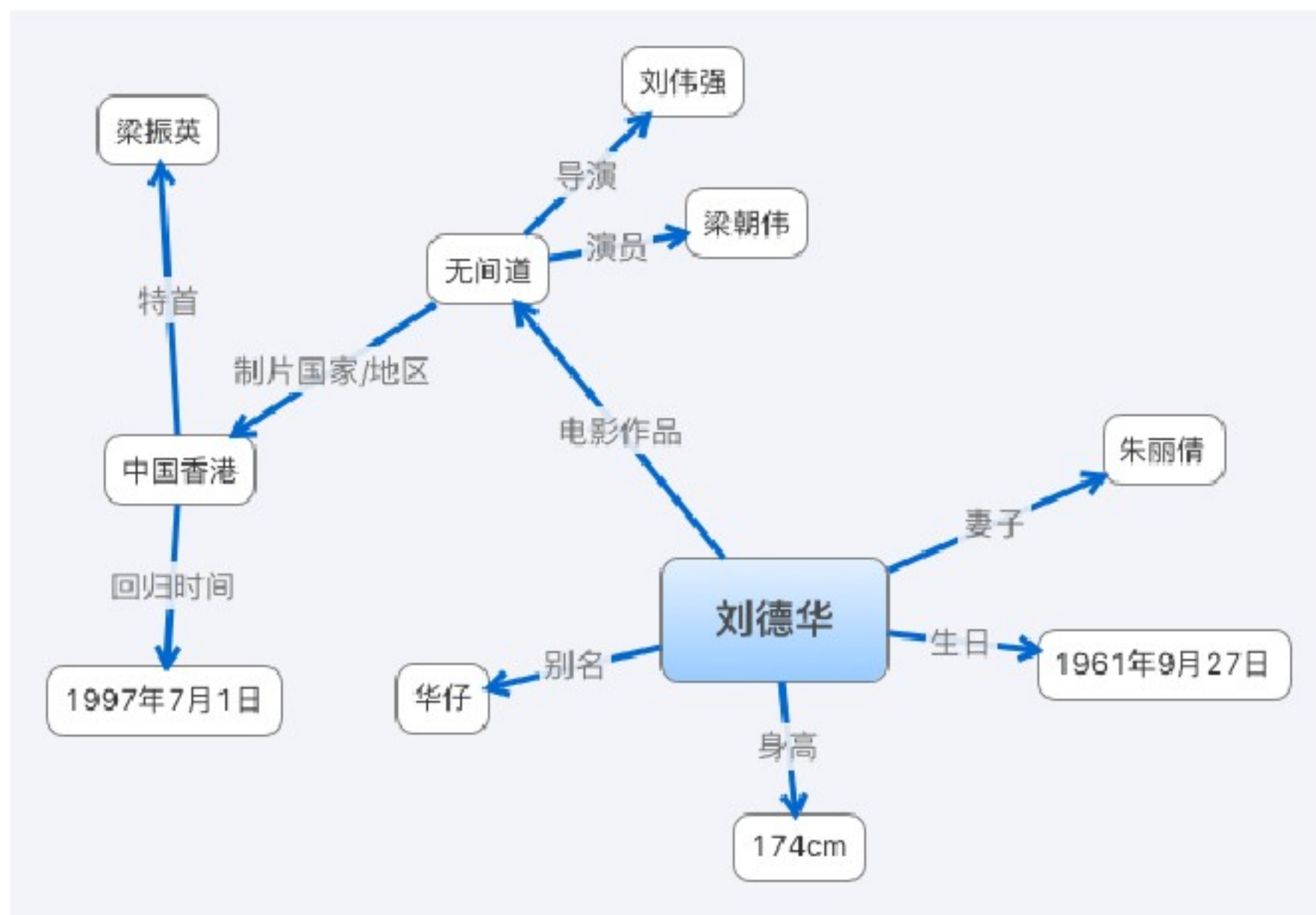
