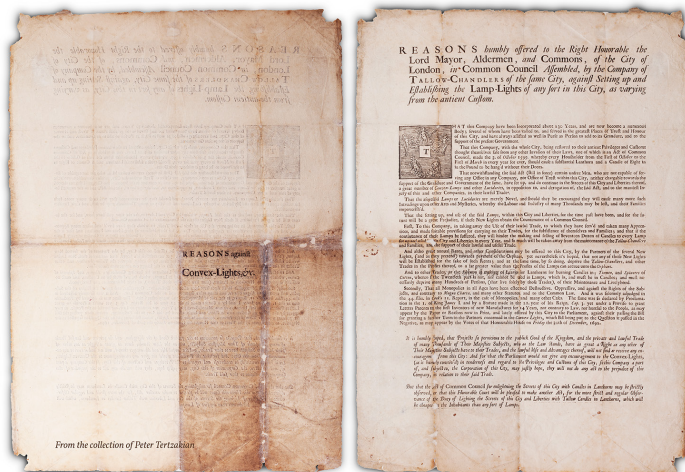


The Candlemaker

By Michael Sawers, HBA 2021



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As he walked through the chamber, the echoes of his footsteps rang out like gunshots amidst the fragile air of St. Paul's Cathedral. His eyes were fixated on a recently created painting. A quote by the artist posted below the painting read, in Latin—

Lector, si monumentum requiris, circumspice.
"Reader, if you seek a monument, look about you."

Charles Wosley found himself here every morning before work, without fail, staring at the brilliant painting of Sir Christopher Wren that was recently put on display in the vast cathedral. He admired Wren; a physicist, astronomer, and mathematician, Wren had taken on the surprising role of architect to help re-build London after the Great Fires. Charles saw himself in Wren; whereas Wren had to rebuild the city, Charles was tasked to rebuild the economy. Specifically, the Lord Mayor had tasked Charles, a high ranking Alderman, to address the City's latest debacle regarding convex lenses. Charles left the Cathedral with a cloudy head, and headed to the meeting.

"Attention, attention" the Lord Mayor said with a growl. He was a lazy man who conducted himself with a complete lack of poise. He sharply contrasted the sanctity of the office around him. There were sleek oak benches lined up diagonally in orderly rows facing the Mayor, while paintings of Mayors before him lined the walls.

"As you all know, we gather here today to make a decision about lenses... or something" the Mayor muttered the end of his sentence. "Today, we have a representative from the Tallow Chandlers who wishes to address us. Representative, please proceed."

"Thank you, Lord Mayor. I represent the interest of hundreds of candlemakers. I wanted to remind you all, before you reach a decision, that candles are cheaper *and* better for the environment, *and*...

The representative droned on in an alarmist tone. Other aldermen shared their opinions until it was Charles' turn to speak.

"I will make this short," said Charles, immediately commanding the respect of his fellow aldermen. "There have been talks among the banking merchants about forming The Bank of England. As you

know, this has long been a goal of ours to achieve. However, the most powerful among them have made it explicit that they wish to be the exclusive lenders for the manufacturing and installation of these new convex lenses. Should we ban lenses, we can say goodbye to the Bank of England.”

This ruffled the crowd as the Lord Mayor ended the meeting and called another discussion for tomorrow morning. As Charles left the building, he was met with another protest from the Candlemakers. He met eyes with a few of them, and for a moment, he thought he saw a glimpse of Ben Shomakker.

Ben was Charles’ close childhood friend; they used to share family meals together, play with toy guns, and as they grew older, even went hunting with their fathers. Charles had always regretted losing touch with him. He heard Ben was now a lesser-known candlemaker in the East End, and Charles tried to crush the pang of guilt he felt then with the quick rationalization that his eyes must have failed him. He headed home.

As he began the next morning’s walk to St. Paul’s, he caught the subtle scent of smoke. He turned his head, and saw a store simply called ‘The Candlemaker’ a few blocks from the cathedral. His eyes drifted inside and met the gaze of an individual giving him a cold grimace. Charles responded with an awkward, guilt-ridden smile as their line of sight was suddenly broken by the store’s brick wall. That same haunting feeling of guilt he experienced outside the council building returned, this time more profound, as he realized how much these candlemakers were at the mercy of The Council. With weak legs, Charles walked into the cathedral and returned to that same painting. Again, he read:

Lector, si monumentum requiris, circumspice.

But today, he failed to find a monument within himself.

