

The Potential for Libraries of Embedded Semantic Markup and Schema.org

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Outline

1. What's this all about?
2. Relevant Technologies
3. Application to Libraries

Traffic Sources



■ **60.15% Search Traffic**

■ **28.20% Referral Traffic**

■ **11.39% Direct Traffic**

■ **0.26% Campaigns**

Rich Snippets

[Vegan Golden Vanilla Cupcakes](#)

www.food.com/.../vegan-golden-vanilla-cupcakes-3023...



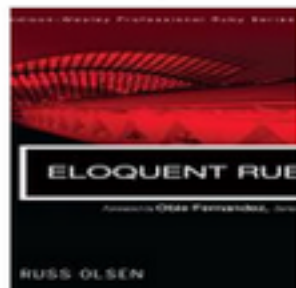
★★★★★ 23 reviews - 35 mins - 148.1 cal

This cupcake recipe is from the book **Vegan Cupcakes Take Over The World**. You can make this recipe using soy margarine or canola oil. IF USING OIL ...

Ingredients: apple cider, flour, cornstarch, baking powder, baking soda, canola ...

Book Rich Snippet

[Eloquent Ruby by Russ Olsen](#)



<http://catalog.lib.ncsu.edu/record/NCSU2407735>

2011 - Available at NCSU Libraries

30+ succinct, actionable pieces of advice for anyone who wants to build great Ruby software - each supported with practical examples

Digital Collections Rich Snippet

Alan Alda

<http://d.lib.ncsu.edu/collections/catalog/0227517>



1970s - 8 comments

The photo shows **Alda** at a podium with a sign behind him reading, "North Carolinians United for the **ERA**."

PostalAddress Properties

- `street_address` => `streetAddress`
- `city` => `addressLocality`
- `state` => `addressRegion`

SEO

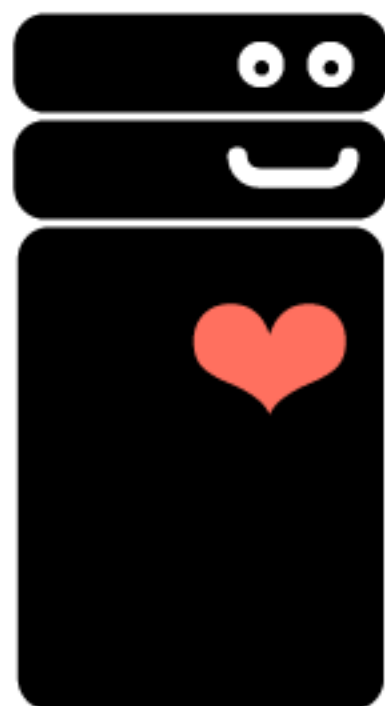
Search Experience Optimization

- Clearer information
- Clickable search results
- Increased click through rate

How Search Engines Work (Simplified)

- Robots crawl the Web
- Process and index the crawl data
- Try to answer search queries with the most relevant results in the index

Robots Are Our Friends



```
User-agent: *  
Allow: /
```

Relevant Technologies

- HTML(5)
- Embedded Semantic Markup
- Web-scale Vocabulary

HTML

1. First item
2. Second item
3. Third item

HTML Semantics

```
<ol>  
  <li>First item</li>  
  <li>Second item</li>  
  <li>Third item</li>  
</ol>
```

HTML without semantics

```
<div id="nav">
<div class="header">
<div id="main" role="main">
  <div id="article">
    <div class="section">
    <div class="section">
<div id="sidebar">
<div id="footer">
```

HTML5 Semantics

```
<nav>
<header>
<main>
  <article>
    <section>
    <section>
<aside>
<footer>
```

Simple Library Markup Example

```
<p>  
  ...  
  <a href="http://lib.ncsu.edu">NCSU Libraries</a>  
  ...  
</p>
```

Simple Library Markup Example (Norwegian)

```
<p>  
  ...  
  <a href="http://lib.ncsu.edu">NCSU Bibliotekene</a>  
  ...  
</p>
```

Embedded Semantic Markup

- Microformats
- RDFa
- Microdata

Simple Library Microdata Example

```
<p>
  ...
  <span itemscope itemtype="Library">
    <a itemprop="url" href="http://lib.ncsu.edu">
      <span itemprop="name">NCSU Libraries</span>
    </a>
  </span>
  ...
</p>
```


Display Before and After

NCSU Libraries

NCSU Libraries

Metadata in the Web

```
<meta name="keywords"  
      content="things, this, slidedeck, is, not, about">
```

Microdata Example Again

```
<p>
  ...
  <span itemscope itemtype="Library">
    <a itemprop="url" href="http://lib.ncsu.edu">
      <span itemprop="name">NCSU Libraries</span>
    </a>
  </span>
  ...
</p>
```

Microdata Example Structure

Library

└ url: <http://lib.ncsu.edu>
└ name: NCSU Libraries

Library with an Address

NCSU Libraries at 2 Broughton Dr., Raleigh, NC

Library with an Address in Microdata

```
<span itemscope itemtype="Library">
  <a itemprop="url" href="http://lib.ncsu.edu">
    <span itemprop="name">NCSU Libraries</span>
  </a> at
  <span itemprop="address" itemscope
    itemtype="Address">
    <span itemprop="street_address">
      2 Broughton Dr.
    </span><br>
    <span itemprop="city">Raleigh</span>,
    <span itemprop="state">NC</span>
  </span>
</span>
```

Library with Address is a Tree

Library

├─ url: <http://lib.ncsu.edu>

├─ name: NCSU Libraries

└─ address: Address

├─ street_address: 2 Broughton Dr.

├─ city: Raleigh

└─ state: NC

JSON for Library with Address

```
{
  "items": [
    {
      "type": ["Library"],
      "properties": {
        "url": ["http://lib.ncsu.edu/"],
        "name": ["NCSU Libraries"],
        "address": [
          {
            "type": ["Address"],
            "properties": {
              "street_address": ["2 Broughton Dr."],
              "city": ["Raleigh"],
              "state": ["NC"]
            }
          }
        ]
      }
    }
  ]
}
```


Microdata

Data Model

What's a "Library"?

```
<span itemscope itemtype="Library">  
  <a itemprop="url" href="http://lib.ncsu.edu">  
    <span itemprop="name">NCSU Libraries</span>  
  </a>  
</span>
```

Schema.org

Schema.org's definition

This site provides a collection of schemas, i.e., html tags, that webmasters can use to markup their pages in ways recognized by major search providers.

