The Melting Pot of Information

Enabling Multiple Perspectives including Auditing

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Contents

- Semantic Interoperability vs. Multiple Perspectives
  - Contradictory Requirements
  - A solution: The Data Projection Model

- A use case: Auditing Information
  - Where do Topics come from in IRS Tax Map?

Contradictory Requirements

- Information is a mess – and will always be!
  - ▶ We need to handle the mess, not deny it.

- We are all different – and will always be!
  - ▶ One format, one schema for all: forget it! There are many different things we want to do, and there are multiple ways in which we can view the information.

- Information comes from everywhere --and will always do.
  - ▶ We need information that can be trusted.
  - ▶ Especially from government sources...

Proposed Solution

- Every information item is a step in a process.

- All processes can be expressed as a set of one-to-one relationships.

- This is the same idea which is at the core of RDF, Topic Maps and other graph-driven information models. Back to the core!

- From the elements, rebuild views with multiple perspectives.

Usages

- Integration of taxonomies, ontologies, emanating from various sources, various people, at various times.

- Creation of specific views for specific purposes: including maintenance, quality control, reporting, auditing

Google "Whatever".
Do you care?

E pluribus unum

- Provide a hospitable environment for items to coexist and connect with each other, even from different origins.

- Enable freedom of speech: various perspectives on the same information objects.

- Provide accountability, transparency, so that clear policies can be established.

- Sounds familiar?

Interoperability in Two Steps

- **1ˢᵗ step**: decompose a system into its elementary processes expressed as binary relationships
  Example : **< 2 | + | 3 >**
  - ▶ **PERSPECTOR : < x | o | y >**
    x operand, operator, y operand

- **2ⁿᵈ step**: rebuild views integrating the components.
  - ▶ Each view conforms to a given perspective.
  - ▶ Multiple perspectives possible.

Perspective

- Perspective = methods to represent 3-dimensional space on a flat surface.

- Geometry: laws of perspective express what's invariant given various points of view.

Perspective and Projection
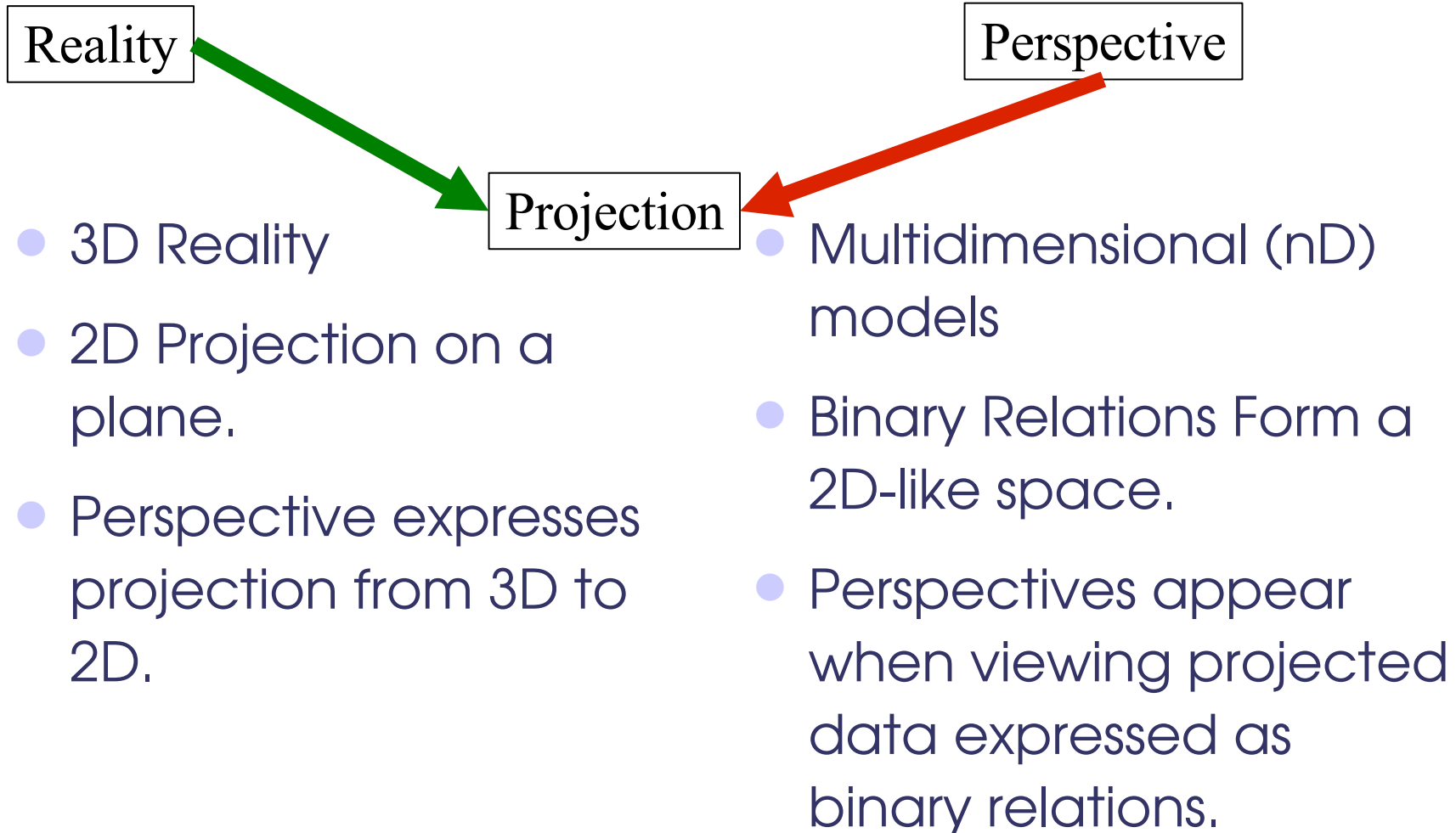
Reality → Projection ← Perspective

