the JOY of SEARCH
A Google Insider’s Guide to Going Beyond the Basics
Daniel M. Russell
Senior Research Scientist for Search Quality and User Happiness at Google
The Joy of Search

A Google Insider’s Guide to Going Beyond the Basics

Daniel M. Russell

The MIT Press
Cambridge, Massachusetts
London, England
Contents

Acknowledgments xi

1 Introduction: How You Can Harness the Power of Online Research—Why You Should Improve Your Online Researching Skills 1

2 Finding a Mysterious Location Somewhere in the World: How to Use Multiple Information Sources to Zero In on a Resource 11

3 Do Lakes in Africa Sometimes Explode? How to Focus Your Search with “site:” and Using Specialized Terms 27

4 Things You Notice While Traveling: How and When to Switch Search Modes to Find Information 39

5 Is That Plant Poisonous or Not? How to Find Highly Localized and Domain-Specific Information 53

6 What’s the Most Likely Way You’ll Die? How to Be Explicit about What You’re Searching to Find (and Why That Matters) 67

7 When Would You Want to Read the Italian Wikipedia? How to Look for Information from Other Languages in Wikipedia and Other Sources 81
8  Why Are the Coasts So Different? How to Use Online Maps Resources to Answer Broad Geographic Questions  95

9  Mysterious Mission Stars: How to Read Snippets in the Search Results and Pay Attention to Search Details  107

10 When Was Oil First Discovered in California? How to Discover and Work Through Multiple Competing Claims in Online Resources  125

11 Can You Die from Apoplexy or Rose Catarrh? How to Find (and Use) Old, Sometimes-Archaic or Obsolete Terminology  137

12 What’s That Wreck Just Offshore? How to Find Archival Imagery and Use Metadata from Photographs  151

13 Do Flies Have the Pattern of a Spider on Their Wings? How to Check the Credibility of a Resource You’ve Found  165

14 What’s the Connection between “The Star-Spangled Banner” and the General Who Burned the White House? How to Search for Vaguely Remembered Connections between Ideas  179

15 What Causes the Barren Zones around Some Plants? How to Know When You Should Go Offline and Do Research in the Real World  197

16 Is Abyssinia the Same as Eritrea? How to Find Additional Context Information for Your Research  221

17 The Mystery of the Parrotfish, or Where Does That White Sand Really Come From? How to Triangulate Multiple Sources to Find a Definitive Answer  239

18 Did Perry Ever Visit the Island of Delos? How to Follow a Long Chain of References to the Ultimate Answer  255
19  On Being a Great Searcher: Rules of Thumb for Asking Great Questions  273

20  The Future of Online Search: Why the Research Skills You Learn Today Will Continue to Be Useful in the Future  289

Notes  303
Index  317
If you work at Google, you end up attracting all kinds of questions. Some are just requests for help, often in a panic (“Can you find this kind of data for me ... by 5:00 p.m.?”). But sometimes you get little puzzles (“Bet you can’t find ...”) or pictures of someplace in the world with the question, “Where’s this?”

Here's a picture that a friend sent me, asking not just where in the world this office tower is, but also an apparently difficult question to answer just from the photo; that's the question for this chapter.

**Research Question:** *Where was the photographer standing when he took this photo?*

This seems impossibly hard, but with a little ingenuity, it's quite possible. In under five minutes, I was able to go from just this photo to his location (and for extra credit, I was able to find the phone number of the office where he was standing).

There are several ways to do this, but the simplest one is to start with clues you find in the photo itself. First, ask yourself, What do you see in the photo?

In a case like this, you have to start with what you have. Look at the image carefully, noting what you might use to crack this where-in-the-world challenge.
There are only a few things that you can really begin with in this picture. Notice that two buildings have logos that might be useful, and there’s a flag in the lower-left corner. If you look very closely, you’ll see it’s actually a mural of a postage stamp with a cancellation mark (figure 2.2). Here’s what that looks like when you zoom in\(^3\). (As mentioned earlier, when you see bolded text that has a superscript, it’s telling you that there’s a short summary of how to do this at the chapter’s end. Check it out; at the end of this chapter is a how-to about ways to zoom in on an image.)