“Order, Order!” The Lord Mayor bellowed above the frenzy as he slammed his hand on his desk to gather attention. The room had a tension unlike ever before; the Tallow Chandlers representative was yelling at an Alderman, and many other aldermen seemed to have chosen sides. The meeting had not even started yet. The Lord Mayor spoke. “Let us begin – ”

“Indeed, let us begin.” Interrupted Charles, as he walked right into the middle of the room. “We must appreciate what is truly at stake. Although these lenses would be excellent for our relationship with the banking merchants, we must remember the other candlemakers, and their suppliers, who are at the mercy of our decision.”

The Tallow Chandlers representative smiled at the Alderman he was arguing with earlier.

“However,” continued Charles, “we must also be cognizant of the forces at play here. If we ban convex lenses, are we not discouraging innovation? Are we not telling our merchants, who embrace economic risks to develop valuable technologies, that we do not, in fact, value them? Claps erupted from many of the Aldermen.

“Thus, gentlemen, I hereby propose we encourage the production and implementation of convex lenses, but also create a program that assists the inevitably high amount of displaced candlemakers!” Shouts erupted from the others.

“It is NOT the council’s job to help those who deny the advancement of society!” yelled an Alderman.

“Convex lenses are already costing us money in the short term; why spend more?” yelled another.

Charles replied “the Lord Mayor has put me in charge of this proposal. I will provide it in two weeks’ time, at which point, you can then form your opinion.” The Lord Mayor called the meeting as Charles walked out of the room into the crowd of protestors once again.

Two weeks had passed, and Charles had finished the proposal—he had missed church every single day for the past two weeks to complete it. He had also made multiple summaries of the 30 page document to hand out at the meeting. Soon after he passed the protestors, he handed out the summaries to the other Alderman. It read:

This proposal aims to address the concerns stat’d by the Tallow Chandlers regarding the Common Council’s decision on whether to ban Convex. This proposal suggests that the Council enlighten the streets with Convex-Lights, but also hire displaced candlemakers full-time to manufacture and install said Lights until either the project is completed, or the given candlemaker has found alternative work.

Contrary to his expectations, Charles was not met with another outburst of emotion from the aldermen. In fact, that would have been better than what he heard, or rather, did not hear. There was just silence.

After everyone present was provided the opportunity to read through the proposal, the Lord Mayor initiated a vote.

“All in favour of the proposal, raise your hand.” 18 out of 40 hands went up. *Rejected.*

“All in favour of the convex-lamp ban?” 19 out of 40 hands went up. *Rejected.*

“Very well. Alderman Wosley’s proposal is rejected, and the city hereby votes to install convex-lamps throughout London.”

And just like that, it was over. The Tallow Chandlers representative stormed out, while Charles walked up from his seat, and with a dejected look on his face, limped outside on a broken heart.

As he left, he suddenly thought of Ben, and on a whim, he approached two Alderman having a conversation.

“Hi, sorry to interrupt – do either of you by chance know where a candlemaker by the name of Shomakker works?”

“Hi Charles – sure, he is a few blocks down from St. Paul’s, at a store called “The Candlemaker. It’s just him who runs it.” said one of the men.

Charles left in a hurry and turned the corner to Ben’s store – he thought he would visit and break the news to him personally. As he turned, however, he saw a closed sign. *Shoot, I must have just missed him,* Charles thought to himself.

Then, his eyes processed the entire scene—the windows were boarded up, the door was caged shut, and the closed sign didn’t just mean closed for the day—it meant closed forever.

Ben had already gone out of business.

Charles went home to his family in a hurry, and was now convinced that the Council had failed the candlemakers. He knew the

candlemakers were ill-qualified to quickly find other work. While Charles went home to a family meal in his West-end home, Ben had to face the humiliation of telling his family he had failed them. The convex lamps may have advanced the interests of society at-large, but without assistance from the council, many of Their Majesties Subjects will now meet the same fate as The Candlemaker.

Lector, si monumentum requiris, circumspice.