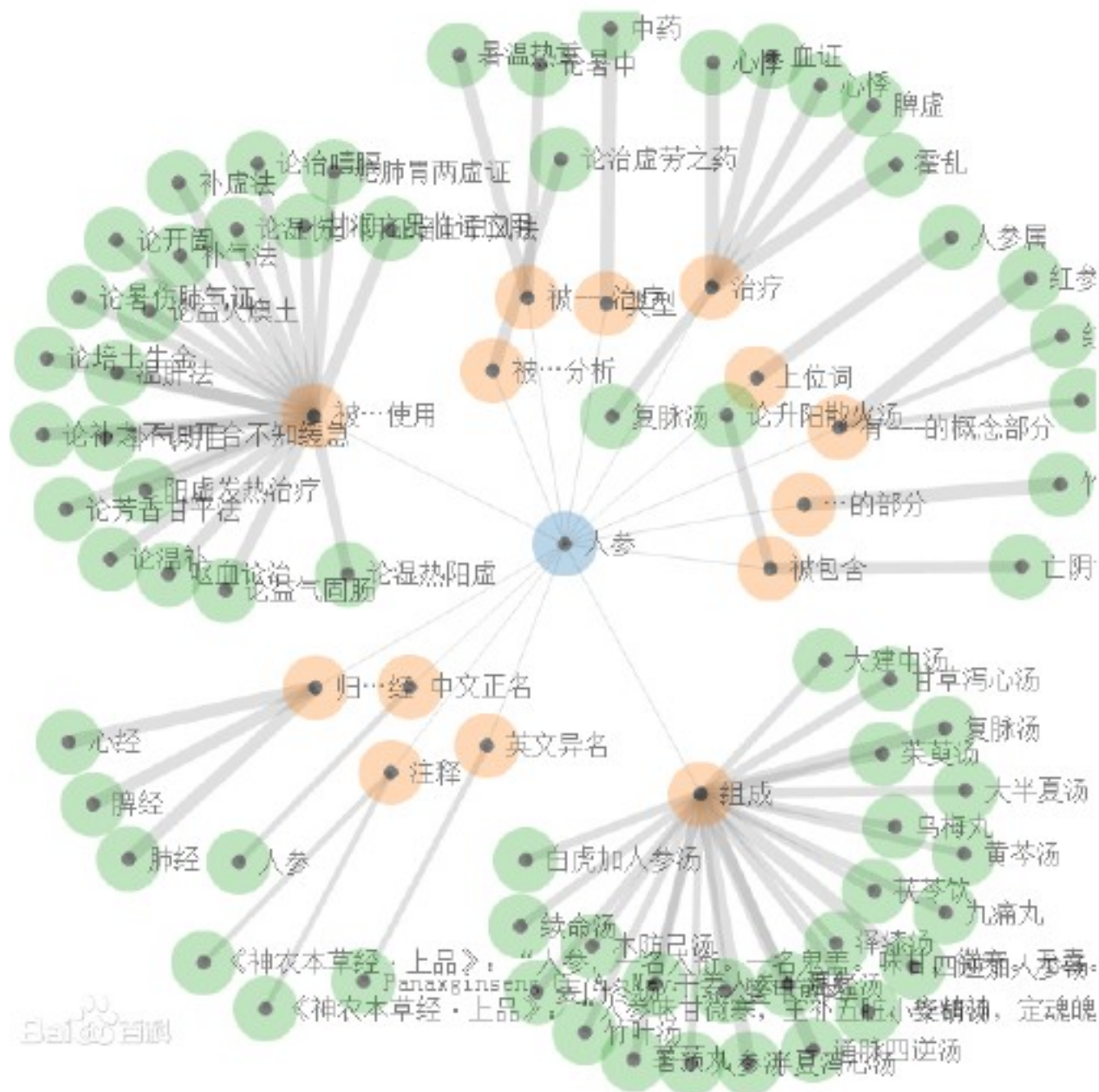