Otherwise, it’s a fairly ordinary urban scene.

A quick check of the flags of the world (just do a quick search for flags of the world in Google Images, and you can quickly get a lovely diagram with all the world flags). (See figure 2.3.)

You can click on any of these and without much trouble find that this is an oddly cropped Egyptian flag. Is this somewhere in Egypt? A quick visual inspection of the buildings and lay of the city tells me this surely isn’t Cairo.
or anywhere else in Egypt, so that’s just a false lead.¹ So let’s ignore the flag for the moment and go looking around in the image for more clues.

Let’s try searching for one of the two logos. I searched first for the closest and most obvious logo atop the building labeled “TP.” (I ALSO chose this because the building is clearly pretty new and pretty much a trophy building. I figured there would be a good chance that someone would have put up a web page on it.) I tried queries like [tp logo], but didn’t have much luck until I modified the query just a bit with a description of what I was looking for.
I searched for [tp office building] and voilà! This is pretty clearly the Telekomunikacja Polska building in Warsaw, Poland. The first result on the search page was to a site that had all the skyscrapers of Warsaw labeled, and this is clearly that building. A quick Wikipedia search for confirmation, and you’ll see all is lining up; this is the TP building, which is now called the “Spektrum Tower (formerly TP S.A. Tower).” (See figure 2.4.)

You can also figure this out by doing a Google Images search for the name of the company [Telekomunikacja Polska]. The TP logo shows up on the first page of Google Images results, and that leads you to the Telekomunikacja Polska website.

Knowing this, I could easily get the street address for the TP building: 14/16 Twarda Street, Warsaw (figure 2.5).

Of course, there are always multiple approaches to finding the location of a photo, and cityscapes are full of clues.

If you look carefully at the building behind the TP skyscraper, you’ll see another building with another logo—PZU. A quick search for [PZU] or

**Figure 2.3**
A search for [flags of the world] in Google Images gives many grids of flags from around the world.
Credit: Google and the Google logo are registered trademarks of Google Inc., used with permission.
Finding a Mysterious Location Somewhere in the World

Figure 2.4
A Wikipedia search for [TP] leads to the Spektrum Tower in Warsaw.
Credit: Cezary Piwowarski, Wikipedia, used under a CC BY 3.0 license

Figure 2.5
The red pin shows us where 14/16 Twarda Street is in Warsaw, but now where’s the building we seek?
Credit: Map Data © Google
[PZU building] also leads directly to Warsaw, and the Powszechny Zakład Ubezpieczeń (PZU) tower, just a few blocks away from the TP tower.

Now that we’ve narrowed the location down to Warsaw, how can I find where the photo was taken FROM?

I tried doing this with Google Maps and looking around downtown Warsaw with Google Street View, but after a couple minutes I couldn’t quite get the angle I wanted to verify where the photo was taken from. That’s when I realized this was really a problem perfectly suited for Google Earth.

Searching in Google Earth for the TP building at 14/16 Twarda Street, I was able to get to exactly the same view I see in Google Maps. But if you turn on the 3D buildings layer, you get a different perspective. Not only can you see all the satellite imagery, but you can see all the major buildings in the downtown area.

I then just used the camera/viewer controls and flew around in Google Earth until I pretty much matched the view. Finding the right side of the building was simple, and then it was just a bit of moving the viewpoint around until I pretty much aligned the Google Earth view with the image.

Once I had the view matched with the photograph (which I did by lining up the buildings), I literally “turned around” my view in Google Earth to see the building behind me—that is, the one where the photograph was taken (figure 2.6).

In Google Earth, double clicking on a 3D building will give you information about that building. I double clicked on the building, and up popped the information I was looking for; it’s the Warsaw Financial Center.

Now … how to figure out what office/floor you’re on? You can estimate it by looking at the altitude of the view—something that Google Earth tells you in the lower-right corner. From that number (120 meters), we can guess we’re somewhere around the fifteenth floor or so. But to get the exact floor? Ah … THIS takes a little extra detective work! How can I figure that out?

Easy, but you have to pay attention to some of the details.

