			Not Sure What This is		Not Sure What This is	
		Business Segment [Axis]	Scale [Factor]	Period [Axis]	pattern: Consolidated Group [Domain]	Period [Axis]	pattern: Consolidated Group [Domain]
	A		B	B	B	B	B
1	Movement in Land [Line Items]						
2	Land, Beginning Balance	pattern:Consolidated Group [Domain]	1,000	[As of] 2006-12-31	1,147	[As of] 2005-12-31	1,147
3	Land, Additions	pattern:Consolidated Group [Domain]	1,000	[For Period] 2007-01-01 to 2007-12-31	1,992	[For Period] 2006-01-01 to 2006-12-31	400
4	Land, Disposals	pattern:Consolidated Group [Domain]	-1,000	[For Period] 2007-01-01 to 2007-12-31	-193	[For Period] 2006-01-01 to 2006-12-31	-200
5	Land, Translation Difference	pattern:Consolidated Group [Domain]	1,000	[For Period] 2007-01-01 to 2007-12-31	2,401	[For Period] 2006-01-01 to 2006-12-31	-200
6	(+) Concept						
7	Land, Period Increase (Decrease), Total	pattern:Consolidated Group [Domain]	1,000	[For Period] 2007-01-01 to 2007-12-31	4,200	[For Period] 2006-01-01 to 2006-12-31	0
8	Land, Ending Balance	pattern:Consolidated Group [Domain]	1,000	[As of] 2007-12-31	5,347	[As of] 2006-12-31	1,147

The information is identical, it is just that it is formatted, or presented, differently. Some users prefer a movement or roll forward to appear like the first example, others prefer it to look like the second example. This shows the power of XBRL, separating the data from the presentation of the data.

Table

A table meta-pattern is a special type of meta-pattern. It is never used alone, but rather always used with one or more of the other meta-patterns. A table always contains other information in the form of a hierarchy, a calculation, or a roll forward (movement).

Consider this example:

**Sample Company
For Period Ending December 31,
(thousands of dollars)**

	2007	2006	2005
Sales, all Segments, all Regions	32,038	35,805	32,465
Breakdown by Segment:			
Pharmaceuticals	20,181	18,150	15,275
Generics	2,433	1,973	1,823
Consumer Health	6,675	6,514	5,752
Other Segments	2,749	9,168	9,615
Breakdown by Region:			
US and Canada	10,214	12,649	10,137
Europe	11,901	10,374	10,396
Asia	5,639	4,371	3,210
Other regions	4,284	8,411	8,722

This is a simple breakdown of sales. At the top part of the fragment is total sales for all segments and all regions. Below that is a breakdown of that total by segment, and then by region.

Here is the static information for this table in the neutral format table expression form:

Sales Analysis		
<i>Perspective:</i>	Presentation	
<i>Scale [Factor]:</i>	1000	
Static Fields (Applies to all Fact Values)		
<i>Entity [Axis]:</i>	http://www.SampleCompany.com	(+) Entity
<i>Concept [Axis]:</i>	pattern:Sales	(+) Concept
<i>Units [Axis]:</i>	'iso4217:USD	(+) Unit

Next we see the [Axis], note that there are two in this case:

pattern: Business Segment [Axis]
pattern: Business Segments, All [Domain]
company: Pharmaceuticals Segment [Member]
company: Consumer Health Segment [Member]
company: Generics Segment [Member]
company: Other Segments [Member]
(+) company: Member

pattern: Regions [Axis]
pattern: Regions, All [Domain]
company: US and Canada Region [Member]
company: Europe Region [Member]
company: Asia Region [Member]
company: Other Regions [Member]
(+) company: Member

The [Axis] are by business segment and by region. You can see how these are used within the line items of the business report below.

There is one thing worth reporting out here. Notice that in the three previous patterns that the business segment had an effective domain of "Consolidated Group [Domain]". Here we used the term "Business Segments, All [Domain]". We could have used "Consolidated Group [Domain]" but "Business Segments, All [Domain]" seems better.