A Better Working Definition of Schema.org

A shared, Web-scale vocabulary for describing the content of Web pages from the perspective on the world of the major search engines.

Schema.org Partners

- Bing
- Google
- Yahoo!
- Yandex

The Goal

- improve adoption
- simpler set of decisions
- more consistent data

The Search Engine Solution

- Simpler Syntax: Microdata
- Shared Vocabulary: Schema.org

Simpler Syntax

Microdata

Shared Vocabulary

Schema.org

Make It Easy for Web Publishers

- Simpler syntax: Microdata
- Shared vocabulary: Schema.org

World According To Search Engines

407 Types of Things

545 Properties of Things

Breadth of Types

From Airport
to Library
to Volcano



The Type Hierarchy

Here is the entire hierarchy in a single file.

Types that have multiple parents are expanded out only once and have an asterisk

DataType

Boolean

Date

DateTime

Number

Float

Integer

Text

URL

Time

Thing: additionalType, description, image, name, url

CreativeWork: about, accountablePerson, aggregateRating, alternativeHeadline, associatedMedia, audience, audio, author, award, awards, comment, contentLocation, contentRating, contributor, copyrightHolder, copyrightYear, creator, dateCreated, dateModified, datePublished, discussionUrl, editor, encoding, encodings, genre, headline, inLanguage, interactionCount, isFamilyFriendly, keywords, mentions, offers, provider, publisher, publishingPrinciples, review, reviews, sourceOrganization, text, thumbnailUrl, version, video

Article: articleBody, articleSection, wordCount

BlogPosting

NewsArticle: dateline, printColumn, printEdition, printPage, printSection

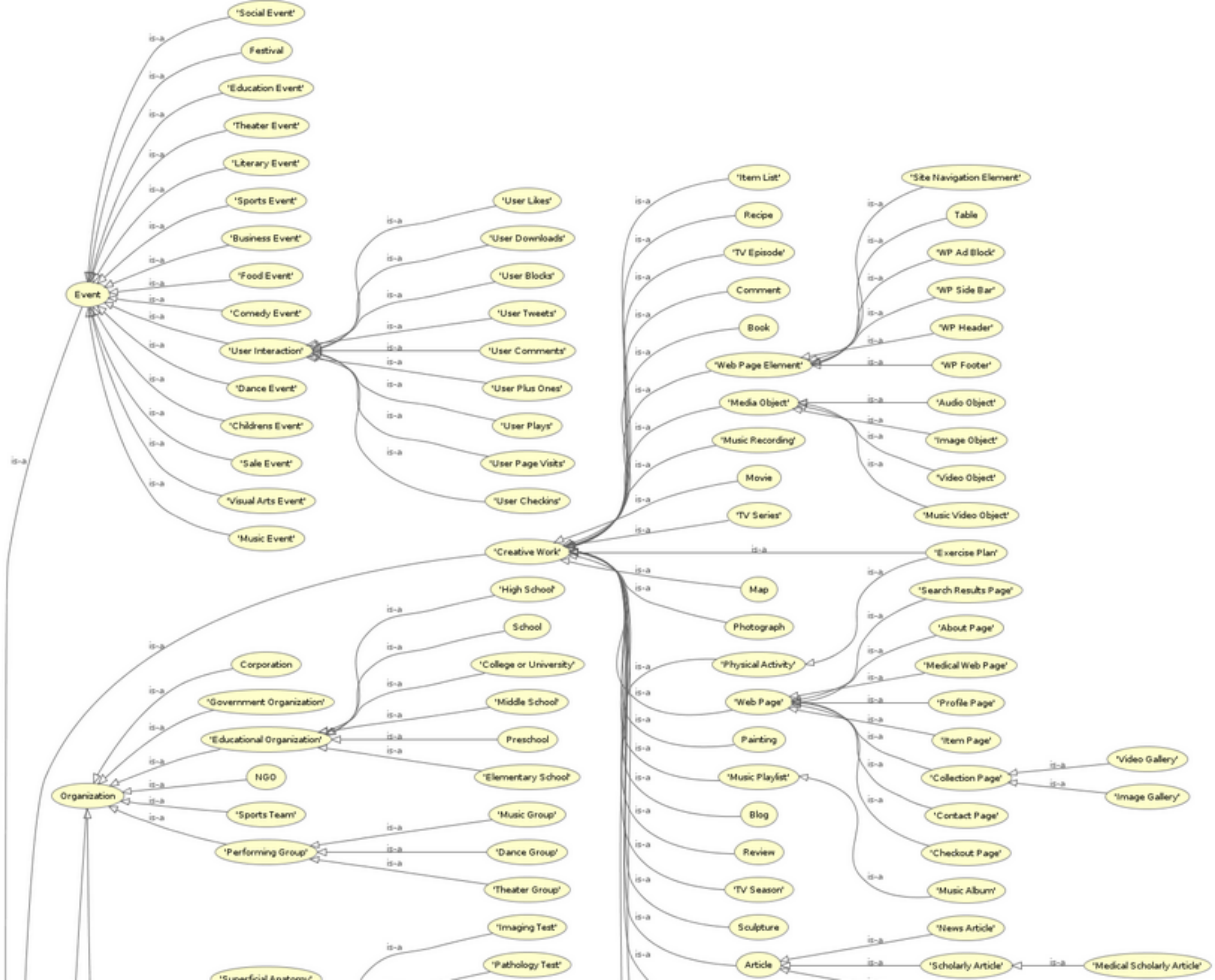
ScholarlyArticle

MedicalScholarlyArticle: citation, publicationType

Blog: blogPost, blogPosts

Book: bookEdition, bookFormat, illustrator, isbn, numberOfPages

Comment



Things It Appears People Search For

- businesses
- products
- medical advice
- stores
- government offices
- creative works
- events
- jobs

The most generic type of item.

Property	Expected Type	Description
Properties from Thing		
<code>additionalType</code>	URL	An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.
<code>description</code>	Text	A short description of the item.
<code>image</code>	URL	URL of an image of the item.
<code>name</code>	Text	The name of the item.
<code>url</code>	URL	URL of the item.

http://schema.org/Library

schema.org

Search[Home](#)[Schemas](#)[Documentation](#)

[Thing](#) > [Organization](#) > [LocalBusiness](#) > [Library](#)

A library.

