

A CHICAGO STYLE SOLUTION TO A MESSY PROBLEM

B CLEARY

I was looking for a real life example of someone that found a way to work through an impossible problem, when I got stuck on Chicago.

I've never really been to Chicago, that stuck thing was a metaphor, but when I think of Chicago I think of bears and bulls and cubs. Chicago seems like a place with lots of meat. Not real clear on why, but in my head Chicago is a meaty place.¹

The Chicago, in my head, has a sound too, the clarinet and saxophones first danced with the horns and rhythms of jazz happened in Chicago and I hear that in its name.²

Chicago, in my head, is full of grit, big people, and cold weather. Chicago is tenacious, (I know that is too big a word but that's the best one so I am going to use it without apology in true Chicago style.)

Which is perfect because I was looking for a tenacious engineering example. Remember I said that at the very beginning. While I busy being stuck I found the story of Ellis Chesbrough. Who was the civil engineer that raised the whole city of Chicago by about 10 inches in the middle of the 1800's.³

But before we get to the story lets drop some markers so we know where we are starting.

Chicago, Illinois in 1850ish

- Zach Taylor was the President in January of 1850 but he dies in July of that year and his vice president James Buchanan takes over for him.⁴
- The Civil war is still about 12 years away but most people see it coming and are worried.⁵
- There is no such thing as a telephone yet.⁶
- The Car is still just an idea running around the head of a German inventor named Karl Benz.⁷
- Everyone knew about electricity but no one knows how to get it into houses or lights yet.⁸

Ellis was not a scientist. He was an engineer. Which means he was all about figuring out how and not so much worried about why.

He was not hung up on the fact that in less than 10 years (1852-1860)⁹ Chicago went from a little train stop town of 30, 00 to an urban nightmare of over a million. He was focused on how to handle all of the...yuck that living in a town with a million people, thousands of horses, and acres of slaughter houses creates. Most big "modern" cities of the 19th century¹⁰ let all that *nasty* flow into the gutter and sewer system. Sewers are buried deep underneath the cities they serve. They are complex tunnels that lead the waste water away from the populated areas and then spill it out into a river or something.

That plan was not going to work in the City of Broad Shoulders,¹¹ for two and a half reasons; One, the ground is very flat so the waste doesn't flow anywhere is just puddles. Two, the ground Chicago is built on is a clay that does not absorb water. And (half) it was ground really difficult to dig through.

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If your following along with pictures in your head, and you envision a busy city street with huge piles of manure and waste blocking doors and fancy women walking through piles of poo in long dresses then your still on track. The poo was a major pollution problem in all the big cities, even ones with great sewer systems.¹¹

The “waste management” problem was huge, it smelled like, well you know, and the people of the 1850’s were pretty sure it was not a healthy lifestyle choice. But no one had a solution. It didn’t look like there was a solution to be had.

in 1849 more than 30,000 of the people of Chicago dead from Cholera;¹² which everyone blamed on all the funk and stink in the air because of the waste. So the leaders of Chicago were looking for an engineer to build them a sewer system no matter how impossible the problem seemed.

Elis Chesbrough took that job. He knew about the challenges of the project. He had a plan; he focused on what would work, even if it sounded crazy. Mr. Chesbrough figured if he could not dig down then he would simply lift the city up. He had worked for the railroad for a couple years, and learned how to turn a 200 ton train engine around by lifting up the tracks and train and then spinning it, so he figured you could use the same idea on a city.

He bought thousands of the jacks (jack screws) the railroad used to lift up train cars, he hired thousands of men, and started jacking up the building of Chicago one by one, until he had raised the whole city about 10 inches.

One building at a time, Chesbrough and his crew crawled under each building, house, hotel and store; they set up their jacks and started twisting them like gigantic screws. They would stop every foot or so to put in more supports then they would crank the jacks some more.

One of the problems of doing this kind of work in a city with a million people is working around all those people. So when Mr. Chesbrough and his crew lifted a hotel, they did so with people still working and sleeping inside. You could literally wake up with a whole new view outside your windows.

In a couple of places he had to move the whole building to get the piping right. His crews did that too. They jacked them up. Put dozens of iron wheels under them, then hitched up thirty or forty plow horses to slowly pull the whole building, to its new resting place.

Engineering is all about looking for problems. You could say that an engineer without a problem is called unemployed. Mr. Chesbrough found problems, challenges and surprises throughout the project. At one point he and his crew even had to move the Chicago river¹⁴

It took Mr. Chesbrough and his men about 5 years, but in the end Chicago has a sewer system that drained very nicely into the river not too far from Lake Michigan where all the water in the city came from in the first place. Which means, for the time being, the great city of Chicago is problem free.

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P.S.

It's funny how sometimes finding a brilliant solution to one problem just leads to another. For example, one of the big solution to the pollution problems of all the horses were leaving in the streets. Was to switch from everyone riding horses to everyone driving cars...

1. Bulls Bears, Cubs and meat from Chicago.
2. How did Jazz change when it reached Chicago?
3. How much did Chesbrough raise the city of Chicago
4. The Presidency of Zachary Taylor.
5. When did the Civil War start?
6. When did they invent the first telephone?
7. Who invented the first car? And what year?
8. First electric lights in houses?
9. How big did Chicago get between 1852 and 1860?
10. What is the middle of the 19th century?
11. What is the city of broad Shoulders?
12. How many people died from Cholera in Chicago in 1849?
13. The Great Horse Manure Crisis of 1894?
14. Did Ellis Chesbrough move the Chicago River?