Now, imagine that a company reported total sales on its income statement and a breakdown of sales within its segment breakdown or elsewhere in the report.

As such you have Sales of \$32,038 for 2007 reported in one place with a "Business Segment [Axis]" of "Consolidated Group [Domain]", and in another place with a "Business Segment [Axis]" of "Business Segments, All [Domain]". What does the business report preparer do within the instance document or business report?

- A. Provide two concepts, one for the first table (income statement) and a second for the second table (segment breakdown); each with the same value but with different context.
- B. Provide one concept, but both Business Segment [Axis] are shown some how in the same context.
- C. Something else.

The answer is "B". Only one concept is provided in the business report. The tables are different "shapes" though, one has one axis, "Business Segment [Axis]", and the other has TWO axis, "Business Segment [Axis]" and "Regions [Axis]". This is done using an XBRL Dimensions feature called the dimension default. The dimension default basically allows the context to contain no actual information for the context information, but the XBRL processor can figure out which dimensional information to apply to each table.

[CSH: The above is hard to explain, but critically important. This is a first draft of the explanation.]

Finally we look at the line items of this sales analysis table:

Sales Analysis		Business Segment [Axis]	Region [Axis]	Period [Axis]			*
A	B	C	E	F	G		
1	Period [Axis]		[For period:] 2007-01-01 to 2007-12-31	[For period:] 2006-01-01 to 2006-12-31	[For period:] 2005-01-01 to 2005-12-31	(+) Period	
2	Sales Analysis [Line Items]						
3	Sales	Business Segments, All [Domain]	Regions, All [Domain]	32,038	35,805	32,465	
4							
5	Sales Analysis [Line Items]						
6	Sales	Pharmaceuticals [Member]	Regions, All [Domain]	20,181	18,150	15,275	
7	Sales	Consumer Health Segment [Member]	Regions, All [Domain]	2,433	1,973	1,823	
8	Sales	Generics Segment [Member]	Regions, All [Domain]	6,675	6,514	5,752	
9	Sales	Other Segments [Member]	Regions, All [Domain]	2,749	9,168	9,615	
10							
11	Sales Analysis [Line Items]						
12	Sales	Business Segments, All [Domain]	US and Canada [Member]	10,214	12,649	10,137	
13	Sales	Business Segments, All [Domain]	Europe [Member]	11,901	10,374	10,396	
14	Sales	Business Segments, All [Domain]	Asia [Member]	5,639	4,371	3,210	
15	Sales	Business Segments, All [Domain]	Other Regions [Member]	4,284	8,411	8,722	
16	(+) Concept	(+) Business Segment [Member]	(+) Region [Member]				

Notice that the same concept "Sales" is used for each of the data points. The Business Segment [Axis], Region [Axis], and Period [Axis] work together to provide a unique context for each of the data points. This information is explicit and is understandable by a computer

whereas the same information actually exists in the human readable form shown. But, a computer would have a hard time gleaming this information, particularly if different reporting entities formatted their human readable reports differently.

Summary

Meta-patterns are important to business users because:

- They make things consistent.
- They make things easier to understand because they are consistent.
- They make software easier to develop and the cost of development is less because of this consistency, or unnecessary variability which adds nothing to the meaning of the information.

Understanding the meta-patterns used to build a taxonomy is key to being able to understand and use a taxonomy effectively. Whether the meta-patterns are formally documented or informal, all taxonomies contain meta-patterns. Good taxonomies are consistent. The number of meta-patterns depends on the data being expressed.

How does a business user understand that the taxonomy is created correctly if they don't understand how XBRL works? Domain knowledge such as the accounting knowledge used to create the US GAAP Taxonomy is absolutely necessary to create a good taxonomy. However, it is not sufficient. The domain users must also understand how XBRL actually works in order to ensure themselves that the taxonomy will work as they expect it to work.

These meta-patterns and neutral format tables work together to help communicate the XBRL piece of the taxonomy equation to the domain experts, allowing them to then focus on the accounting aspects of the taxonomy.