Property	Expected Type	Description
Properties from Thing		
<code>additionalType</code>	URL	An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.
<code>description</code>	Text	A short description of the item.
<code>image</code>	URL	URL of an image of the item.
<code>name</code>	Text	The name of the item.
<code>url</code>	URL	URL of the item.
Properties from Place		
<code>address</code>	PostalAddress	Physical address of the item.
<code>aggregateRating</code>	AggregateRating	The overall rating, based on a collection of reviews or ratings, of

Simple Example Using Schema.org

```
<span itemscope itemtype="http://schema.org/Library">  
  <a itemprop="url" href="http://lib.ncsu.edu">  
    <span itemprop="name">NCSU Libraries</span>  
  </a>  
</span>
```

Adding an Address

Property	Expected Type	Description
Properties from <u>Thing</u>		
<u>url</u>	URL	URL of the item.
Properties from <u>Place</u>		
<u>address</u>	<u>PostalAddress</u>	Physical address of the item.
<u>aggregateRating</u>	<u>AggregateRating</u>	The overall rating, based on a collection of reviews or ratings, of

Nested Types

**The Onus for
Complexity
Should Be on
Consumers and
Not Publishers of
Data**

http://schema.org/PostalAddress

[Thing](#) > [Intangible](#) > [StructuredValue](#) > [ContactPoint](#) > [PostalAddress](#)

The mailing address.

Property	Expected Type	Description
Properties from Thing		
<code>additionalType</code>	URL	An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.
<code>description</code>	Text	A short description of the item.
<code>image</code>	URL	URL of an image of the item.
<code>name</code>	Text	The name of the item.
<code>url</code>	URL	URL of the item.
Properties from ContactPoint		
<code>contactType</code>	Text	A person or organization can have different contact points, for different purposes. For example, a sales contact point, a PR contact point and so on. This property is used to specify the kind of contact point.
<code>email</code>	Text	Email address.
<code>faxNumber</code>	Text	The fax number.
<code>telephone</code>	Text	The telephone number.
Properties from PostalAddress		
<code>addressCountry</code>	Country	The country. For example, USA. You can also provide the two-letter ISO 3166-1 alpha-2 country code .
<code>addressLocality</code>	Text	The locality. For example, Mountain View.
<code>addressRegion</code>	Text	The region. For example, CA.
<code>postalCode</code>	Text	The postal code. For example, 94043.
<code>postOfficeBoxNumber</code>	Text	The post office box number for PO box addresses.
<code>streetAddress</code>	Text	The street address. For example, 1600 Amphitheatre Pkwy.

http://schema.org/PostalAddress

[Thing](#) > [Intangible](#) > [StructuredValue](#) > [ContactPoint](#) > [PostalAddress](#)

The mailing address.

Property	Expected Type	Description
Properties from Thing		
<code>additionalType</code>	URL	An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.
<code>description</code>	Text	A short description of the item.
<code>image</code>	URL	URL of an image of the item.
<code>name</code>	Text	The name of the item.
<code>url</code>	URL	URL of the item.
Properties from ContactPoint		
<code>contactType</code>	Text	A person or organization can have different contact points, for different purposes. For example, a sales contact point, a PR contact point and so on. This property is used to specify the kind of contact point.
<code>email</code>	Text	Email address.

PostalAddress Microdata Example on Schema.org

```
<div itemprop="address" itemscope itemtype="http://schema.org/PostalAddress">
  <span itemprop="streetAddress">
    20341 Whitworth Institute
    405 N. Whitworth
  </span>
  <span itemprop="addressLocality">Seattle</span>,
  <span itemprop="addressRegion">WA</span>
  <span itemprop="postalCode">98052</span>
</div>
```

Example of Library with an Address using Schema.org

```
<span itemscope itemtype="http://schema.org/Library">
  <a itemprop="url" href="http://lib.ncsu.edu">
    <span itemprop="name">NCSU Libraries</span>
  </a> at
  <span itemprop="address" itemscope
    itemtype="http://schema.org/PostalAddress">
    <span itemprop="streetAddress">
      2 Broughton Dr.
    </span><br>
    <span itemprop="addressLocality">Raleigh</span>,
    <span itemprop="addressRegion">NC</span>
  </span>
</span>
```

Schema.org PostalAddress Example as Tree

`http://schema.org/Library`

└─ `url: http://lib.ncsu.edu`

└─ `name: NCSU Libraries`

└─ `address: http://schema.org/PostalAddress`

└─ `streetAddress: 2 Broughton Dr.`

└─ `addressLocality: Raleigh`

└─ `addressRegion: NC`

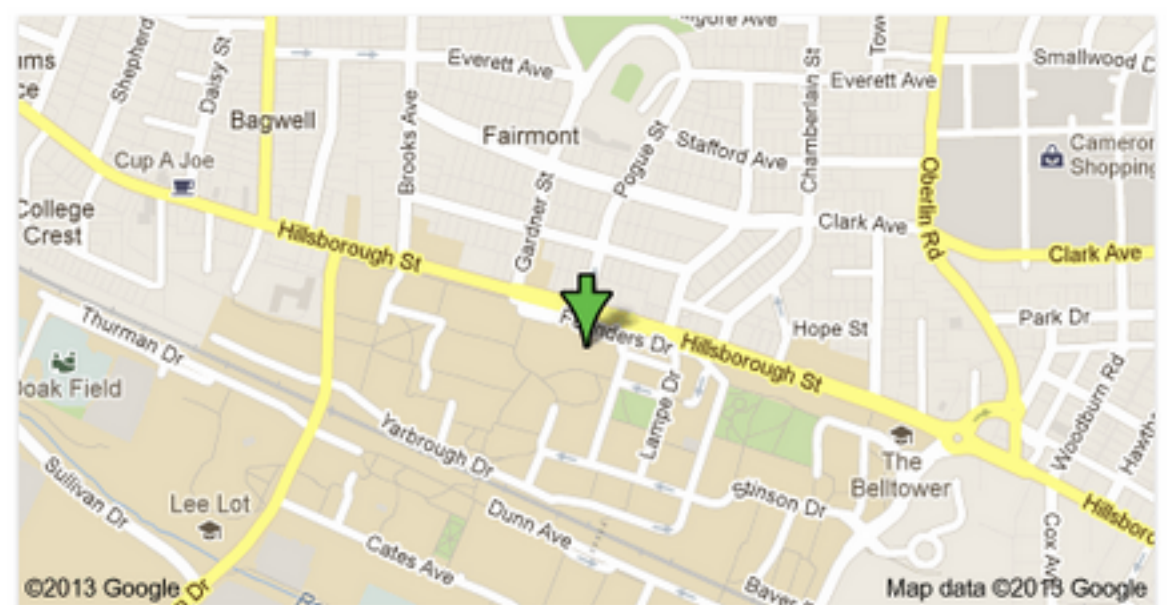
Search for "NCSU Libraries"

[NCSU Libraries](http://www.lib.ncsu.edu/)

www.lib.ncsu.edu/ Share

2 Broughton Dr., Raleigh, NC

Access to the catalogs, information, departments, and policies of the **NCSU Libraries**.



