

# Thinking Big: Web Scale AI

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Mortgage Financing  
Patent & Other Rights  
Computer File System  
Management  
Derivative Risk  
Traffic  
Management  
Tracking Scientific  
Literature  
...etc

Overwhelming Problems



Web 3.0

- **Decentralized**
- **Interconnected**
- **Machine-readable**
- **AI-driven**

Web 2.0

- **User-generated content**
- **Social media**
- **Collaboration**
- **Cloud computing**

Web 1.0

- **Static content**
- **One-way communication**
- **Search engines**
- **Basic web browsing**

Who's online: Limits to power



- Knowledge in minds
- Transfer by speech, sketches



- Knowledge in books
- Transfer by visiting libraries, public readings



- Knowledge in mass market books, films, newspapers, journals, television, radio
- Transfer by replication, broadcast



- Knowledge in Web pages, pdf/ps files, passive DBs, some audio
- Transfer by authoring then browsing, searching



- Knowledge in fluid constructs (wikis, complex evolving DBs/RDF stores, blogs, social network pages) , web services across all media, distributed across many sites.
- Transfer by collaborative construction, active notification, alerts, SMSs, social notification, mash-ups ...



- Knowledge understood by the web (KBs, probabilistic KBs, semantically enhanced texts, DBs, services)
- Transferred by assistive, cooperative software that understands users needs, desires, limitations, and assembles/derives the right knowledge services

Scarce

Abundant

Overwhelming



# Human knowledge evolution





# Introduction to Cyc

What's it for?

# Logistics

OpenCyc (Current): [ <http://sw.opencyc.org/concept/Mx4r8qkxXAW-QdmV1JNL5SFyIA> ]

OpenCyc (Versioned): [ <http://sw.opencyc.org/2008/06/10/concept/Mx4r8qkxXAW-QdmV1JNL5SFyIA> ]

http

Search



## OpenCyc Collection: shipping container

Unique ID: [ Mx4r8qkxXAW-QdmV1JNL5SFyIA ]

English ID: [ LargePortableCargoContainer ]

English Aliases: [ "cargo container", "cargo containers", "portable cargo container", "portable cargo containers", "shipping containers" ]

A specialization of *StorageConstruct*. Each instance of *LargePortableCargoContainer* is a large (usually about 40' x 8' x 8') metal container used for shipping large quantities of goods across land (e.g., on a large truck) or overseas (e.g., on a cargo ship).

**A Type of:** storage device

**Instance of:** spatially disjoint object type, type of object

**Subtypes:**

**Instances:**

**Same as:**

<http://umbel.org/umbel/sc/LargePortableCargoContainer>

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# Logistics

OpenCyc (Current): [ <http://sw.opencyc.org/concept/Mx4rSbwOlPpYEdqAAACs71DGQ> ]

OpenCyc (Versioned): [ <http://sw.opencyc.org/2008/06/10/concept/Mx4rSbwOlPpYEdqAAACs71DGQ> ]

Search



## OpenCyc Collection: loading a vehicle

Unique ID: [ Mx4rSbwOlPpYEdqAAACs71DGQ ]

English ID: [ LoadingAVehicle ]

English Aliases: [ "had loaded a vehicle", "has loaded a vehicle", "have loaded a vehicle", "load a vehicle", "loaded a vehicle", "loads a vehicle", "will have loaded a vehicle", "will load a vehicle" ]

The collection of instances of Loading in which the toLocation is a vehicle.

**A Type of:** loading, putting something into something else

**Instance of:** type of temporally stuff-like thing

**Subtypes:**

**Instances:**

**Same as:**

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# Inferred Index

for

Shipping

order by : [predicate](#) [ontology](#)

filters : [predicate](#) [ontology](#)

index view : [inferred](#) [legal](#)

► [Browsing](#)

► [Editing](#)

[All Assertions](#) (2640) 

► [open all](#)

► via [Shipping](#) (46)

► via [ConveyingMaterials](#) (4)

► via [\(TransportViaFn TransportationDevice\)](#) (22)

► via [MaterialHandling](#) (5)

► via [TransportationEvent](#) (33)

► via [DirectedTranslation](#) (14)

► via [Conveying-Generic](#) (27)

► via [Translation-Complete](#) (5)

► via [CausingAnotherObjectsTranslationalMotion](#) (1)

► via [Translation-SingleTrajectory](#) (9)

► via [ControllingAPhysicalDevice](#) (5)

► via [SocialOccurrence](#) (11)

► via [PhysicalEvent](#) (9)

(and

(isa :ACTION [Shipping](#))

C

on

[PublicConstant](#) [CycSecureFORT](#)

[ConveyingMaterials](#) [DeliveryServiceEvent](#)

physical location to another. Shipping from the perspective of being done  
at UPS, the US Postal Service, or Dominoes Pizza Delivery might do."

[Canonical Ship-TheWord 0 IntransitiveVerbFrame Shipping](#)

[Canonical Ship-TheWord 0 TransitiveNPFrame Shipping](#)

[By transportees\)\)](#)

[TheWord Verb 0 Shipping\)](#)

[TransitiveNPFrame](#)  
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[cy](#)

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[TransitiveNPFrame](#)

[ge](#)  
[TransitiveVerbFrame](#)

# Detailed Representations



**Valve Surgery**

Search

## Semantic Search Results

## Intelligent Search

### Semantic Search Results

#### [A. Marc Gillinov, M.D.](#)

A. Marc Gillinov, M.D. Specialties: Minimally invasive mitral valve, aortic valve, and tricuspid valve surgery; mitral [valve repair](#), surgical... Gillinov, M.D. has performed 125 [heart-valve repair](#) operations at [http://tomcat/html-content/gillinov\\_GillinovHeartValveRepair.html](http://tomcat/html-content/gillinov_GillinovHeartValveRepair.html) (cached)

#### [Valve Disease](#)

[AV Repair](#) or Replace + Other [AV Repair](#) or Replace  
Replacements AV = Aortic  
[http://tomcat/html-content/Valve\\_Disease](http://tomcat/html-content/Valve_Disease)

#### [Nicholas G. Smedira, M.D.](#)

Nicholas G. Smedira, M.D. Specialties: Heart valve replacement, off-pump coronary artery bypass surgery...  
<http://tomcat/html-content/smedira.html>

#### [Joseph F. Sabik III, M.D.](#)

Joseph F. Sabik III, M.D. Specialties: Adult heart surgery, off-pump coronary artery bypass surgery...  
<http://tomcat/html-content/sabik.html> (cached)

#### [Eric E. Roselli, M.D.](#)

Eric E. Roselli, M.D. Specialties: Adult cardiac surgery and replacement, high-risk valve surgery...  
<http://tomcat/html-content/roselli.html>

#### [Gosta B. Pettersson, M.D., Ph.D.](#)

Gosta B. Pettersson, M.D., Ph.D. Specialties: Aortic and mitral [valve repair/replacement](#)...  
<http://tomcat/html-content/pettersson.html>

#### A. Marc Gillinov, M.D.

**Specialties:** Minimally invasive mitral valve, aortic valve, and tricuspid valve surgery; mitral valve repair, surgical treatment and minimally invasive surgery for atrial fibrillation; off-pump coronary artery bypass surgery; and high-risk mitral valve surgery.

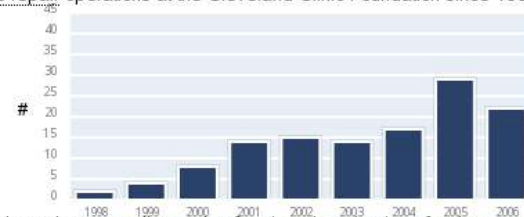
**Medical Degree:** Johns Hopkins University School of Medicine, Baltimore, Maryland

**Special Training:** Johns Hopkins University School of Medicine, Baltimore, Maryland

A native Clevelander, Dr. Gillinov spent the summers of 1978 to 1980 dividing his time between working at Cleveland Clinic and playing tennis. He still enjoys both activities.



Gillinov, M.D. has performed 125 [heart-valve repair](#) operations at the Cleveland Clinic Foundation since 1998.



This graph, based on a small sample of patient data, is given for demonstration purposes only.

# Content adaptation: heart valve repair

## Intelligent Search



### Semantic Search Results

#### A. Marc Gillinov, M.D.

Gillinov, M.D. has performed 316 [coronary artery](#) operations at the Cleveland Clinic... invasive mitral valve, [aortic](#) valve, and tricuspid valve surgery; repair, surgical treatment and minimally invasive surgery for atrial fibrillation; off-pump [coronary](#) artery bypass surgery  
[http://tomcat/html-content/gillinov\\_GillinovCoronaryArtery.html](http://tomcat/html-content/gillinov_GillinovCoronaryArtery.html) (cached)

#### Nicholas G. Smedira, M.D.

and heart-lung transplantation, ventric  
grafting, myectomy, reoperations, and  
[http://tomcat/html-content/smedira\\_h](http://tomcat/html-content/smedira_h)

#### Gosta B. Pettersson, M.D., Ph.D.

Adult acquired heart disease (includi  
complex [coronary artery](#) surgery; aort  
<http://tomcat/html-content/pettersson>

#### Joseph F. Sabik III, M.D.

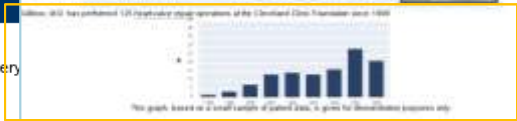
Joseph F. Sabik III, M.D. Specialties: A  
surgery, off-pump [coronary](#) artery bype  
[http://tomcat/html-content/sabik\\_.html](http://tomcat/html-content/sabik_.html)

#### Coronary Disease

Primary isolated CABG refers to a pat  
images... excellent long-term patency  
[http://tomcat/html-content/Coronary\\_D](http://tomcat/html-content/Coronary_D)

#### Bruce W. Lytle, M.D.

Bruce W. Lytle, M.D. Chairman, D  
diseases, reoperations, diseases of th  
[http://tomcat/html-content/lytle\\_.html](http://tomcat/html-content/lytle_.html)



#### A. Marc Gillinov, M.D.

**Specialties:** Minimally invasive mitral valve, aortic valve, and tricuspid valve surgery; mitral valve repair, surgical treatment and minimally invasive surgery for atrial fibrillation; off-pump coronary artery bypass surgery; and high-risk mitral valve surgery.