- 3D Reality

- 2D Projection on a plane.

- Perspective expresses projection from 3D to 2D.

- Multidimensional (nD) models

- Binary Relations Form a 2D-like space.

- Perspectives appear when viewing projected data expressed as binary relations.

Auditable Information Systems

- Information systems can be made accountable the same way financial information is.

- Auditing Information = Viewing information within one given perspective.

  - Auditing is no more than one particular way of navigating information.

IRS Tax Map

- Electronic Research Tool for assistors in call centers & taxpayers
  - ▶ Network navigational model (Topic Map)- Enables research by subject.
  - ▶ Easy to use. Doesn't require any change in the workflow.
  - ▶ Uses combination of automatic processes/manual input.

- Contains:
  - ▶ Forms/Instructions, Publications, Tax Law FAQ, Tele-Tax Topics

- Built on XML/SGML work.

Tax Map Audited:
Income Earned Abroad

Income Earned Abroad

☑ **Publications**

☑ Publications

Links Inside Publications

Publication 593 - Tax Highlights for U.S. Citizens and Residents Going Abroad - Income Earned Abroad

Income Earned Abroad You may qu... exclusion from tax of a limited amo...

Related Topic Links

➢ Income
➢ U.S. Citizens and Resident Aliens Abroad

IRS TAX MAP 2005

Search All Topics:

[ ] GO

Search Help
Navigation Help

Main Topics
A B C D E F G H I
J K L M N O P Q R
S T U V W X Y Z #

FAQs
Forms
Publications
Tele-Tax Topics

Comments
About Tax Map
Previous Tax Maps

Income Earned Abroad

Index

1	created	from document p593-001
2	related containment	Income
3	related PFT	Living Abroad
4	normalizes as	INCOME EARNED ABROAD
5	URL	ts0/tp6717.htm

U.S. Citizens and Resident Aliens Abroad

American citizens abroad
Living Abroad

☑ ■ Forms ☑ ■ Publications ☑ ■ FAQs ☑ ■ TeleTax

■ Forms and Instructions

Form 2350 Application for Extension of Time to File U.S. Income Tax Return [MORE]

Form 2555 Foreign Earned Income [MORE]

  2555 Instructions

■ Publications

Related Publications

Publication 54 Tax Guide for U.S. Citizens and Resident Aliens Abroad [PDF] [MORE]

Publication 516 U.S. Government Civilian Employees Stationed Abroad [PDF] [MORE]

Publication 593 Tax Highlights for U.S. Citizens and Residents Going Abroad [PDF] [MORE]

Links Inside Publications

Related Topic Links

➢ Alien, Resident
➢ Bona Fide Residence Test
➢ Employment Abroad
➢ Foreign Corporation
➢ Foreign Income
➢ Income Earned Abroad
➢ International Issues
➢ Physical Presence Test
➢ U.S. Citizen
➢ U.S. Citizens and Resident and Nonresident Aliens
➢ VISA Status

Where does "Living Abroad" come from?