2 W Broughton Dr Raleigh, NC 27607

[Get directions](#)

Transit: [Founders Dr at DH Hill Library](#)

Other Library Services and Business Types

- ContactPoint
- CollegeOrUniversity
- Event
- JobPosting
- OpeningHoursSpecification
- Person
- Specialty

WebPage

WebPage: breadcrumb, isPartOf, lastReviewed, mainContentOfPage, primaryImageOfPage, relatedLink, reviewedBy, significantLink, significantLinks, specialty

AboutPage

CheckoutPage

CollectionPage

ImageGallery

VideoGallery

ContactPage

ItemPage

MedicalWebPage: aspect

ProfilePage

SearchResultsPage

WebPageElement

SiteNavigationElement

Table

WPAdblock

WPFooter

WPHeader

WPSideBar

What does Schema.org currently mean for the cultural heritage sector?

1. No Rich Snippets
2. Generic Types
3. Lists of Values
4. Sparse properties

Types that Trigger Google Rich Snippets

Structured Data Testing Tool

- Applications
- Authors
- Events
- Music
- People
- Products
- Recipes
- Reviews

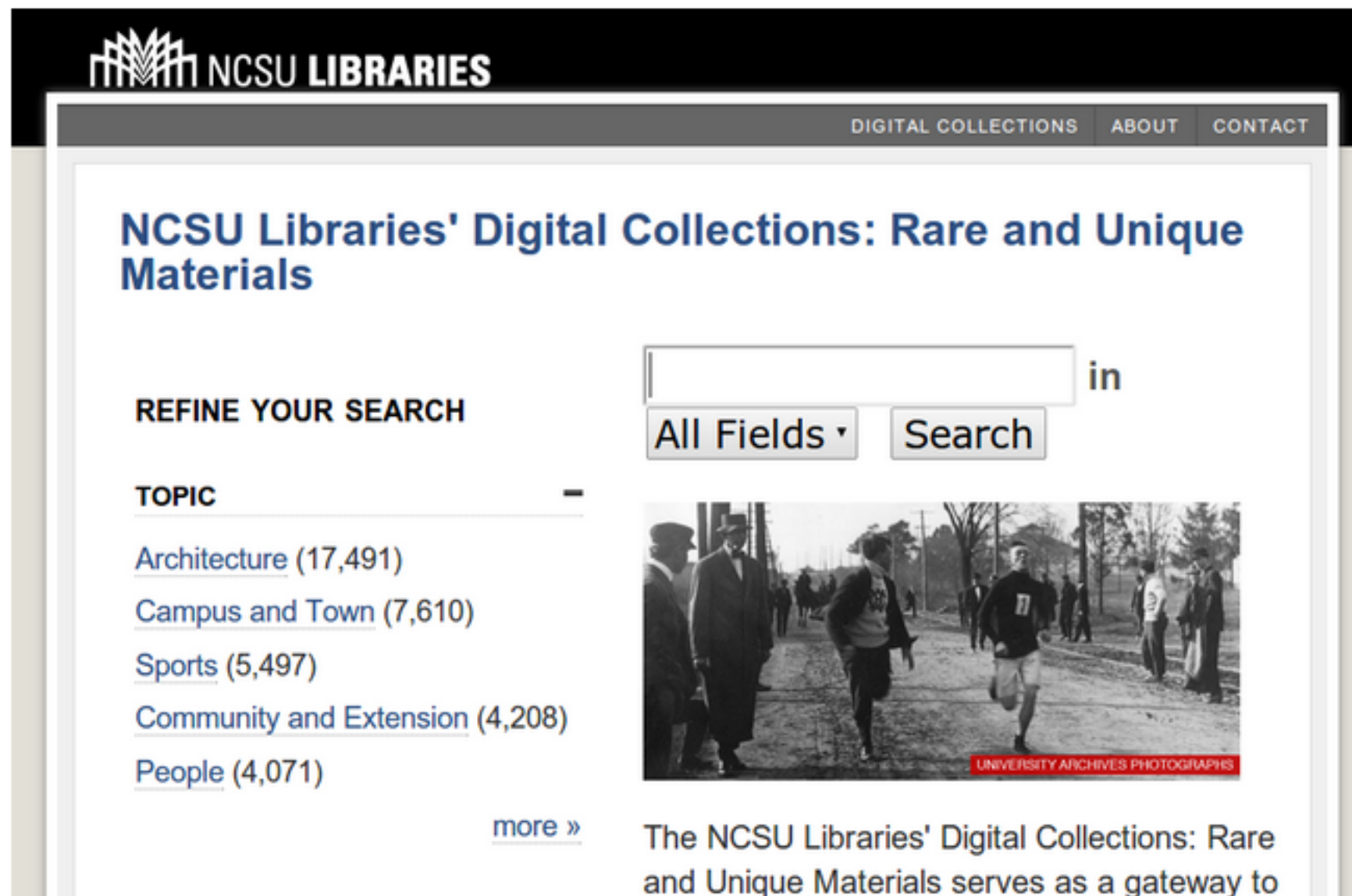
Additional types listed on Google's Rich Snippets page

- Businesses and Organizations
- Recipes
- VideoObjects

Required Properties

Example:

NCSU Libraries Digital Collections



The screenshot shows the NCSU Libraries Digital Collections website. At the top, there is a navigation bar with the NCSU Libraries logo and the text "NCSU LIBRARIES". Below this, there are links for "DIGITAL COLLECTIONS", "ABOUT", and "CONTACT". The main heading is "NCSU Libraries' Digital Collections: Rare and Unique Materials".

On the left side, there is a "REFINE YOUR SEARCH" section with a "TOPIC" dropdown menu. The topics listed are:

- [Architecture](#) (17,491)
- [Campus and Town](#) (7,610)
- [Sports](#) (5,497)
- [Community and Extension](#) (4,208)
- [People](#) (4,071)

Below the topics, there is a "more »" link.

On the right side, there is a search box with the text "in" to its right. Below the search box are two buttons: "All Fields ▾" and "Search".

Below the search area, there is a photograph of a group of people walking on a dirt path. The photograph is labeled "UNIVERSITY ARCHIVES PHOTOGRAPHS" in the bottom right corner.