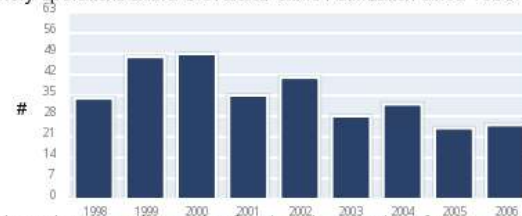
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Gillinov, M.D. has performed 316 coronary artery operations at the Cleveland Clinic Foundation since 1998.



This graph, based on a small sample of patient data, is given for demonstration purposes only.

# Content adaptation: coronary artery

**News Front Page**



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## How Mumbai

New details have been slowly emerging about the early stages of the Mumbai terror attacks. Much of the information has been gleaned after the capture of one of the militants involved, as the BBC's Prachi Pinglay reports from Mumbai.

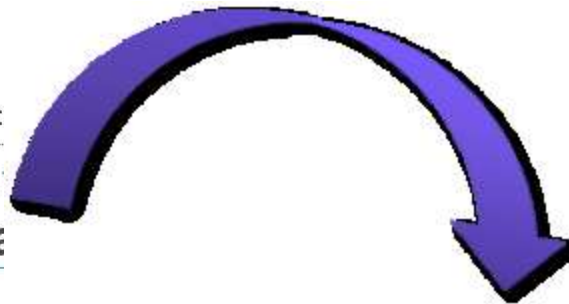
The story of the Mumbai terror attacks like private fishing trawler with five crew men Arabian sea off the coast of Porbandar in Gujarat state on 13 November.

Sometime during the next 12 days, the t at sea by at least 10 young men, aged b years, carrying backpacks and bags, ac the Mumbai police, coastguard, and com

Investigators still do not know what the n and where they were coming from when trawler - though suspicion has fallen on t of Karachi.



Investiga  
together  
unfolded



terrorist attack, Mumbai terrorist

attacks, November 2008 Mumbai terrorist attack, ...)

About

Basic Info

Advanced Info

Mumbai blasts was a:

☒ terrorist attack

Looking for taking hostages

What type of thing is this?

Additional Names

Click to add another name

**CURE: Content  
Understanding,  
Review or Entry**





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## How Mumbai attacks unfolded

New details have been slowly emerging about the early stages of the Mumbai terror attacks. Much of the information has been gleaned after the capture of one of the militants involved, as the BBC's Prachi Pinglay reports from Mumbai.



Investigation together unfolded

The story of the Mumbai terror attacks like a private fishing trawler with five crew men

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fallen on t

of Karachi.

Mumbai blasts (aka Mumbai terrorist attack, Mumbai terrorist

attacks, November 2008 Mumbai terrorist attack, ...)

[About](#)

[Basic Info](#)

[Advanced Info](#)

- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 was intended to damage *tangible thing*.
- ☐ *generic agent* was adversely affected by Mumbai blasts.
- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 damaged *thing existing stably in time*.
- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 is intended to harm *generic agent*.
- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 affects *generic agent*.
- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 affected *thing existing stably in time*.
- ☐ *thing existing stably in time* was

Relevant questions found using inference



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Investigation together unfolded

The story of the Mumbai terror attacks like a private fishing trawler with five crew men or bandar i

lays, the t  
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, and com  
what the n  
om when  
fallen on t

of Karachi.

### Mumbai blasts (aka Mumbai terrorist attack, Mumbai terrorist

attacks, November 2008 Mumbai terrorist attack, ...)

*organism* died in the Mumbai terrorist attacks of November 26 - 29, 2008.

- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 happened in

*location*

- ☐ Some *device* is used during the Mumbai terrorist attacks of November 26 - 29, 2008.

- ☐ *tangible thing* was the object of attack in Mumbai blasts.

- ☐ *generic agent* deliberately took part in the Mumbai terrorist attacks of November 26 - 29, 2008.

- ☐ *generic agent* acted intentionally in the Mumbai terrorist attacks of November 26 - 29, 2008.

- ☐ The Mumbai terrorist attacks of November 26 - 29, 2008 included the use of *device*.

Relevant  
questions  
found using  
inference



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## How Mumbai attacks unfolded

New details have been slowly emerging about the early stages of the Mumbai terror attacks. Much of the



Investigations together unfolded

attacks like crew members or bandits

lays, the t n, aged b

years, carrying backpacks and bags, across the Mumbai police, coastguard, and com

Investigators still do not know what the n and where they were coming from when trawler - though suspicion has fallen on t of Karachi.

Answers understood using NLP and KB content

Mumbai blasts (aka Mumbai terrorist attack, Mumbai terrorist

attacks, November 2008 Mumbai terrorist attack, ...)

- ☐ *thing existing stably in time* was meaningfully involved in Mumbai blasts.
- ☐ *intelligent agent* was a perpetrator in the Mumbai terrorist attacks of November 26 - 29, 2008.
- ☒ the Taj Mahal Hotel is the Working intended target of the Mumbai terrorist attacks of November 26 - 29, 2008.
- ☒ The Mumbai terrorist attacks of November 26 - 29, 2008's date is 11/26/2008 - 11/29/2008.
- ☐ The number of *organism* who are injured in the Mumbai terrorist attacks of November 26 - 29, 2008 is *non-negative quantity or nu*.
- ☐ *generic agent* was assisting in Mumbai blasts.
- ☐ *non-negative quantity or nu*





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## How Mumbai attacks unfolded

New details have been slowly emerging about the early stages of the Mumbai terror attacks. Much of the



Investigators together unfolded

attacks like crew members or bandits

days, the terror group, aged by

years, carrying backpacks and bags, across the Mumbai police, coastguard, and commando

Investigators still do not know what the men were doing and where they were coming from when the attack began on the ferry - though suspicion has fallen on the group based in Karachi.

Answers understood using NLP and KB content

Mumbai blasts (aka Mumbai terrorist attack, Mumbai terrorist

attacks, November 2008 Mumbai terrorist attack, ...)

26 - 29, 2008 is *non-negative quantity or nu*

☐ *generic agent* was assisting in Mumbai blasts. - +

☐ *non-negative quantity or nu* *organism* died in the Mumbai terrorist attacks of November 26 - 29, 2008. - +

☒ The Mumbai terrorist attacks of November 26 - 29, 2008 happened in Mumbai, India. Working - +

☒ Some hand grenade is used during the Mumbai terrorist attacks of November 26 - 29, 2008. Working - +

☒ Some AK-47 is used during the Mumbai terrorist attacks of November 26 - 29, 2008. Working - +

☒ Some homemade bomb is used during the Mumbai terrorist attacks of November 26 - 29, 2008. Working - +



File Edit Tools Window Help

Task Info Concepts Document Search Network Analysis Queries

Clear Find Stop

Give the values of *SUBSIT*, *OTR-SUBSIT*, *OTR-ATTACK* and *WHAT-TYPE* such that:

- All of the following are true
  - OTR-ATTACK* is not the Mumbai terrorist attacks of November 26 - 29, 2008.
  - Lashkar-e-Tayyiba was a perpetrator in *OTR-ATTACK*.
- Either of the following is true
  - All of the following are true
    - The Mumbai terrorist attacks of November 26 - 29, 2008 included the use of some instance of *WHAT-TYPE*.
    - WHAT-TYPE* is a type of small-arms weapon.
    - OTR-ATTACK* included the use of some instance of *WHAT-TYPE*.
  - All of the following are true
    - SUBSIT* is part of the Mumbai terrorist attacks of November 26 - 29, 2008.
    - SUBSIT* is an instance of *WHAT-TYPE*.
    - WHAT-TYPE* is a type of capturing.
    - WHAT-TYPE* is not terrorist attack.
    - OTR-SUBSIT* is part of *OTR-ATTACK*.
    - OTR-SUBSIT* is an instance of *WHAT-TYPE*.

Add Group Remove Group

Continue Schedule Save New Tab Reset

5 answers Timed out

Answers (5)

What Type	Otr Attack	Sources
hand grenade	the terrorist attack on August 6, 2002 in Kashmir	SAIC BBC
hand grenade	the terrorist attack in Rajwas, India on August 2, 2000	SAIC BBC
capturing	the Srinagar terrorist attack on September 24, 2002	
hostage-taking	the Srinagar terrorist attack on September 24, 2002	
capturing	the terrorist attack in Akhala, India on November 24, 2000	

Justify Fact Sheet Visualize Visualize All Export Export UC

Status: Idle Message:

Using KB  
content  
from *CURE*

# Leaders of organizations that operate in Gaza and have killed Israelis

## Search Results

Leaders of organizations that operate in Gaza and have killed Israelis

### Simple Fragments

\_\_\_\_\_ happened in the Gaza Strip.  
 \_\_\_\_\_ happened in Gaza City, the West Bank and Gaza.