When I opened the large image, the first thing I did was to scrub around a bit, looking for what I might use for clues. In the process, I noticed an odd blue set of squiggles on the image roughly in the middle of the photograph. That’s a little puzzling. What’s up with that? I ignored it earlier, but now I remembered it was there and so I zoomed in a bit to see (figure 2.7).
Figure 2.6
Flying around in Google Earth, I was able to find the location in Warsaw where the Google Earth view with the 3D buildings view mode looks nearly identical to the original image.
© 2012 CNES, Daniel M. Russell

Figure 2.7
a) The original photo cropped down to just the blobby reflection in the window. b) If you flip that image horizontally (as though looking at it in a mirror), a word appears. c) Zoom in a bit and then enhance the contrast, and it’s clear what the logo is.
Credit: Daniel M. Russell
This looks suspiciously like backward writing. At this point, I needed to play around with the image a bit to see if I couldn’t squeeze some more information out of it. So I opened this subimage in my favorite image editor and flipped it around the vertical axis\(^5\) (in this case, I used Adobe Photoshop, but nearly all image editors can do this).

Since it looked backward, I first did a flip horizontally so I can see what it could be (figure 2.7b). At this point, not only does it look suspiciously like writing, but it looks suspiciously familiar. Still, I wasn’t 100 percent sure. I needed a better look.

Just to be sure, using my image editor I enhanced the contrast a bit and zoomed in so I could see the details (figure 2.7c). This is definitely the Google logo.

And then I had my AHA! It’s the Google logo! (Surprise!) Obviously, my friend was in the Google office in Warsaw when he took the photo. Offices often have large logos of their company, so this isn’t that surprising. (But now I get the humor: my friend doesn’t work at Google, and so this was a bit of a “look where I’m at now!” kind of inside joke.)

From there, it’s not hard to do a search for [Google office Warsaw] and find the Google offices in the Warsaw Financial Center on the Google offices web page. That page tells us the exact floor (tenth) and phone number.

Search [Google offices Warsaw] to find that the information is at the Google corporate offices website: www.google.com/about/locations/.

Google Warsaw
Warsaw Financial Center
Emilii Plater 53
00–113 Warszawa
Poland
Phone: +48 22 207 19 00
Fax: +48 22 207 19 21

And once you have THAT information, it’s pretty straightforward to figure out that the Google offices are on the tenth floor.

**Research Lessons**

1. *Sometimes clues can be misleading (such as the Egyptian flag in the image)*. It’s important to NOT get bogged down in dead ends but instead be willing to change your strategy on the fly.
2. *Google Earth is a valuable search tool when you’re looking for objects in landscape photos that you can’t identify otherwise.* In this case, I was able to line up the photo with the 3D buildings and literally work backward to identify the Warsaw Financial Center.

3. *Sometimes clues are hidden in the details and reflections.* In the case of the Google logo appearing reflected in the glass, it becomes apparent once you isolate that part of the image, magnify it, and reflect it around the horizontal axis. That one clue then lets you figure out the exact location. Reflections are often incredibly useful clues in images (although you need to have an image editing tool to magnify the details, transform the image, or enhance the contrast).

Above all, you just have to think like a detective, working from the clues you have (logos and the reflection on the glass) and then using the tools you know about (such as Google Earth) to work from evidence to the complete answer.

**How to Do It**

**A. Zoom in.** To *zoom in* on a photo, you can zoom in on an image by using the browser itself. Just type a control-+ (that is, hold down the control key and press the + symbol) to zoom in and then control— (the control and minus keys). On a Mac, it’s similar, but use the command key instead of the control key (that is, CMD+ and CMD—).

If you need even more zooming, you can download the photo from the website and then use an application to magnify the image. For most browsers, you can right-click on the image (or control click on a Macintosh) and then save the image to your computer. Then once you’ve done that, just double click on the image, and your computer will open it in an image editing program like Apple’s Preview or Microsoft’s Photo Viewer. No matter what your image viewing application is, there will be an option to zoom in, scroll around, and zoom out. Often the zoom-in tool looks like a small magnifying glass, frequently with a plus sign in it. Click on that to zoom in. (And if it’s not there, it will be hidden under the menu item “Tools.” Look there as well.)
B. Google Street View. Using Google Street View is the way you can “look around” on a street location when you use Google Maps. To do this, just pin Google Maps on your browser in whatever location you’d like to check out. Here I’ve opened it up to Manhattan, New York (figure 2.8).