Below the photograph, there is a caption: "The NCSU Libraries' Digital Collections: Rare and Unique Materials serves as a gateway to".

Grove Arcade Drawing

Mounted presentation drawing

Charles Parker Papers, 1924-1929 (MC00383)



Alan Alda Visit

**Alda, Alan :: Noteworthy Alumni and Guest Visitors,
1940-1990**

[People \(UA023.024\)](#)



No Rich Snippet

[Alan Alda](#)

<http://d.lib.ncsu.edu/collections/catalog/0227517>



1970s - 8 comments

The photo shows **Alda** at a podium with a sign behind him reading, "North Carolinians United for the **ERA**."

[Alan Alda - NCSU Libraries' Digital Collections: Rare and ...](#)

d.lib.ncsu.edu/collections/catalog/0227517

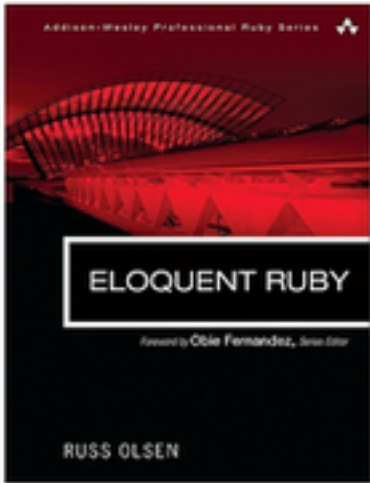
The excerpt from the page will show up here. The reason we can't show text from your webpage is because the text depends on the query the user types.

Generic types for objects

- Thing
 - CreativeWork
 - Article
 - Book
 - Map
 - MediaObject
 - Movie
 - Painting
 - Photograph
 - Sculpture
 - TVSeries

Example: GoodReads

goodreads [Home](#) [My Books](#) [Friends](#) [Recommendatio](#)



Eloquent Ruby (Addison-Wesley Professional Ruby Series)
by **Russ Olsen** (Goodreads Author)

★★★★★ 4.58 · · 212 ratings · 21 reviews

It's easy to write correct Ruby code, but to gain the fluency needed to write "great" Ruby code, you must go beyond syntax and absorb the "Ruby way" of thinking and problem solving. In "Eloquent Ruby," Russ Olsen helps you write Ruby like true Rubyists do—so you can leverage its immense, surprising power. Olsen draws on years of experience internalizing the Ruby culture an...more

Paperback, 413 pages
Published February 11th 2011 by Addison-Wesley Professional
(first published February 7th 2011)
[more details...](#) [edit details](#)

Get a copy: [Barnes & Noble](#) [online stores ▼](#) [Libraries](#) [More...](#)

Friend Reviews

Missing Types

- drawing
- blueprint
- pamphlet
- postcard
- poster
- photographic negative
- suit of armor
- etc. ad infinitum

Scaling

Global

Vocabularies

additionalType

An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.

Plate_armour

```
<div itemscope itemtype="http://schema.org/CreativeWork">  
  <link itemprop="additionalType"  
    href="http://dbpedia.org/page/Plate_armour">  
    
</div>
```



External Enumerations

```
<div itemscope itemtype="http://schema.org/Person">  
  <span itemprop="name">Jason Ronallo</span>  
  <link itemprop="nationality"  
    href="http://en.wikipedia.org/wiki/United_States"/>  
</div>
```

Topics

```
<div itemscope itemtype="http://schema.org/Book">
  <span itemprop="name">Eloquent Ruby</span> by
  <span itemprop="author">Russ Olsen</span>
  about Ruby (Computer program language)
  <link itemprop="about"
    href="http://id.loc.gov/authorities/sh00000128#concept">
  <link itemprop="bookFormat"
    href="http://schema.org/Hardcover">
</div>
```

Schema.org

Extension

Mechanism

Example: OCLC WorldCat

[-] Linked Data

[More info about Linked Data](#)

<<http://www.worldcat.org/oclc/676726142>>

library:holdingsCount	"66"				
library:oclcnum	"676726142"				
library:placeOfPublication	<table border="1"><tr><td>rdf:type</td><td>schema:Place</td></tr><tr><td>schema:name</td><td>"Upper Saddle River, NJ :"</td></tr></table>	rdf:type	schema:Place	schema:name	"Upper Saddle River, NJ :"
rdf:type	schema:Place				
schema:name	"Upper Saddle River, NJ :"				
rdf:type	schema:Book				
schema:about	< http://dewey.info/class/005/e22/ > <table border="1"><tr><td>rdf:type</td><td>skos:Concept</td></tr><tr><td>skos:inScheme</td><td><http://dewey.info/scheme/e22/></td></tr></table>	rdf:type	skos:Concept	skos:inScheme	< http://dewey.info/scheme/e22/ >
rdf:type	skos:Concept				
skos:inScheme	< http://dewey.info/scheme/e22/ >				

Sparse Properties

- rights
- copyright
- licensing
- OCLC (oclcID)
- dimensions
- materials

Identifiers

How will we handle all the different library identifiers?

Schema.org Extensions

- **rNews** International Press Telecommunications Council
- **jobPosting** United States Office of Science and Technology Policy
- **GoodRelations**
- **Health and medical**

Other Proposals

- Learning Resources
- Datasets
- Audience
- TV and Radio
- Comics and Serials
- Historical Data
- Biological Databases

Schema Bib Extend Community Group




W3C Community and Business Groups



CURRENT GROUPS

REPORTS

ABOUT

 Mailing List

 Wiki

 Chat

 RSS

 Contact Group

Schema Bib Extend Community...

Schema Bib Extend Community Group

The mission of this group is to discuss and prepare proposal(s) for extending Schema.org schemas for the improved representation of bibliographic information markup and sharing. The group will seek consensus around, and support for, proposal(s) to the W3C WebSchemas Group. This Community Group will not, itself, produce technical specifications.

 Reports

No reports yet published. The Chair is responsible for publishing reports.
[More about publishing...](#)

Get involved!

Anyone may join this Community Group. All participants in this group have signed the [W3C Community Contributor License Agreement \(CLA\)](#).

[JOIN THIS GROUP](#)

or learn [how to join](#) or [request an account](#).

Beyond Rich Snippets

Knowledge Graph

[Edvard Munch - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Edvard_Munch

Edvard Munch 2] was a Norwegian painter and printmaker whose intensely evocative treatment of psychological themes built upon some of the main tenets of ...