\_\_\_\_\_ is an Israeli.  
 \_\_\_\_\_ is an organization.  
 \_\_\_\_\_ holds the position of \_\_\_\_\_ in the Gaza Strip.  
 \_\_\_\_\_ holds the position of \_\_\_\_\_ in Gaza City, the West Bank and Gaza.

\_\_\_\_\_ is a leader of \_\_\_\_\_.  
 \_\_\_\_\_ was killed during \_\_\_\_\_.

### General Fragments

\_\_\_\_\_ happened in \_\_\_\_\_.  
 \_\_\_\_\_ operates in \_\_\_\_\_.

\_\_\_\_\_ is true  
 \_\_\_\_\_ happens in the Gaza Strip.  
 \_\_\_\_\_ is a leader of *CULPRIT*.  
 \_\_\_\_\_ happened during *PHYSICAL-DESTRUCTION-EVENT*.  
 \_\_\_\_\_ is a perpetrator in *PHYSICAL-DESTRUCTION-EVENT*.  
 \_\_\_\_\_ is an organization.

Continue

Save

New Tab

Reset

64 answers  
Timed out

Culprit	Sources
HAMAS	 9  3  4 (12 more)
HAMAS	 9  3  4 (13 more)
HAMAS	 10  10  3 (17 more)
HAMAS	 2  9  3 (15 more)
HAMAS	 9  3  4 (13 more)

Fact Sheet

Visualize

Visualize All

Export

Export UC

True Question Answering

## Facts and Rules (from 1998, 2003)

Mt: [InternationalOrganizationDataMt](#)  
[\(internationalOrganizationMemberCountries](#)  
[AfricanUnion Congo-Brazzaville\)](#)  
[\(internationalOrganizationMemberCountries](#)  
[UnitedNationsOrganization Congo-Brazzaville\)](#)

([implies](#) ([and](#)  
 ([isa](#) ?COUNTRY [IndependentCountry](#))  
 ([territoryOf](#) ?COUNTRY ?LAND)  
 ([geographicalSubRegions](#) [ContinentOfAfrica](#)  
 ?LAND))  
 ([internationalOrganizationMemberCountries](#)  
[OrganizationOfAfricanUnity](#) ?COUNTRY))

Republic of the Congo is a member of  
 Organization of African Unity, the  
 United Nations, and African Union.

### Automated Reasoning

```
(implies (and
  (isa ?COUNTRY IndependentCountry)
  (territoryOf ?COUNTRY ?LAND)
  (geographicalSubRegions ContinentOfAfrica ?LAND)
  (internationalOrganizationMemberCountries
   OrganizationOfAfricanUnity ?COUNTRY)) in
  InternationalOrganizationDataMt
  (territoryOf Congo-Brazzaville
   TerritoryFn Congo-Brazzaville)) in
  WorldPoliticalGeographyBetaVocabularyMt
  (properGeographicalSubRegions ContinentOfAfrica
   TerritoryFn Congo-Brazzaville)) in
  WorldGeographyMt :GENLPREDI (genLPreds
  properGeographicalSubRegions geographicalSubRegions)
  in InternationalOrganizationDataMt
  :ISA (isa Congo-Brazzaville IndependentCountry) in
  InternationalOrganizationDataMt
```



beta  
 Republic of the Congo



inCyc

#### General:

*Likouala, Niari, Kouilou, Pool, and Ouham* are a geographical subregion of Republic of the Congo. *Nzari, Kouilou, Pool, Ouham, Likouala, Cuvette, Plateaux,* and 3 others are a geopolitical subdivision of Republic of the Congo.

*Brazzaville, Cuvette, Plateaux, Sangha, and Lekoumou* are a geographical subregion of Republic of the Congo.

- = *Central African Republic*
- = *and Democratic Republic of the Congo*
- border on Republic of the Congo.
- Republic of the Congo borders on *Cameroon*.
- *Gabon* and *Angola* border on Republic of the Congo.

Republic of the Congo is an *African country*, a *people's republic*, and a *republic*.

- Republic of the Congo is east of *Gabon*
- *Democratic Republic of the Congo* is east of Republic of the Congo.

# Knowledge for People

#### [Poland Train Ticket](#)

Get instant online tickets and reservations from RailEurope.com  
[www.RailEurope.com](http://www.RailEurope.com)

#### [Fly Cheap to Poland](#)

70% off Poland Air Fare Compare  
Poland Flights - Save  
[Poland.Flights.Asia.com](http://Poland.Flights.Asia.com)

#### [Warsaw Hotels, Poland](#)

Discounts in February! Apartments in City Center and Old Town.  
[www.hotelinwarsaw.com](http://www.hotelinwarsaw.com)



Ads by Google



## Warsaw, Poland

### Documentation:

Comment: The #ScapitalCity and one of the majorCities of Poland-AtPresent.

### General:

Warsaw, Poland is a [Polish city](#) and a [capital](#).

Warsaw, Poland's latitude is 52.25 degrees. Warsaw, Poland's longitude is 21 degrees.

Warsaw, Poland is in [Poland](#). Warsaw is the capital of [Poland](#).

### Affiliations:

Warsaw, Poland is in [Poland](#). Warsaw is the capital of [Poland](#).

### Miscellaneous:

Warsaw, Poland is a [city](#). Warsaw, Poland's population is 1,600,000. Warsaw, Poland is where Stanislaw Lesniewski died. Alfred Tarski was born in Warsaw, Poland.

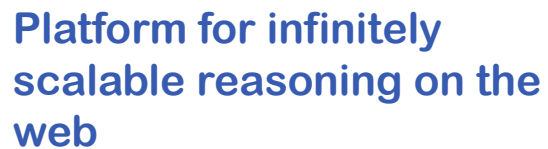
Okecie Airport services Warsaw, Poland.<sup>1</sup> Some subway is located in Warsaw, Poland.

<sup>1</sup> [AvInfo's IATA/ICAO airport and airline codes webpage](#)

[How was this page created?](#)

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The diagram, titled "Reasoning", illustrates a hierarchical structure of knowledge or data. At the top is a "Query" node. Below it are two "Method" nodes. These lead to three "Problem" nodes. Further down, there are more "Method" and "Problem" nodes, some of which are marked with a red "X", indicating a failure or error. The diagram is set against a background of a globe with several upward-pointing arrows, suggesting a process of reasoning or problem-solving.

# Use Case: City on-line



- **Our cities face many challenges**
- **Urban Computing** is the ICT way to



improve the quality of life

Is public trans

Personal:

Will I be late for my 9:45am talk?

Can I stop at my favourite café?

Should I drive, take bus, or metro?

Take an umbrella?

Are we  
right now  
will be

trating?

where is traffic moving?

REAL TIME 12:00

Wo  
Ce  
20

LAST WEEK

San Giovanni Lat  
Colosseo

REAL TIME

REAL TIME 13:55

Time High



# Use case: Drug Discovery

FDA white paper Innovation or Stagnation (March 2004):

"developers have no choice but to use the **tools of the last century** to assess this century's candidate solutions."

## Problem development

"industry scientists of entire product area, used in **areas other**

*"Show me any potential for compound's drug class, to*

$Q_1$

$Q_1$

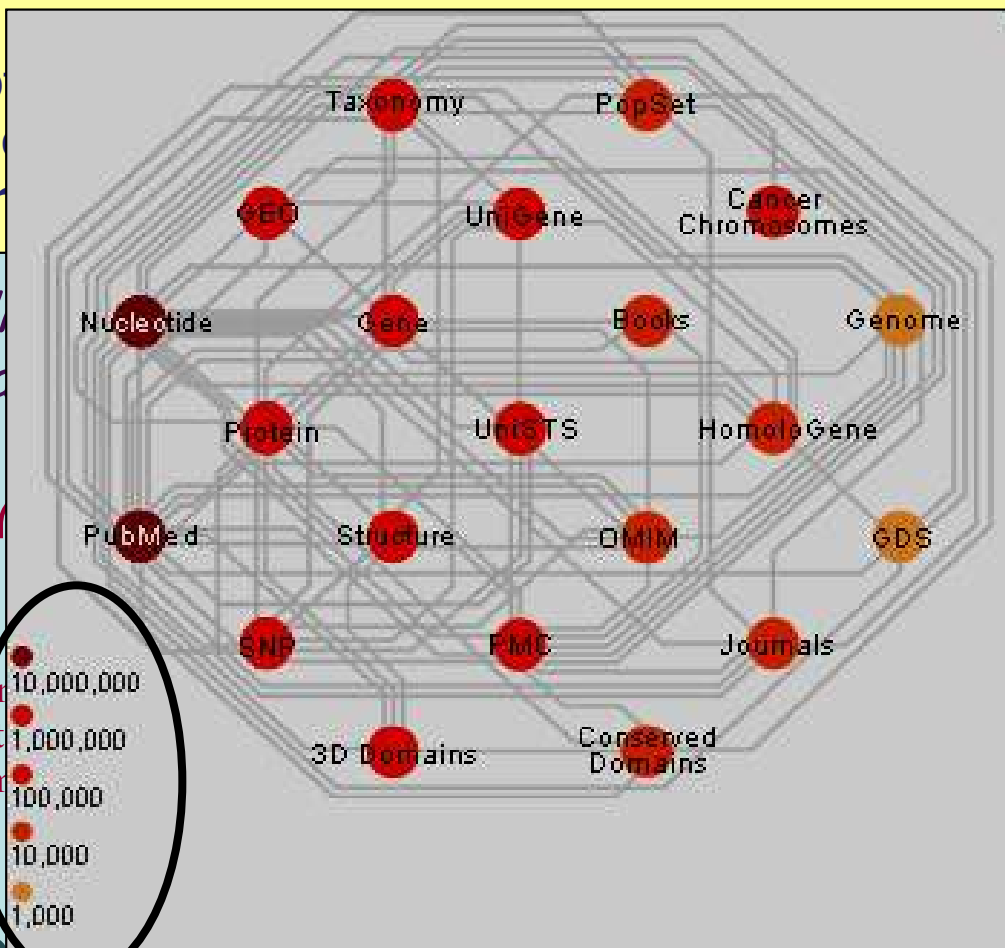
Show me all liver toxicity associated with the target or the pathway.