# 什么是知识图谱

我的理解：我们可以把它理解成一张由知识点相互连接而成的语义网络



专业定义：知识图谱（Knowledge Graph/Vault）又称为科学知识图谱，在图书情报界称为知识域可视化或知识领域映射地图，是显示知识发展进程与结构关系的一系列各种不同的图形，用可视化技术描述知识资源及其载体，挖掘、分析、构建、绘制和显示知识及它们之间的相互联系。



# 为什么有知识图谱

从1990年底web诞生到现在，万维网经过20多年的发展，现在对大家来说已经习以为常了。万维网也是一种网络，构成万维网的节点是一个个的网页，网页之间通过超链接建立关联关系。拜万维网这种简单、开放的技术所赐，人类的信息获取能力有了巨大的飞跃。在万维网基础上诞生了现代的搜索引擎技术，人们通过关键字就能快速的找到相关网页，然后再从一堆网页候选结果中找寻自己真正想要的答案。随着移动互联网的发展，人们对搜索的期望更高了一阶，为什么不给我更精确的答案？

移动手机的屏幕很小，没有那么多的空间展示那么多的搜索结果，用户也没有耐心再一个个打开网页，寻找答案；另外，更多新的搜索形态诸如语音搜索、拍照搜索、人机对话等不断产生并快速演化，用户同样希望搜索引擎能够结合着自身喜好、地理位置、时间点等给出更精确的回答。

要想更精准的满足用户需求，搜索引擎就不能只是存储网页文档，而是要通过各种方式，能够识别出网页中出现的实体以及实体属性，并将它们纳入到知识图谱中。当用户发起搜索时，能够根据知识图谱已知的知识点，准确理解用户意图，并给出最精准的回答。

# Google的指示图谱



## 1.找到正确的东西

搜索引擎经常会面临一词多义的情况，例如：

金庸小说“笑傲江湖”，被改变成了各种版本的电视剧、电影、甚至是游戏，用户搜索“笑傲江湖”时，是想要找小说、还是电影呢？

“李娜”是一个网球运动员的名字，也是一个歌手的名字；

“文章”可能是个人名，也可能是article；

“小米”是某个公司的名称、手机品牌，也是一种农作物；

“火箭”是一种承担太空运载的交通工具，也是一个篮球队的名称，等等

在Google的这篇文章中，作者拿“泰姬陵”举例，一个印度的知名景点叫这个，一个音乐专辑也叫这个，一个城市街道名也叫这个。Google会在搜索结果的右侧给出泰姬陵的地图，相关介绍等，在更下面的位置，会给出同名的音乐专辑，城市街道等。

作者：高天蒲

链接：<https://www.jianshu.com/p/4b833de35067>

来源：简书

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[Taj Mahal - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Taj\\_Mahal](http://en.wikipedia.org/wiki/Taj_Mahal)

The **Taj Mahal** is a white marble mausoleum located in Agra, India. It was built by Mughal emperor Shah Jahan in memory of his third wife, Mumtaz Mahal.

↳ [Origins and architecture of the ... - Mumtaz Mahal - Shah Jahan - Agra](#)

[Taj Mahal \(musician\) - Wikipedia, the free encyclopedia](#)

[en.wikipedia.org/wiki/Taj\\_Mahal\\_\(musician\)](http://en.wikipedia.org/wiki/Taj_Mahal_(musician))

Henry Saint Clair Fredericks (born May 17, 1942), who uses the stage name **Taj Mahal**, is an American Grammy Award winning blues musician. He incorporates ...

[Atlantic City New Jersey Casino Hotels | Trump Taj Mahal, Atlantic...](#)

[www.trumptaj.com/](http://www.trumptaj.com/)

For five star Atlantic City Casino hotels, Trump **Taj Mahal** Casino Hotel offers restaurants, nightlife and a casino floor you can't resist. Explore our Atlantic City ...

[Taj Mahal](#)

[www.tajmahal.gov.in/](http://www.tajmahal.gov.in/)

★★★★★ 262 Google reviews - Write a review

Symbol of Day of Judgement .SH 62 282001 Agra, Uttar Pradesh, India  
0562 222 8431

[Taj Mahal - Welcome to tajblues.com HOME](#)

[www.tajblues.com/](http://www.tajblues.com/)

Official site includes news, tour schedule, discography, audio/video and pictures.

[The Taj Mahal, India](#)

[www.islamiccity.com/culture/taj/default.htm](http://www.islamiccity.com/culture/taj/default.htm)

**Taj Mahal** is regarded as one of the eight wonders of the world, and some Western historians have noted that its architectural beauty has never been surpassed.

[Images for taj mahal](#) - Report images



[Taj Mahal](#)

[www.tajmahal.org.uk/](http://www.tajmahal.org.uk/)

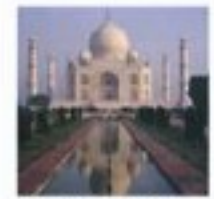
**Taj Mahal** at Agra, India is one of the wonders of the world. Find information related to **Taj Mahal** travel and tourism in this article.