Living Abroad

Index

1		alternate name PFT	American citizens abroad	>
2	< U.S. Citizens and Resident Aliens Abroad	alternate name PFT		
3		privileged name is	U.S. Citizens and Resident Aliens Abroad	>
4	< Individuals Abroad	replaced PFT by		
5	< U.S. Citizen Abroad	replaced PFT by		
6	< U.S. citizens abroad	replaced PFT by		
7	< U.S. Citizens and Residents Living Outside the United States	replaced PFT by		
8	< U.S. Citizens or Residents Living Abroad	replaced PFT by		
9		related PFT	Bona Fide Residence Test	>
10	< Employment Abroad	related PFT		
11		related PFT	F2350	>
12		related PFT	Foreign Corporation	>
13		related PFT	Foreign Income	>
14	< Income Earned Abroad	related PFT		
15	< P516	related PFT		
16	< P54	related PFT		
17	< P593	related PFT		
18		related PFT	Physical Presence Test	>
19	< Retirees who were working abroad.	related PFT		
20	< Survivors of decendents who were working abroad.	related PFT		
21	< VISA Status	related PFT		
22		normalizes as	LIVING ABROAD	>
23		URL	ts0/tp16663.htm	>
24		topic type PFT	Key Topic	>

Containment Rule Results

862	< Roth IRAs and traditional IRAs.	IRAs >
863	< Roth IRAs and traditional IRAs.	Traditional IRAs >
864	< Discount on Debt Instruments	Debt >
865	< Hope and Lifetime Learning Credits	Credits >
866	< Health Spa Expenses	Health >
867	< Health Spa Expenses	Expenses >
868	< Exceptions to reporting OID.	Exceptions. >
869	< Exceptions to reporting OID.	OID >
870	< SSN on correspondence.	SSN >
871	< Capital Expense	Capital >
872	< Home Mortgage	Home
873	< Home Mortgage	Mortgage
874	< Maximum Exclusion	Exclusion
875	< Income from property given to a child.	Income
876	< Income from property given to a child.	Property
877	< Income from property given to a child.	Child
878	< Medicare Advantage MSAs	Medicare
879	< Farm Income, cash method	Farm
880	< Farm Income, cash method	Farm Income
881	< Farm Income, cash method	Income
882	< Farm Income, cash method	Cash Method

If one topic name is entirely contained into another one, they get automatically related.

Synonyms Created by Tax Experts

139 < Gambling	Wagering	>
140 < Gift, Property	Property Received as a Gift	>
141 < Gift, Shares	Shares Acquired by Gift	>
142 < Gifts to Charity	Charitable Contributions	>
143 < HCTC	Health Coverage Tax Credit	>
144 < Help from IRS	Taxpayer Assistance	>
145 < Hiring Employees	Hiring New Employees	>
146 < Hobby Expenses	Activity not for profit	>
147 < Home Mortgage Interest	Itemized Deduction, Home Mortgage Interest	>
148 < Home Mortgage Interest	Mortgage Interest, Home	>
149 < Home Office	Business Use of Home	>
150 < Home Vacation	Vacation Home	>
151 < Hope Credit	Credit, Hope	>
152 < Household Employment	Employment, Household	>
153 < IC-DISC	Interest Charge Domestic International Sales Corporation	>
154 < IRA	Individual Retirement Account	>
155 < IRA	Individual Retirement Arrangement	>
156 < ITIN	Taxpayer Identification Number	>
157 < Important Reminder	Reminders, Important	>

Three Words In Common - Rule

< Distributions, Minimum required

Minimum Distributions)

810 < Distributions, Minimum required

When Must You Withdraw I
(Required Minimum Distribu

811 < Divorced or Separated Spouses/Parents

Separated or Divorced Spous

Donee Information Return (Sale,
812 < Exchange or Other Disposition of Donated
Property)

Sale or Exchange of Property

Dues Used for Lobbying or Political
813 < Activities

Lobbying and political activi

814 < Dwelling Unit Used as Home

Personal Use of Dwelling Unit (Including
Vacation Home) >

815 < Dyed Diesel Fuel and Dyed Kerosene

For Diesel Fuel and Kerosene (Other Than
Kerosene Used in Aviation) Used Other
Than as a Fuel (No. 8) >

816 < Dyed Diesel Fuel and Dyed Kerosene

For Diesel Fuel or Kerosene in a Qualified
Local Bus (No. 6) >

817 < Dyed Diesel Fuel and Dyed Kerosene

Sales by Registered Ultimate Vendors of
Undyed Diesel Fuel and Undyed Kerosene >

818 < Dyed Diesel Fuel and Dyed Kerosene

Undyed Diesel Fuel and Undyed Kerosene
(Other Than Kerosene Used in Aviation) >

- Topics that have three words in common get automatically related.

Applications

- Generalization
    - Record processes involved, expressed with a common notation.
    - Some processes are contained into standard applications: hierarchy in XML documents, taxonomies, relational databases, etc.

- Applicability:
    - Semantic Integration

More Information

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