Genetics

$Q_2$

"Show me all liver toxicity associated with the target or the pathway."

Chemistry



Current: linking but no inference

**Cyc Analytical Environment: CAE knowledge entry**

File Edit Tools Window Help

Task Info Document Search Concepts Related-to Query Creator **Queries**

Find Stop

\* **ARG1 acts on some part of thoracic aorta,**  
 \* **ARG1 is an endovascular procedure that is a stent placement,**  
 \* **ARG1 happened in Cleveland Clinic main campus,**  
 \* **and ARG1 happens sometime between June 2002 and May 2004.**

Ask  
Save  
New Tab  
Stop

Context: Anytime PSC Edit...

Results: All Time limit: 90 Allow speculation? More...

Answers

Answer

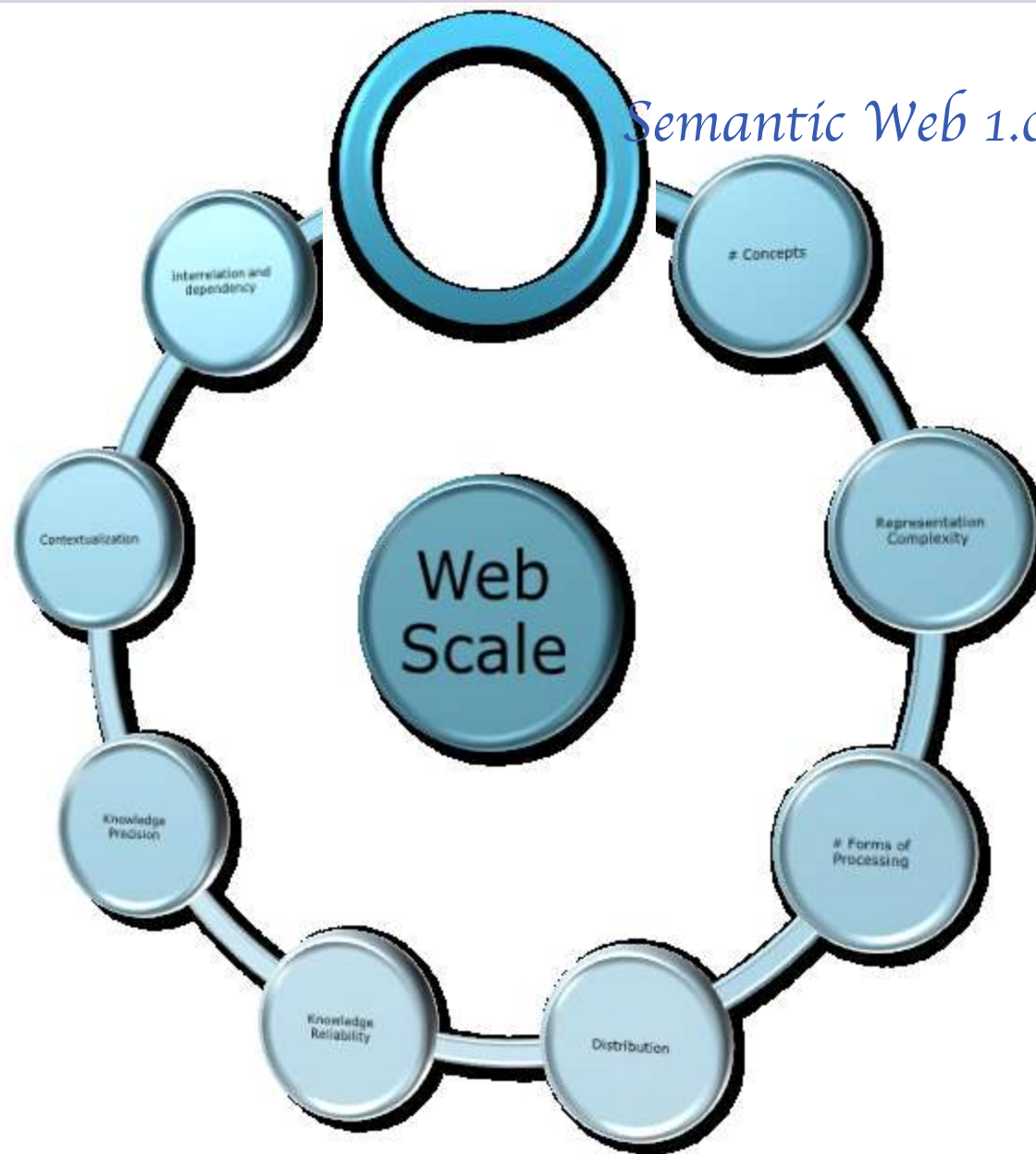
?ARG2.  
 (#\$eventOccu  
 ?DISEASE-Ty  
 instance of ?C  
 ?TELEPHONI  
 of ?CCF-TELE  
 ?EVENT is an  
 ?CCF-PREOP  
 ?CCF-EVENT  
 ?CCF-EVENT  
 ?ARG2 is the  
 to create the l  
 ?AFIB-SURGE  
 ?ENDOVASC  
 performed be  
 ?ARG2.  
 ?DATE ends :  
 ?THING-THAT  
 ?ENDOVASC  
 endovascular  
 the patient's  
 ▼ Temporal Relatio  
 The latest inte  
 ARG1 ARG2)  
 TIME.  
 The earliest in  
 (RELATION A  
 true is TIME.  
 EVENT occurs  
 and LATER-D

Status: Idle Message:

“Who had an endovascular stent placement on their thoracic aorta at CCF’s main campus between June, 2002, and May, 2004?”



## *Semantic Web 1.0*



# Elements of Scale

EVENT  $\supset$  TEMPORAL-THING  $\supset$  PARTIALLY-TANGIBLE-THING

Upper  
Ontology

$(\forall a, b) a \in \text{EVENT} \wedge b \in \text{EVENT} \Rightarrow$   
 $\text{causes}(a, b) \Rightarrow \text{precedes}(a, b)$

Core  
Theories

Domain-Specific  
Theories

$(\forall m, a) m \in \text{MAMMAL} \wedge a \in \text{ANTHRAX} \Rightarrow$   
 $\text{causes}(\text{exposed-to}(m, a), \text{infected-by}(m, a))$  □

Very specific information  
(some indirect, via SKSI)

(ist FtLaudHolyCrossERCASE#403921  
(caused CutaneousAnthrax  
(SkinLesions Ahmed\_al-Haznawit)))

First Order Predicate Calculus: unambiguous; enable mechanical reasoning

Every American has a president.  
Every American has a mother.

Higher Order Logic: contexts,  
predicates as variables,  
nested modals, reflection,...

$\exists y. \forall x. \text{Amer}(x) \Rightarrow \text{president}(x, y)$   
 $\forall x. \exists y. \text{Amer}(x) \Rightarrow \text{mother}(x, y)$

Formal Representation for Reasoning



## First Order

- (isa ASBFinancialCorp PubliclyHeldCorporation)
- (corporateOfficers ASBFinancialCorp GeraldRJenkins)

## With Context

- In MT: FinancialTransactionMT  
(relationAllExists performedBy RepurchaseProgram PubliclyHeldCorporation)

## Rule

- In MT: FinancialTransactionMT  
(forAll ?X (implies  
    (isa ?X RepurchaseProgram)  
    (thereExists ?Y (and (isa ?Y PublicallyHeldCorporation) (performedBy ?X ?Y)))))

## Second Order

- (implies  
    (and (isa ?SET Set-Mathematical) (cardinality ?SET 1) (elementOf ?THING ?SET))  
    (equals ?SET (TheSet ?THING)))

## Modal

- (beliefs israel (relationInstanceExists possesses Syria ClusterBomb))

## Meta

- (opaqueArgument believes z)