[The Scream - List of paintings by Edvard ... - Edvard Munch \(film\) - Madonna](#)

[Edvard Munch - The Dance of Life Site](#)

www.edvard-munch.com/

Edvard Munch. background. Gallery. news · Fun stuff · resources · BehindTheScenes. **Edvard Munch** - The Dance of Life ...

[Edvard Munch - paintings, biography, and quotes of E...](#)

www.edvardmunch.org/

A comprehensive resource for information about **Edvard Munch**, his biography, quotes, and famous paintings which include The Scream, Anxiety, Madonna, The ...

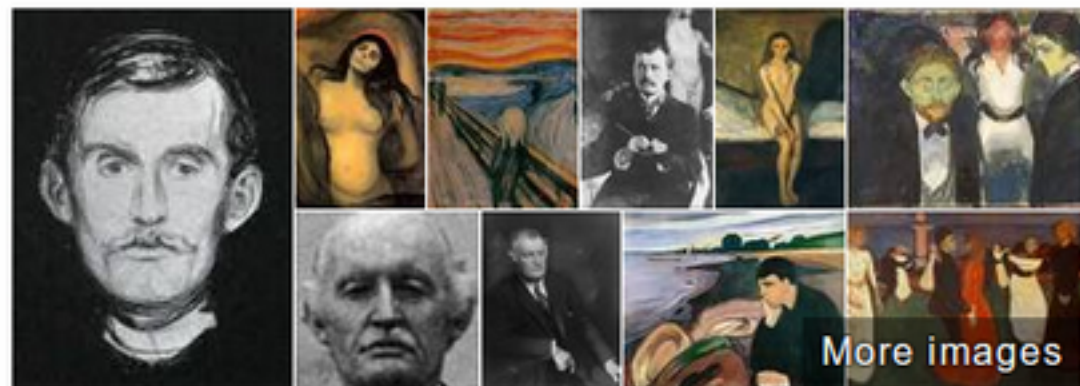
[Edvard Munch Paintings - The Scream - Anxiety](#)

[Edvard Munch \(TV 1974\) - IMDb](#)

www.imdb.com/title/tt0074462/

★★★★★ Rating: 8/10 - 1348 votes

Directed by Peter Watkins. With Geir Westby, Gro Fraas, Kerstii Allum, Eric Allum. Following a rough chronology from 1884 to 1894, when Norwegian artist ...



Edvard Munch

Edvard Munch was a Norwegian painter and printmaker whose intensely evocative treatment of psychological themes built upon some of the main tenets of late 19th-century Symbolism and greatly influenced German Expressionism in the early 20th century. [Wikipedia](#)

Born: December 12, 1863, [Adalsbruk](#)

Died: January 23, 1944, [Oslo](#)

Nationality: Norwegian

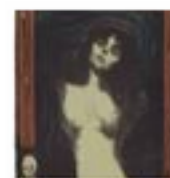
Series: [The Scream](#)

Periods: Symbolism, Expressionism

Artwork



[The Scream](#)
1893



[Madonna](#)
1895



[The Sick Child](#)
1885



[Puberty](#)

[Henrik Ibsen - Wikipedia, the free encyclopedia](#)

en.wikipedia.org/wiki/Henrik_Ibsen

Henrik Johan Ibsen was a major 19th-century Norwegian playwright, theatre director, and poet. He is often referred to as "the father of realism" and is one of the ...

[A Doll's House - Hedda Gabler - Category:Henrik Ibsen](#)

[Henrik Ibsen Biography](#)

www.mnc.net/norway/ibsen.htm

Henrik Ibsen (1828-1906) published his last drama, "When We Dead Awaken", in 1899, and he called it a dramatic epilogue. It was also destined to be the ...

[Henrik Ibsen Biography - Facts, Birthday, Life Story - ...](#)

www.biography.com > [People](#)

Trace Norwegian playwright **Henrik Ibsen's** writing career, from his exile to his success with the plays A Doll's House and Hedda Gabler, on Biography.com.

[Henrik Ibsen - IMDb](#)

www.imdb.com/name/nm0406585/

Henrik Ibsen, Writer: The Frost. **Henrik Ibsen** was born on March 20th in Stockmannsgerden in Skien. His mother was Marichen and his father was Knud, ...

[Henrik Ibsen - Ibsen.net](#)

www.ibsen.net > ... > [Introductions to Ibsen's life & works](#)

Henrik Ibsen (1828 - 1906) is one of the very greatest names in world literature. He was a central figure in the modern breakthrough in the intellectual life of ...



Henrik Ibsen

Henrik Johan Ibsen was a major 19th-century Norwegian playwright, theatre director, and poet. He is often referred to as "the father of realism" and is one of the founders of Modernism in the theatre. [Wikipedia](#)

Born: March 20, 1828, [Skien](#)

Died: May 23, 1906, [Oslo](#)

Nationality: Norwegian

Spouse: [Suzannah Ibsen](#) (m. 1858–1906)

Movies: [Aakasha Gopuram](#), [Enemy of the People](#), [Sara](#), [A Doll's House](#), [Planet Ibsen](#), [More](#)

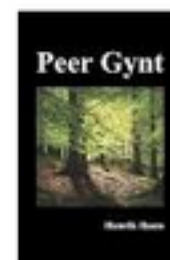
Books and plays



[A Doll's House](#)
1879



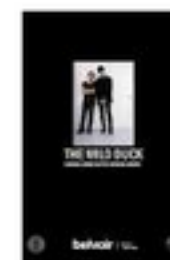
[Hedda Gabler](#)
1891



[Peer Gynt](#)
1876



[An Enemy of the People](#)
1882



[The Wild Duck](#)

Vertical Search Engines

Common Crawl



Web Data Commons

Extracting Structured Data from the Common Web Crawl

API for Interoperability

Preservation

Tools

Schema Creator

Schema Creator for Person

schema.org/Person

Name

Jason Ronallo

Organization

NCSU Libraries

Job title

Associate Head, Digital Library Initiatives

URL

http://ronallo.com

Description

software and libraries

Birth date

Preview

Jason Ronallo

NCSU Libraries

Associate Head, Digital Library Initiatives

software and libraries

Code

```
<div itemscope itemtype="http://schema.org/Person">  
<a itemprop="url" href="http://ronallo.com"><div  
  itemprop="name"><strong>Jason Ronallo</strong></div>  
</a>  
<div itemscope itemtype="http://schema.org/Organization">  
<span itemprop="name">NCSU Libraries</span></div><div  
  itemprop="jobtitle">Associate Head, Digital Library  
  Initiatives</div>  
<div itemprop="description">software and libraries</div>  
</div>
```


Google Structured Data Testing Tool

Structured Data Testing Tool

URL

HTML

<http://eventful.com/sanfrancisco/events>

PREVIEW

Events ▾

Google search results

Google Custom Search

Preview

[San Francisco metro area, CA Events, Concerts, Festivals, & Family ...](#)
eventful.com/sanfrancisco/events

The excerpt from the page will show up here. The reason we can't show text ...