You use Google Street View by clicking and holding the small yellow man figure in the lower-right corner. Once you do this, you’ll see that you can drag that icon onto any of the blue lines that appear on the map (figure 2.9).

If I drag the icon to the corner of East Forty-First Street and Fifth Avenue, and then drop the icon at that map location, I’ll be able to see the front of the New York Public Library (figure 2.10).

You can then click and press on the image to change the view by dragging the view left, right, up, and down. (Try it!) Much of the world’s streets are visible this way. (Check out your home street, or try someplace you might want to visit but can’t get to at the moment. 1600 Pennsylvania Avenue in Washington, DC, is popular, but you can also check out the Google Street View of a place like the Eiffel Tower in Paris, France (figure 2.11).

C. Google Earth. Google Earth is a free application that you can download from Google. (I could give you the URL, but a better way to find it is for you
Finding a Mysterious Location Somewhere in the World

Figure 2.9
© 2017 Google

Figure 2.10
The Google Street View of the New York Public Library.
© 2014 Google
to search for [Google Earth] and then download it from there.) With Google Earth, you can literally fly to any spot on the planet and then look around (figure 2.12). It’s much like Google Maps, but it has a bunch of extra features that Google Maps doesn’t have (at least not yet). For instance, you can turn on (or off) various “layers” of mapping information—city and country outlines, or the locations of different kinds of landmarks. In this chapter, I’ve already talked about the 3D buildings layer, which is an information layer that you can turn on or off when looking at the Google Earth images.

In figure 2.13, we see the River Thames, Big Ben, the Houses of Parliament, and Westminster Abbey just behind. This is the same kind of view I used to locate that building in downtown Warsaw.

D. Flip it around the vertical axis. Knowing how to manipulate an image is a generally useful thing. Not only does it let you alter the image to your liking, but as a side effect, you learn what other people can do to change an image. As you probably know, image manipulation is rampant in the fashion world, and happens more often than you might like in news and journalism.
Figure 2.12
In Google Earth, you can click on the small box and activate the 3D buildings view. That layer lets you see buildings in 3D from around the world.
Image © Google. Map data: Landsat/Copernicus/IBCAO, SIO, NOAA, US Navy

If you open a picture in almost ANY image editor, you’ll see a tool (frequently hidden in a pull-down menu called “Tools”) that lets you flip the image.

To flip an image, you have to know that there are two different ways to flip—horizontally and vertically. Here’s an image of a young woman looking to the right (figure 2.14).

And after doing a “flip horizontal,” the image looks like the same picture but everything is flipped left to right. She now looks to the left.

If you do a “flip vertical,” she looks to the right.

Note that rotation is NOT the same as flipping the image. If you rotate the image by 30 degrees, you’ll see something different.

And notice that rotating the original image by 180 degrees gives you a DIFFERENT image than if you do a flip vertically.
In the case of the photo featured earlier in this chapter, I wanted to make it possible for me to recognize the image that was faintly visible in the window. To “undo” the effect of the reflection, I had to do a flip horizontally in order for it to show up in the right way.

In this particular case, I used the “preview” application on the Macintosh (but again, nearly all photo viewers have this capability).

To really understand this, I highly recommend that you open an image on your computer and play around with the flip function (and the rotate function, if you have a couple of minutes) to really understand what’s going on here. Trust me, this will be useful for you in the future.
Finding a Mysterious Location Somewhere in the World

Figure 2.14
The upper left shows the original picture, before any rotating or flipping, and then various orientations.
Credit: Luc Nikiema
Try This Yourself

Here’s a lovely picture I took of the Notre-Dame Cathedral in Paris, France. As you can see, it’s a beautiful spring day with clouds and birds, and a bridge crossing the river. Imagine that you have an incredibly romantic episode in your life that happened on that bridge and that now—years later—you’d like to do a little research about the bridge. You know the name of the cathedral in the background, and probably know the name of the river, but how would you figure out the name of the bridge? (Hint: use Google Street View.) Can you search it out?