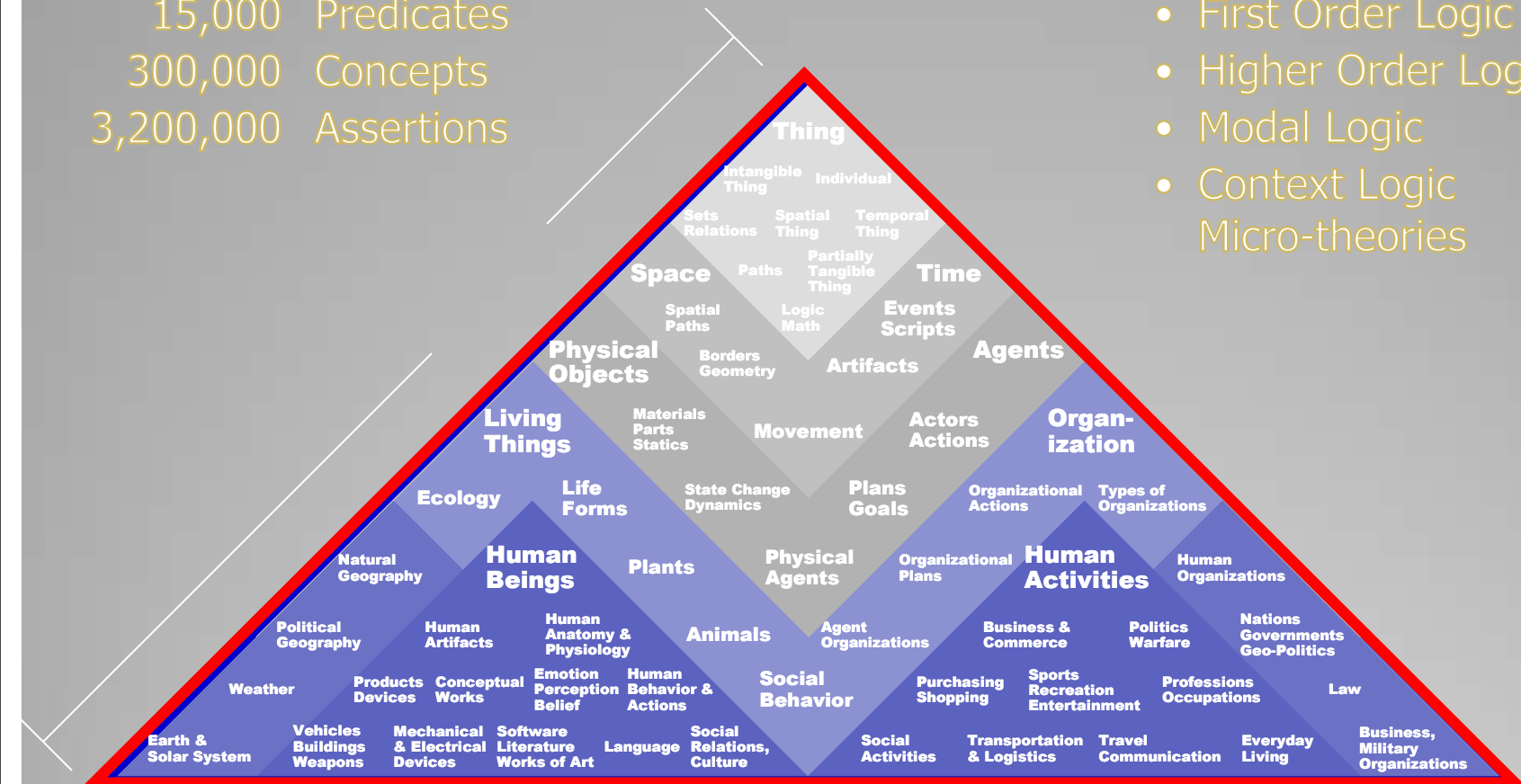
Syntactic Power

### Cyc contains:

15,000 Predicates  
300,000 Concepts  
3,200,000 Assertions

### Represented in:

- First Order Logic
- Higher Order Logic
- Modal Logic
- Context Logic
- Micro-theories



**General Knowledge about Various Domains**

**Specific data, facts, and observations**

- isa 596215
- genls 99198
- disjointWith 6114
- resultIsa 4277
- resultGenl 1206
- argIsa 35617
- argGenl 5398
- arg1Isa 16748
- arg1Genl 2354
- arg2Isa 14114
- arg2Genl 2283
- arg3Isa 3486
- argFormat 5493
- arg2Format 3320
- functionalInArgs 1427
- arity 16416
- arityMin 958
- comment 57305
- genlPreds 7440
- negationInverse 990
- genlMt 26078
- denotationInEnglish 409745
- synonymousExternalConcept 13916

## Open Cyc Predicate Populations

- OpenCyc ([www.opencyc.org](http://www.opencyc.org))
  - The Cyc Ontology made 100% freely available (yes, 100% free even for commercial purposes)
  - Available for download on SourceForge and on opencyc.org
  - Over 30,000 accesses
- ResearchCyc ([researchcyc.cyc.com](http://researchcyc.cyc.com))
  - OpenCyc + millions of hand-engineered assertions
  - Free for R&D purposes
  - Current users: 300 research groups (about 1/2 academic)

Open and Research

# Assertion Count

rapidly growing list  
already many

every book sold by Amazon

any CD ever recorded (almost)

basic facts on every country on the planet

common 5 hierarchical dictionaries  
(UK, FR, NL)

scientific bibliographies

names of artists & art works  
(10.000's)

Geographic names (millions)

Encyclopedia

# Representational and Conceptual Complexity

For my own Part, I swam as Fortune directed me, and was pushed forward by Wind and Tide. I often let my Legs drop, and could feel no Bottom: but when I was almost gone, and able to struggle no longer, I found myself within my Depth; and by this Time the Storm was much abated. The Declivity was so small, that I walked near a Mile before I got to the Shore, which I conjectur'd was about eight a-clock in the Evening. I then advanced forward near half a Mile, but could not discover any sign of Houses or Inhabitants; at least I was in so weak a Condition, that I did not observe them. I was extremely tired, and with that, and the Heat of the Weather, and about half a Pint of Brandy that I drank as I left the Ship, I found myself much inclined to sleep. I lay down on the Grass, which was very short and soft, where I slept sounder than ever I remember to have done in my Life, and, as I reckoned, above Nine Hours; for when I awakened, it was just Day-light.

<http://www.jaffebros.com/lee/gulliver/bk1/chap1-1.html>

I swam, pushed forward by time and current, and when I was almost put to an end, I saw land, and discovered myself in water that was not deep. At about eight o'clock in the nightfall, I got to the edge of the sea and walked for nearly half a mile without seeing any houses. Too tired to go farther, I got down on my back in the grass, which was very short and soft. There I slept soundly till morning.

Put into Basic English by the Basic English Institute  
<http://ogden.basic-english.org/lilliput.html>

850 words: 600 nouns, 150 adjectives,  
100 syntactic operators

## Gulliver's Travels in Basic English

**Travels into Several Remote Nations of the World, in Four Parts. By Lemuel Gulliver, First a Surgeon, and then a Captain of several Ships,** Jonathan Swift, London, Benj. Motte, 1726

**Basic English: A General Introduction with Rules and Grammar.**

Ogden, Charles Kay. Small format, hardcover.  
Publisher: Paul Treber & Co., Ltd. London, 1930.



Is it attached to the  
inside of the outer object?

– Yes -- Try

**#\$connectedToInside**



Can it be removed by pulling, if  
enough force is used, without  
damaging either object?

– No -- Try **#\$in-Snugly**  
or **#\$screwedIn**

Does the inner object  
stick into the outer object?

–Yes – Try

**#\$sticksInto**



Senses of 'In'

- Does part of the inner object stick out of the container?

- None of it.

**#\$in-ContCompletely**

- Yes

**#\$in-ContPartially**

- No

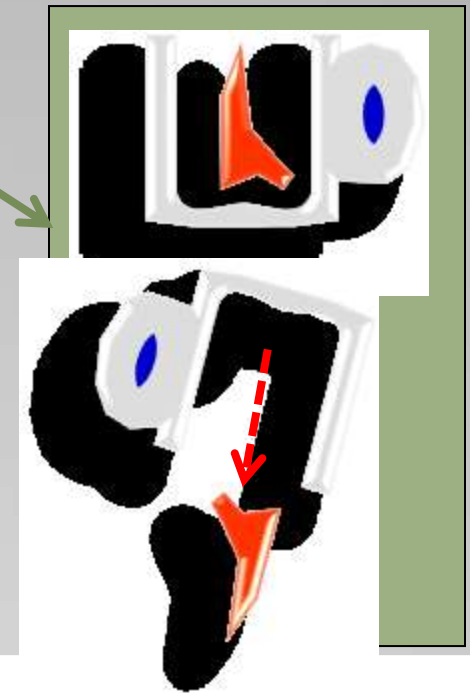
- **#\$in-ContClosed**



- If the container were turned around could the contained object fall out?

Yes

**#\$in-ContOpen**



For Inference:

Senses of 'In'



- Does part of the inner object stick out of the container?

- None of it.  
**#\$in-ContCompletely**

- Yes  
**#\$in-ContPartially**

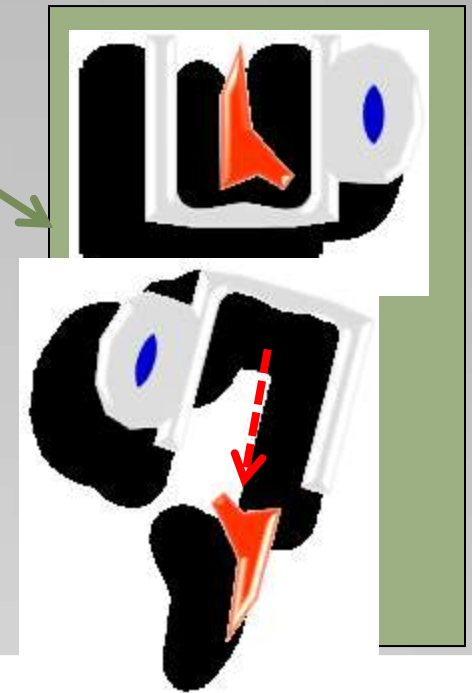
- No  
**#\$in-ContClosed**



- If the container were turned around could the contained object fall out?