Wed, Feb 13 [Swedish House Mafia 2013](#) - Bill Graham Civic Auditorium, San ...

Fri, Feb 8 [Ellie Goulding](#) - Fox Theater - Oakland, Oakland, CA(San ...

Sat, Feb 9 [Lewis Black](#) - Masonic Auditorium, San Francisco, CA, CA

Structured Data Linter

Raw structured data extracted from the page:

http://www.w3.org/ns/md#item	rdf:type	schema:Library	
	schema:address	rdf:type	schema:PostalAddress
		schema:addressLocality	Raleigh
		schema:addressRegion	NC
		schema:streetAddress	2 Broughton Dr.
	schema:name	NCSU Libraries	
	schema:url	http://lib.ncsu.edu	

RDF Distiller

[Home](#)[Distiller](#)[SPARQL endpoint](#)[About](#)[Project Descriptions](#)[Documentation](#)

RDF Distiller

RDF.rb is a Ruby Gem implementing RDF graphs, readers and writers to help integrate semantic technologies into Ruby projects.

The distiller transforms data between different RDF formats. The [form below](#) can be used to start the service installed at this site.

[From URL](#)[From Form Input](#)

Linked Data from Microdata

```
@prefix md: <http://www.w3.org/ns/md#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix rdfa: <http://www.w3.org/ns/rdfa#> .
@prefix schema: <http://schema.org/> .

<> md:item ([ a schema:Book;
  schema:about <http://id.loc.gov/authorities/sh00000128#concept>;
  schema:author "Russ Olsen";
  schema:bookFormat schema:Hardcover;
  schema:name "Eloquent Ruby"]);
rdfa:usesVocabulary schema: .
```

Google Data Highlighter

The screenshot displays the Google Data Highlighter interface. At the top, a progress bar shows four steps: "Tag first page" (active), "Create page set", "Tag more examples", and "Review and Publish". Below the progress bar, a URL is shown with a red "R" icon. A black tooltip box contains the instruction: "Highlight each piece of information and apply a tag." To the right of the URL are buttons for "DONE", "Cancel", and a settings gear icon.

The main content area shows a document with the title "The Prevalence of Schema.org Book Properties in the Wild" and a date "Jan 24th, 2013" highlighted in yellow. A dropdown menu is open over the date, listing schema.org properties: Name, Date, Location, Image, Official URL, Category, Performer, and Ticket. The document text below the date discusses extracting structured data from a crawl corpus and mentions the Schema.org Book properties.

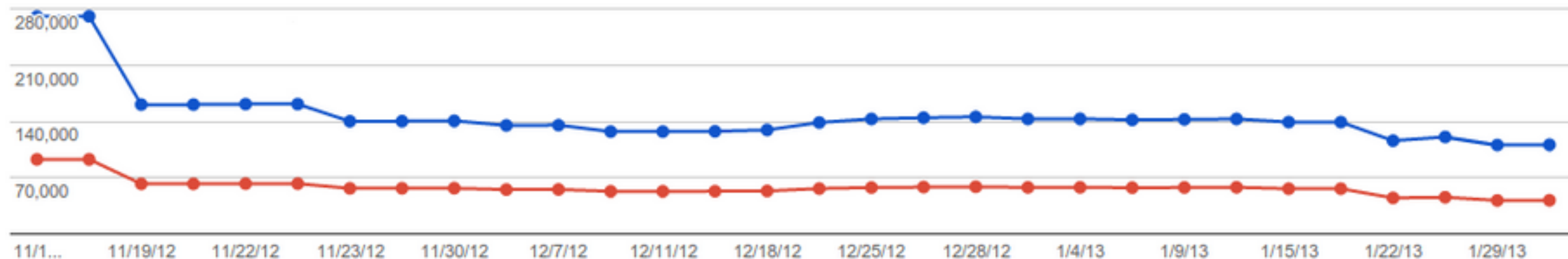
On the right side of the interface, there are sections for "Writing" (with a link to "HTML5 Microdata and Schema.org"), "Recent Posts" (with a link to "The Prevalence of Schema.org Book Properties in the Wild"), and "Github Repos".

At the bottom right, a "My Data Items" section lists various schema types with their required fields: Event (Name, Date), Location (Venue, Address), Image, Official URL, Category, Performer, Ticket (Type, Price).

Google Structured Data Dashboard

Structured Data

All structured data	Structured data types
■ 110,955 Items	■ 4 Types
■ 41,847 Pages	on 41,847 pages



Download

Show 25 rows 1-4 of 4 < >

Data Type	Source	Pages	Items
Photograph	Markup: schema.org	4,798	48,519
ItemPage	Markup: schema.org	27,929	27,929
CreativeWork	Markup: schema.org	2,436	27,823
SearchResultsPage	Markup: schema.org	6,684	6,684

Jason Ronallo

@ronallo

<http://ronallo.com>

jronallo@gmail.com

Slide Deck and Speaker Notes

<http://schemaorg-presentation.herokuapp.com>



The Potential for Libraries of Embedded Semantic Markup and Schema.org by **Jason Ronallo** is licensed under a **Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported License** .

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**Unused
Slides
(Bonus!)**

Other Examples

Duke University

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111,057 volumes

40,267,237 pages

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Featured Collection



Biodiversity Heritage Library

[Bone Wars iTunes U Collection](#)

The batrachia and reptilia of Costa Rica : atlas /

[Brief](#) | [Detailed](#) | [MODS](#) | [BibTeX](#) | [EndNote](#)

Author/Creator:

[Cope, E. D. \(Edward Drinker\), 1840-1897](#)

Genre:

Book

Publication info:

Philadelphia, 1877.