[Explore the Taj Mahal Virtual Tour - "5 STARS ...](#)

[www.taj-mahal.net/](http://www.taj-mahal.net/)

" WOW!...Thrilling...Exotic...Ravishing!" says The SundayTimes, London - 360°

Taj Mahal



shunk120.hubpages....

The Taj Mahal is a white marble mausoleum located in Agra, India. It was built by Mughal emperor Shah Jahan in memory of his third wife, Mumtaz Mahal. [Wikipedia](#)

**Height:** 561 feet (171 m)

**Opened:** 1648

**Address:** Symbol of Day of Judgement ,SH 62 282001, Agra, Uttar Pradesh, India

**Architectural style:** Mughal architecture

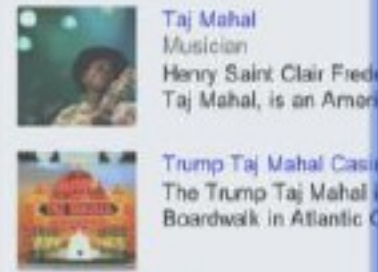
**Phone:** 0562 222 8431

**Architect:** Ustad Ahmad Lahauri

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**Taj Mahal**  
Musician  
Henry Saint Clair Fredericks, who uses the stage name Taj Mahal, is an American Grammy Award winning blues



**Trump Taj Mahal Casino Resort**  
The Trump Taj Mahal is a casino located at 1000 Boardwalk in Atlantic City, New Jersey, United States, in



## 2.展示更恰当的摘要

当用户搜索某个事物时，例如，居里夫人，相关的诸如她的简介、出生年代、籍贯，她的丈夫、孩子、主要学术成就等可能都是用户感兴趣的内容。借助知识图谱，Google能够将这些信息更有条理的展示给用户。用户无需再打开网页，就能了解到这个人的基本概要。

描述一个人或者一个事物的属性会特别多，不同的人关注的点也有所不同，因此不可能将知识图谱中所有相关的内容都展示给用户。Google会利用特定的算法计算出哪些才是用户最关心的内容，只把这些用户最感兴趣的内容呈现出来。

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Past week  
Past month  
Past year  
Custom range...

**Marie Curie - Wikipedia, the free encyclopedia**  
[en.wikipedia.org/wiki/Marie\\_Curie](https://en.wikipedia.org/wiki/Marie_Curie)  
Marie Skłodowska-Curie (7 November 1867 – 4 July 1934) was a French-Polish physicist and chemist famous for her pioneering research on radioactivity.  
→ Marie Curie Cancer Care - Pierre Curie - Irène Joliot-Curie - Radioactive decay

**Marie Curie - Biography - Nobelprize.org**  
[www.nobelprize.org/nobel\\_prizes/physics/.../marie-curie-bio.html](http://www.nobelprize.org/nobel_prizes/physics/.../marie-curie-bio.html)  
Short profile from the foundation that awards the Nobel Prize.

**Marie Curie - Biography - Nobelprize.org**  
[www.nobelprize.org/nobel\\_prizes/chemistry/.../marie-curie-bio.html](http://www.nobelprize.org/nobel_prizes/chemistry/.../marie-curie-bio.html)  
Marie Curie, née Maria Skłodowska, was born in Warsaw on November 7, 1867, the daughter of a secondary-school teacher. She received a general education ...

**Images for marie curie** - Report images

**Marie Curie and The Science of Radioactivity**  
[www.aip.org/history/curie/](http://www.aip.org/history/curie/)  
The life of Marie Curie, from the AIP Center for History of Physics. Text by Naomi Pasachoff and many illustrations describe Curie's contributions to the science of ...

Marie Curie



Marie Skłodowska-Curie was a French-Polish physicist and chemist famous for her pioneering research on radioactivity. She was the first person honored with two Nobel Prizes—in physics and chemistry.