Yes

**#\$in-ContOpen**



**For Inference: Senses of 'In'**

Is it attached to the  
inside of the outer object?

– Yes -- Try

**#\$connectedToInside**



Can it be removed by pulling, if  
enough force is used, without  
damaging either object?

– No -- Try **#\$in-Snugly**  
or **#\$screwedIn**

Does the inner object  
stick into the outer object?

–Yes – Try

**#\$sticksInto**



Senses of 'In'

- **#\$TransportationEvent**
- **#\$ControllingATransportationDevice**
- **#\$TransportWithMotorizedLandVehicle**
- **(#\$SteeringFn #\$RoadVehicle)**
- **#\$TransporterCrashEvent**
- **#\$VehicleAccident**
- **#\$CarAccident**
- **#\$Colliding**
- **#\$IncurringDamage**
- **#\$TippingOver**
- **#\$Navigating**
- **#\$EnteringAVehicle ...**



## **Some Transportation Event Types**

- **#\$performedBy**
- **#\$causes-EventEvent**
- **#\$objectPlaced**
- **#\$objectOfStateChange**
- **#\$outputsCreated**
- **#\$inputsDestroyed**
- **#\$assistingAgent**
- **#\$beneficiary**

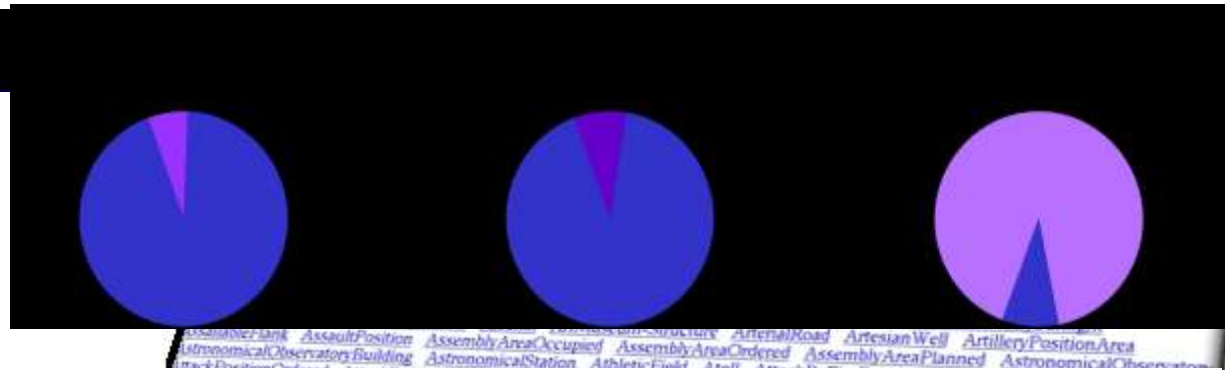
- **#\$fromLocation**
- **#\$toLocation**
- **#\$deviceUsed**
- **#\$driverActor**
- **#\$damages**
- **#\$vehicle**
- **#\$providerOfMotiveForce**
- **#\$transportees ...**

Over 400 more.

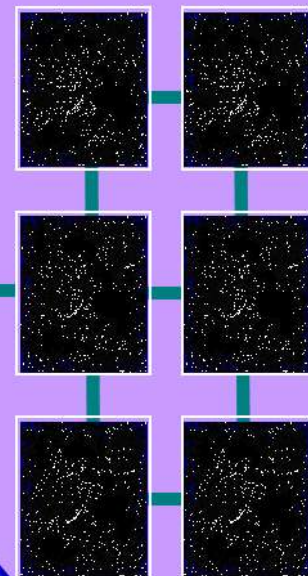
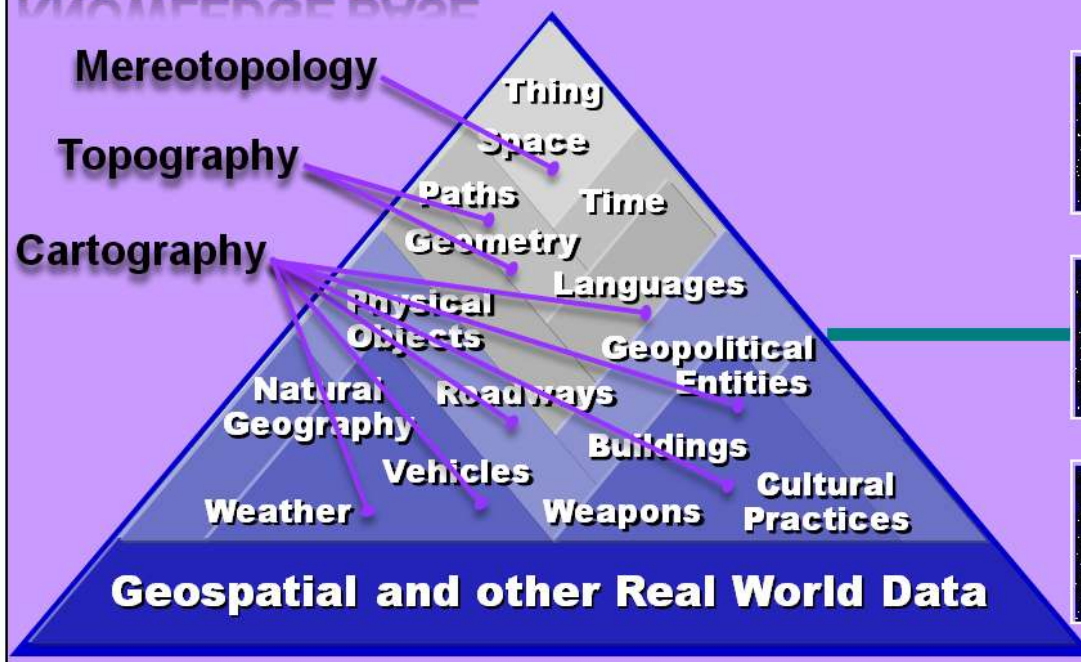


## Relating Events and Participants





# Reasoning Modules



**Mt - FACC-FeatureType-Mapping**

(codeMapping FACC-FeatureType-CMLS	"EA020" Hedge)
(codeMapping FACC-FeatureType-CMLS	"AK101" DrivingRun
(codeMapping FACC-FeatureType-CMLS	"AM011" Storage
(codeMapping FACC-FeatureType-CMLS	"BH070" FordInStree
(codeMapping FACC-FeatureType-CMLS	"BH180" Waterfall
(codeMapping FACC-FeatureType-CMLS	"CA020" RidgeLane
(codeMapping FACC-FeatureType-CMLS	"GB015" Apron-Ap
(codeMapping FACC-FeatureType-CMLS	"AK060" Campgro
(codeMapping FACC-FeatureType-CMLS	"AT030" PowerLin
(codeMapping FACC-FeatureType-CMLS	"GB065" Seaplane
(codeMapping FACC-FeatureType-CMLS	"GB005" Airport-P
(codeMapping FACC-FeatureType-CMLS	"AN050" Railway-
(codeMapping FACC-FeatureType-CMLS	"EA050" Vineyard
(codeMapping FACC-FeatureType-CMLS	"GB010" Cultural

(implies  
(and  
  (tangentialProperPartOfSpaceRegion  
  (nontangentialProperPartOfSpaceRegion  
(nontangentialProperPartOfSpaceRegion  
(implies  
(and  
  (tangentialProperPartOfSpaceRegion  
  (identicalSpaceRegions ?REGION1 ?REGION2)  
(tangentialProperPartOfSpaceRegion

46

## CorporateBond-InvestmentGrade



isa: BondTypeByIssuingAgentType

genls: CorporateBond-Agreement

Context: Union of all contexts

Predicate: genls

Index:

Parameters:

... Agreement

... Authority

... Economic

... Financial

... Investment

... Obligation

... Temporal

... Tradeable

... Un

... (MeaningInSystemFn SENSUS-Information1997 "DECOMPOSABLE-OBJECT")

... DebtSecurity [SENSUSMappingMt] ... \*see above\*

-> Thing

... (MeaningInSystemFn SENSUS-Information1997 "DECOMPOSABLE-OBJECT")

... CorporateBond-Agreement [SENSUSMappingMt]

... Bond-Agreement

... CorporateBond-Agreement [UniversalVocabularyMt]

## CorporateBond-InvestmentGrade

[UniversalVocabularyMt -> (Bond-Agreement, CorporateBond-Agreement)]

## SelfInvestedPersonalPension



isa: AccountType

genls: MoneyPurchasePensionScheme, TrustPensionScheme

... TemporalThing

... BusinessRelatedDocumentOrAgreement [UniversalVocabularyMt] ... \*see above\*

... Account

... PersonalAccount [UniversalVocabularyMt]

... RetirementAccount [UniversalVocabularyMt]

... MoneyPurchasePensionScheme [UniversalVocabularyMt]

... FinancialAccount

... RetirementAccount [UniversalVocabularyMt] ... \*see above\*

## SelfInvestedPersonalPension

[TheMotleyFoolUKCorpusMt -> (MoneyPurchasePensionScheme, SelfInvestedPersonalPension)]

Existing Cyc content is large, but knowledgeable systems must give proactive, constant, accurate support to all: Needs very broad coverage and high accuracy.