Subjects:

[Amphibians](#), [Costa Rica](#), [Reptiles](#)

BHL Collections:

[Bone Wars Collection](#)

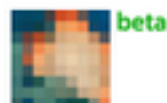
[Bone Wars iTunes U Collection](#)

Language:

English

LC Call Number:

QL656 .C78



WIKIPAINTINGS
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- ▶ Artworks

Homepage ▶ Edvard Munch ▶ Evening on Karl Johan Street

Enter keyword to search



English ▾

Evening on Karl Johan Street



Artist: [Edvard Munch](#)

Completion Date: 1892

Style: [Expressionism](#)

Period: [European period](#)

Genre: [genre painting](#)

Technique: [oil](#)

Material: canvas

Dimensions: 84.5 x 121 cm

Gallery: Rasmus Meyer Collection, Bergen, Norway

Tags: [streets-and-squares](#), [Oslo](#)

Share: 1

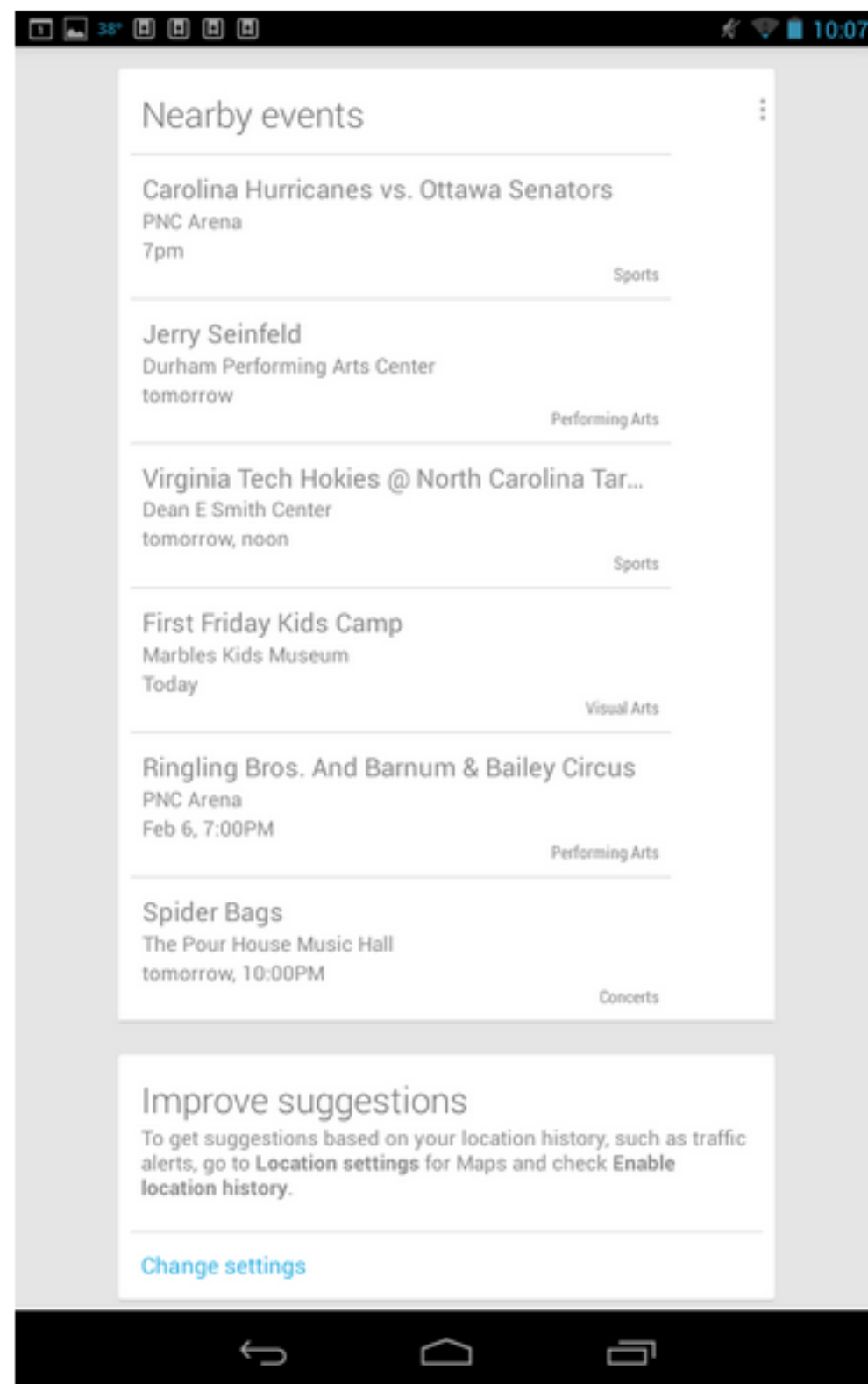
Image dimensions 500x343px, [View All Sizes](#) ▶

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References

<http://www.abcgallery.com/M/munch/munch31.html>

Android Now Events



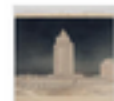
Custom Search Engine Rich Snippets

Google custom search

About 571 results (0.20 seconds)

[Search Results - Grove Arcade - NCSU Libraries' Digital Collections ...](#)

[d.lib.ncsu.edu/collections/catalog?f%5Bwork...Grove+Arcade](#)



Items 1 - 20 of 189 ... View, **Grove Arcade**, Asheville, Buncombe County, North Carolina. **Grove Arcade** . View, **Grove Arcade**, Asheville, Buncombe County, North ...

[Mounted presentation drawing \(Grove Arcade\) - NCSU Libraries ...](#)

[d.lib.ncsu.edu/collections/.../mc00383-001-ff0001-001-001_0001](#)



Mounted presentation drawing (**Grove Arcade**) ... Building: **Grove Arcade** (Asheville, Buncombe County, North Carolina) · Section through skylight; Section thru ...

[Exterior View, Grove Arcade \(Grove Arcade\) - NCSU Libraries ...](#)

[d.lib.ncsu.edu/collections/catalog/ncar_N_75_7_1568](#)



Exterior View, **Grove Arcade** (**Grove Arcade**) ... Title: Exterior View, **Grove Arcade**; Subjects: Commercial buildings · Mercantile buildings · Ramps (Walkways) ...

[Relief detail, Grove Arcade - NCSU Libraries' Digital Collections](#)

[d.lib.ncsu.edu/collections/catalog/ncar_N_75_7_1147](#)



Title: Relief detail, **Grove Arcade**; Subjects: Commercial buildings · Mercantile buildings ... Building: **Grove Arcade** (Asheville, Buncombe County, North Carolina) ...

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[d.lib.ncsu.edu/collections/catalog?f%5Bwork...Grove+Arcade...2](#)



You searched for: Buildings **Grove Arcade** Remove constraint **Grove Arcade**: **Grove Arcade**. Displaying items 21 - 40 of 189 start over ...

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