Born: November 7, 1867, Warsaw  
Died: July 4, 1934, Sancellemoz  
Spouse: Pierre Curie (m. 1895–1906)  
Children: Irène Joliot-Curie, Ève Curie  
Discovered: Radium, Polonium  
Education: École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris, University of Paris

People also search for

Albert Einstein  
Pierre Curie  
Ernest Rutherford

## Marie Curie



es.wikipedia.org

Marie Skłodowska-Curie was a French-Polish physicist and chemist famous for her pioneering research on radioactivity. She was the first person honored with two Nobel Prizes—in physics and chemistry. [Wikipedia](#)

**Born:** November 7, 1867, [Warsaw](#)

**Died:** July 4, 1934, [Sancellemoz](#)

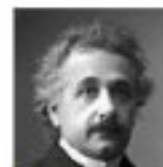
**Spouse:** [Pierre Curie](#) (m. 1895–1906)

**Children:** [Irène Joliot-Curie](#), [Ève Curie](#)

**Discovered:** [Radium](#), [Polonium](#)

**Education:** [École Supérieure de Physique et de Chimie Industrielles de la Ville de Paris](#), [University of Paris](#)

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Ernest Rutherford



Louis Pasteur



John Dalton

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### 3. 更深更广

如果说1和2是用来满足用户的需求，那么，接下来的就是如何激发用户的求知和探索欲望了。通过知识图谱，你可能会了解到之前不知道的东西，以及这些不同东西之间的关联关系。例如，《辛普森一家》是美国流行的动画片，作者拿这个动画片的导演举例，点击链接可以发现，该导演的父亲也是个知名的电影导演；

知识图谱还可以根据相关度给用户做出推荐，例如，当用户搜索一本书时，知识图谱知道这本书获得哪些奖项，就会把同样获得这些奖项的图书也推荐给用户。当用户搜索某个科学家时，知识图谱会把和他同一个年代、同一个领域的科学家展示给用户。





matt groening



evidbiker80@gmail.com

5

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**Matt Groening - Wikipedia, the free encyclopedia**

[en.wikipedia.org/wiki/Matt\\_Groening](http://en.wikipedia.org/wiki/Matt_Groening)

Matthew Abram "**Matt**" **Groening** [1] is an American cartoonist, screenwriter, and producer. He is the creator of the comic strip *Life in Hell* (1978–present) as well ...

↳ [Early life](#) - [Career](#) - [Awards](#) - [Personal life](#)

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**Matt Groening - IMDb**

[www.imdb.com/name/nm0004981/](http://www.imdb.com/name/nm0004981/)

**Matt Groening**, Writer: *The Simpsons*. Growing up in Portland, Oregon, **Matt Groening** did not particularly like school, which is what originally turned him towards ...

**Matt Groening Biography - Facts, Birthday, Life Story - Biography.com**

[www.biography.com/people](http://www.biography.com/people)

Visit Biography.com and learn about the life and humor of **Matt Groening**, cartoonist, satirist and creator of cultural phenomenon, *The Simpsons*.

**interview with Matt Groening - The AV Club**

[www.avclub.com/content/node/47771](http://www.avclub.com/content/node/47771)

**"The Simpsons" creator Matt Groening reveals location of Springfield ...**

[www.cbsnews.com/.../the-simpsons-creator-matt-groening-reveals-lo...](http://www.cbsnews.com/.../the-simpsons-creator-matt-groening-reveals-lo...)

Apr 10, 2012 - **Matt Groening** tells *Smithsonian* magazine that Homer, Marge, Bart, Lisa and Maggie reside in Springfield, Oregon Read more by Jessica ...

**Matt Groening reveals inspiration behind 'Simpsons' Springfield ...**

[www.washingtonpost.com/.../matt-groening...jglQA37TLAT\\_blog.ht...](http://www.washingtonpost.com/.../matt-groening...jglQA37TLAT_blog.ht...)

Apr 11, 2012 - Also in the morning mix: Alec Baldwin goes on a Twitter rant.

**Matt Groening**



en.wikipedia.org

Matthew Abram "Matt" Groening is an American cartoonist, screenwriter, and producer. He is the creator of the comic strip *Life in Hell* as well as two successful television series, *The Simpsons* and ... [Wikipedia](#)

**Born:** February 15, 1954 (age 58), Portland

**Education:** Lincoln High School, The Evergreen State College

**Parents:** Margaret Groening

**Siblings:** Lisa Groening

**Awards:** *Ruben Award for Cartoonist of the Year*

**Parents:** Margaret Groening, Homer Groening  
**Siblings:** Lisa Groening

**Books**



The Simpsons Library...  
2004



Bart Simpson's Guide to...  
1993



The Simpsons: A Comp...  
1997



The Simpsons Uncens...  
1991



The Simpsons Forever...  
1991

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Nancy Cartwright

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