# Existing Vocab.



Web 3.0 Systems start from Web 2.0-  
style learning.

Acquire ground facts, test rule  
inferences.

Another CURE example.



Content Understanding, Review or Entry

## Hamas Leader's Son Among 19 Killed in Israeli-Palestinian Conflicts

Tuesday, January 15, 2008

Associated Press

 [E-Mail](#) |  [Print](#) |  [Digg This!](#) |  [del.icio.us](#)

**GAZA CITY, Gaza Strip — Israeli troops killed a son of Gaza's most powerful leader along with 18 other Palestinians on Tuesday in the bloodiest day of fighting in the coastal area since Hamas militants seized control last summer.**

As fighting raged in Gaza, a Hamas sniper shot and killed an Ecuadorean volunteer working in the potato fields of an Israeli border farm. That killing, and Tuesday's high death toll, stoked the flames of violence at a time when Israel and Palestinian moderates are making halting attempts to talk peace.

• [Click here to view photos.](#)

Tuesday's bloodshed began before dawn when Israeli infantry, tanks and helicopters pushed into northern Gaza in what the military said was a routine operation aimed at Palestinian militants who launch rocket barrages at Israeli towns near Gaza almost every day.

Three Palestinian civilians were killed in the ensuing fighting, along with 18 armed militants — one of them Hussam Zahar, 24, the son of hard-line Hamas leader Mahmoud Zahar. The Israelis pulled out Tuesday with no casualties. A later airstrike on militants firing rockets into Israel killed two more Hamas men.

## Hamas Leader's Son Among 19 Killed in Israeli-Palestinian Conflicts

Tuesday, January 15, 2008

Associated Press

 [E-Mail](#) |  [Print](#) |  [Digg This!](#) |  [del.icio.us](#)

**GAZA CITY, Gaza Strip** — Israeli troops killed a son of Gaza's most powerful leader along with 18 other Palestinians on Tuesday in the bloodiest day of fighting in the coastal area since Hamas militants seized control last summer.

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**Mahmoud Zahar** ✕

Known

Teach

Followups

☒ person

☐ Hamas leader

**Additional Names**

cuadorean volunteer working in the  
y's high death toll, stoked the flames of  
making halting attempts to talk peace.

, tanks and helicopters pushed into  
aimed at Palestinian militants who  
y day.

ong with 14 armed militants — one of  
ahmoud Zahar. The Israelis pulled out  
ockets into Israel killed two more

Hospital in Gaza City, a weeping  
Mahmoud Zahar held his lifeless son's bloodied head in his

## Hamas Leader's Son Among 19 Killed in Israeli-Palestinian Conflicts

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[Mortgage Rates at 4](#)

### Mahmoud Zahar

**Known**

**Teach**

**Followups**

☒ person

☒ Hamas leader

#### Additional Names

cuadorean volunteer working in the  
y's high death toll, stoked the flames of  
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ong with 14 armed militants — one of  
Mahmoud Zahar. The Israelis pulled out  
ockets into Israel killed two more

hospital in Gaza City, a weeping

Mahmoud Zahar held his lifeless son's bloodied head in his

## Hamas Leader's Son Among 19 Killed in

Is  
Individual : MahmoudZahar

Tu

Ass Bookkeeping Assertions :

- ❖ (myCreator MahmoudZahar CycAdministrator) in BookkeepingMt
- ❖ (myCreationTime MahmoudZahar 20080118) in BookkeepingMt
- ❖ (myCreationSecond MahmoudZahar 165058) in BookkeepingMt

GA

wi  
si  
GAF Arg : 1

As Mt : UniversalVocabularyMt

po isa : ● Individual

vic

• C Mt : (ContextOfPCWInterpretationFn CWSentence--7 CycAdministrator (DayFn 18  
(MonthFn January (YearFn 2008))))

Tu isa : ● (SubcollectionOfWithRelationToFn Person hasLeaders Organization-Hamas)

no

lau Mt : UniversalVocabularyMt

Th ● (inProgressTerm MahmoudZahar)

them Hussam Zahar, 24, the son of hard-line Hamas leader Mahmoud Zahar. The Israelis pulled out Tuesday with no casualties. A later airstrike on militants firing rockets into Israel killed two more Hamas men.



# Leaders of organizations that operate in Gaza and have killed Israelis

## Search Results

Leaders of organizations that operate in Gaza and have killed Israelis

### Simple Fragments

\_\_\_\_\_ happened in the Gaza Strip.  
 \_\_\_\_\_ happened in Gaza City, the West Bank and Gaza.

\_\_\_\_\_ is an Israeli.  
 \_\_\_\_\_ is an organization.  
 \_\_\_\_\_ holds the position of \_\_\_\_\_ in the Gaza Strip.  
 \_\_\_\_\_ holds the position of \_\_\_\_\_ in Gaza City, the West Bank and Gaza.

\_\_\_\_\_ is a leader of \_\_\_\_\_.  
 \_\_\_\_\_ was killed during \_\_\_\_\_.

### General Fragments

\_\_\_\_\_ happened in \_\_\_\_\_.  
 \_\_\_\_\_ operates in \_\_\_\_\_.

\_\_\_\_\_ is true  
 \_\_\_\_\_ happens in the Gaza Strip.  
 \_\_\_\_\_ is a leader of *CULPRIT*.  
 \_\_\_\_\_ happened during *PHYSICAL-DESTRUCTION-EVENT*.  
 \_\_\_\_\_ is a perpetrator in *PHYSICAL-DESTRUCTION-EVENT*.  
 \_\_\_\_\_ is an organization.

Continue

Save

New Tab

Reset

64 answers  
Timed out

Culprit	Sources
HAMAS	 9  3  4 (12 more)
HAMAS	 9  3  4 (13 more)
HAMAS	  10  3 (17 more)
HAMAS	 2  9  3 (15 more)
HAMAS	 9  3  4 (13 more)

Fact Sheet

Visualize

Visualize All

Export

Export UC

Using Acquired Knowledge

Task Info

Document Search

Concepts

Network Analysis

Queries

Israelis

killed

Gaza

organization

Leaders

Search Results

Leaders of Gaza and

Simple

Status: Idle

M

Query: What values of  $X$  and  $CULPRIT$  are there such that

- some Asian was killed during some physical destruction event,
- $CULPRIT$  operates in [the Gaza Strip](#),
- $CULPRIT$  was a perpetrator in that physical destruction event,
- and  $X$  is a leader of  $CULPRIT$ ?

Answer:

$CULPRIT$ : [HAMAS](#)

$X$ : [Mahmoud Zahar](#)

Because:

[HAMAS's](#) headquarters is in [the Gaza Strip](#). <sup>1</sup>

[Mahmoud Zahar](#) was a leader of [HAMAS](#) on January 15, 2008. <sup>2</sup>

[HAMAS](#) was a perpetrator in [the Jerusalem, Israel terrorist attack on August 19, 2003](#). <sup>3</sup>, <sup>4</sup>

[Avraham Bar-Or](#) was killed during [the Jerusalem, Israel terrorist attack on August 19, 2003](#). <sup>5</sup>

[Avraham Bar-Or](#) was an [Israeli](#). <sup>5</sup>

Detailed Justification:

External Sources:

<sup>1</sup> [SAIC Legacy Assertions, Science Applications International Corporation](#).

<sup>2</sup> [Hamas Leader's Son Among 19 Killed in Israeli-Palestinian Conflicts](#).

<sup>3</sup> "Patterns of Global Terrorism 2003", *United States Department of State*, April 2004, <http://www.state.gov/>.

<sup>4</sup> [Encyclopedia of the Orient, LexicOrient.com, http://www.i-cias.com/e.o/hamas.htm](#).

<sup>5</sup> [TKB Fact Entry Source Sit Report Fatal Terrorist Attacks in Israel since the Declaration of Principles](#)

Continue

Save

New Tab

Reset

64 answers

Timed out

2 more)

3 more)

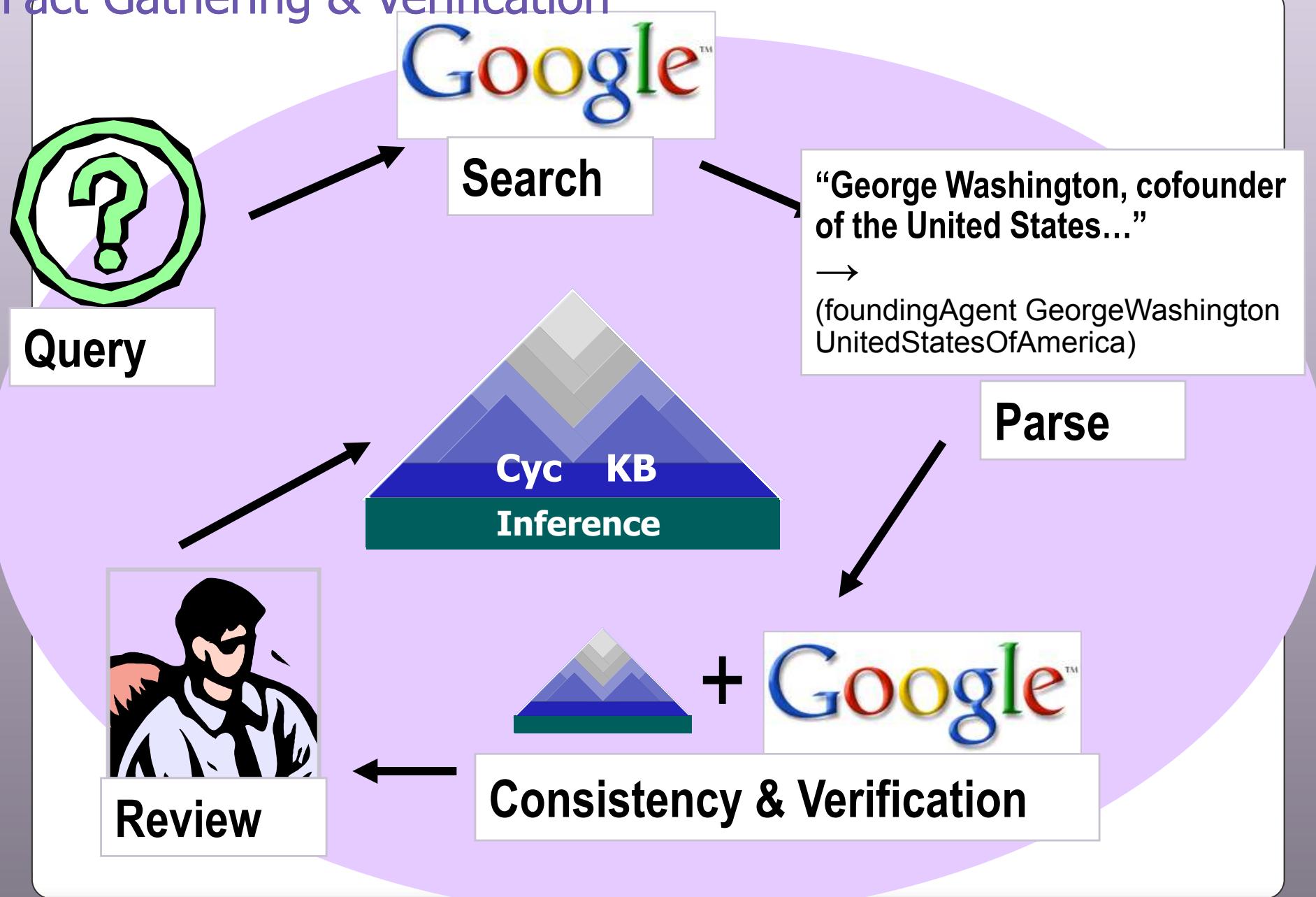
7 more)

15 more)

3 more)

port UC

# Fact Gathering & Verification



## Query

“What are symptoms of Whooping Cough?”



(symptomOfAilment WhoopingCough ?SYMP )

NL Generation

## Partial English sentences

“A symptom of whooping cough is \_\_\_\_”

“Whooping cough can cause \_\_\_\_”

“A symptom of Pertussis Bordetella is \_\_\_\_”

“Symptoms (such as \_\_\_\_\_) of whooping cough”

## Learning Facts by Search





Looking for something that matches the argument constraints on the predicate...

"... symptoms of pertussis such as fever and a dry cough ..."

Parse back into existing CyclL concepts

(symptomOfAilment WhoopingCough Fever)

(symptomOfAilment WhoopingCough Coughing-AilmentCondition)

## Parsing Results





- Explicitly: perform one step of inference to throw out facts inconsistent with KB
- Implicitly: don't even look at things that don't match argument constraints

Throw out  
**provably wrong**  
answers



Skip already  
known  
(**provably right**)  
knowledge



# KB Consistency Check



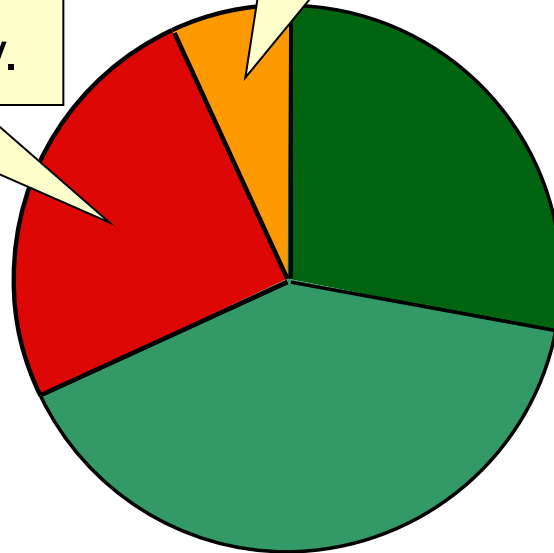


## On Review of 114 results

- 61 “verified”
- 53 “rejected”

Data Cyc could have got but didn't—not so bad.

Incorrect data Cyc now believes. That is bad. NL is noisy.



- True & Verified
- False & Rejected:
- False, but Verified
- True, but Rejected

# Initial Results



# Train

```

+-----Xp-----+
+-----Wd-----+
+-----A-----+
+-----G-----G-----Ss-----Os-----Mp-----+
+-----Jp-----+-----Mp-----+
+-----Dmcn-----+-----N Sa+-----Js-----+
LEFT   Royal.a Dutch Shell Plc halted.v output.n of 455,000 barrels.n a day.p in Nigeria .

```

```

($and ($isa ($TheFn $DecreaseEvent)
  ($DecreaseInValueReturnedByFn ($ExportRateOfByFn $Petroleum-CrudeOil) $Nigeria))
  ($doneBy ($TheFn $DecreaseEvent) $RoyalDutchShell)
  ($quantityChangeAmount ($TheFn $DecreaseEvent) ($BarrelsPerDay 455000)))

```

# template

```

+-----Xp-----+
+-----Wd-----+
+-----A-----+
+-----G-----G-----Ss-----Os-----Mp-----+
+-----Jp-----+-----Mp-----+
+-----Dmcn-----+-----N Sa+-----Js-----+
LEFT   [Agent] halted.v output.n of [Quantity] in [Locn] .

```

```

($and ($isa ($TheFn $DecreaseEvent)
  ($DecreaseInValueReturnedByFn ($ExportRateOfByFn $Petroleum-CrudeOil) [Locn]))
  ($doneBy ($TheFn $DecreaseEvent) [Agent])
  ($quantityChangeAmount ($TheFn $DecreaseEvent) [Quantity]))

```

# Use

Petróleos de Venezuela S.A. halted output of 760 000 barrels a week in Maracaibo.

```

($and ($isa ($TheFn $DecreaseEvent)
  ($DecreaseInValueReturnedByFn ($ExportRateOfByFn $Petroleum-CrudeOil)
    $CityOfMaracaiboVenezuela))
  ($doneBy ($TheFn $DecreaseEvent) $PetroleosdeVenezuelaSA
  ($quantityChangeAmount ($TheFn $DecreaseEvent) ($BarrelsPerWeek 760000)))

```

... Klingberg contacted the USSR for the first time in 1957, and soon after that he started his espionage activity. Israel's foreign and domestic intelligence agencies, Mossad and Shin Bet, started suspecting Klingberg of espionage, but shadowing brought no results. At one point, the scientist also successfully passed the polygraph test...

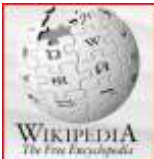
# Unknown word "polygraph"

Device-Physical

genls

Polygraph

Page  
Download



Wikipedia



A polygraph commonly yet incorrectly referred to as a lie detector, is a device that measures and records several physiological variables such as blood pressure, heart rate, breathing rate and skin conductivity while the subject is asked a series of questions.

Sentence  
Extractor

EBMT Parser

a polygraph is a device.

(# \$genls  
# \$Polygraph  
# \$Device-Physical)

Semantic  
Checker

Success



No page found

Uninformative  
sentence

Unable to parse

Hypothesis not  
logically consistent

# The FACTory

FACTory is an amusing (we hope!) little trivia game that tests your knowledge about everything from sports teams to comedic actors, from geography to emotions. Not only that, but every question you answer brings the world a little closer to a truly intelligent computer.

**Play!**

We're very pleased to be able to bring you this game, and look forward to your comments and suggestions for this and other efforts in the future.

Or You Could

Make a Suggestion

Help Develop

Thanks, with love,  
Total Score

You 

Click Here

How To Play

High Scores



Status  
I have 2 answers so far.

I am thinking of a sentence ...

True False Don't know

Graphic design is a field in art.

Doesn't make sense

Status  
I believe this is true.



Submitting ...

Thank you!

Continue ...

Answers: 3  
You agreed with: 100%



I now believe this sentence is **true**:  
Graphic design is a field in art.

Score: +2  
Bonus: +10

Score: 2  
Questions Answered: 2

Cyc's Champion

- |     |     |      |
|-----|-----|------|
| 1.  | TEV | 502  |
| 2.  | EDO | 498  |
| 3.  | KES | 377  |
| 4.  | AMK | 354  |
| 5.  | SCM | 7098 |
| 6.  | SMC | 6524 |
| 7.  | MSM | 5784 |
| 8.  | MJW | 5084 |
| 9.  | RYU | 4809 |
| 10. | PIG | 4579 |

Score: 14

Questions Answered: 2



Close

## Verification by Volunteers



game.cyc.com