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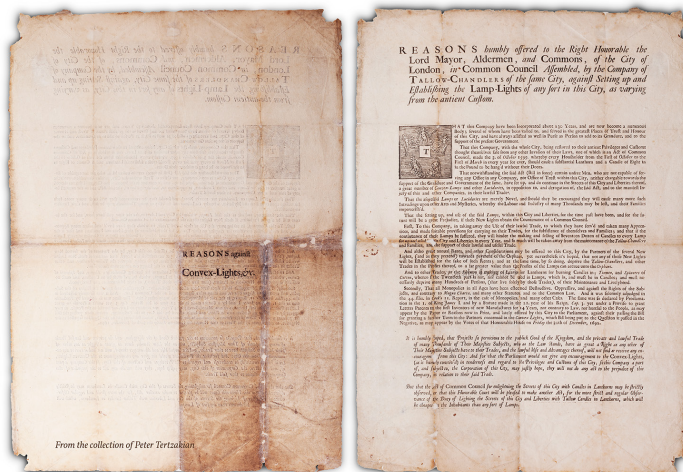
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The Candlemaker and the Coal Generator: A Tale of Transition and Innovation

By Helen Schreyer, HBA 2021



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London, 1680 – The Candlemaker

I was five years old when my father first showed me how to make a candle. I remember it well. He sat me down and told me that I was a man now, that one day I would take over the family business. We didn't have much, so we made our candles from animal fat collected during the autumn slaughter¹ (Mother made Father promise to save that part of the lesson for when I was older). Father made his candles from sheep tallow because it didn't smell as bad as cows' or pigs' tallow.² Each year we needed 400 candles to light our home,³ so Father kept these and sold the rest to The Tallow Chandlers' Company. The Company used our candles, along with those of many others, to maintain compulsory lighting for the City of London. They also traded in sauces, vinegar, soap, cheese, and herrings,⁴ but we were less interested in those. All we had to give was our candles.

The night Father taught me how to make candles he showed me his crates of twisted cotton and linen wicks. We spent hours together, dipping wicks in tallow until each had a proper width and taper.⁵ Father guided my hand, keeping me steady, then showed me how candles need trimming when they're burned—sometimes 40 times per night—to keep the wick short and the flame clear and bright.⁶ At the end of the night Father handed me my first candle. My face was flushed, and his eyes were twinkling. "Well done, son," he said, "One day you'll make your old man proud."

London, 1692 – Through the Looking Glass

It's been twelve years since I made my first candle. I don't make them anymore. Two years ago, I took an apprenticeship with Mr. Reeves, the glassblower in town. He makes lenses too. At first it was just spectacles but then he caught wind of a new technology called the 'convex lens.' Father thinks Reeves is nothing but a nonconforming, rebellious tinkerer. I think Reeves is a genius.

"The convex lens is going to change the entire lighting industry," I told my parents over dinner.

Father scowled. "Reeves doesn't know what he's doing. And neither do you. You should be preparing to take over the family business. I've tolerated your tinkering this long, but no more. Next month is your eighteenth birthday. I forbid you from continuing with these trivialities and expect to see you studying our books."

¹ Crawford, B. (NA). How Were Candles Made in the 1800s? Our Pastimes. Retrieved from <https://ourpastimes.com/how-were-candles-made-in-the-1800s-12148427.html>.

² Ibid.

³ Ibid.

⁴ The Tallow Chandlers' Company. (NA). Our History. The Tallow Chandlers' Company. Retrieved from <https://www.tallowchandlers.org/about-us/our-history>.

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⁶ Ibid.

"Father, I refuse to take over our family business. It has no future!"

"How dare you – "

"Convex lenses are the future. And I can make lenses. I've learned all about it, Reeves taught me."

"You would – "

"I can change our business. I can make it better!"

"Now let your Father finish," Mother cut in as she spooned potatoes onto my plate.

Father gave a tired sigh. "William, the convex lens won't change anything. Just last night The Tallow Chandler's put in a petition to the councillors of the City of London to ban the convex lens. A thing like that would make lighting too efficient. Wick makers, candle makers, candle suppliers, all of us would lose our livelihoods. We can't allow an industry like this to change, not when it supports so many families as it is."

I stared at my father, incredulous. "Are you hearing yourself? Too *efficient*? Can't allow an industry to *change*? The only way we'll ever see progress is if we *enable* change. Eventually it'll happen either way, the question is whether or not you'll be left behind." I forked peas into my mouth. "Take the risk or lose the chance, Father," I said, then swallowed quickly after a pointed look from Mother. "Now's your chance to get ahead. *I'm* your chance to get ahead."

Father sighed. "Ah, Will. There is an old Chinese proverb, 'To guess is cheap. To guess wrong is expensive.' Let others do the guessing. We'll stay where it is safe."

"What about the other proverbs you taught me?" I countered. "'Those who say it can't be done shouldn't interrupt the person doing it?' Or 'Only the wisest and stupidest men never change?' We are doing it Father. *You* would be stupid not to change!"

"William! Do not speak to your Father that way!"

"But it's true! Times are changing. We need to change with them." Father set down his cutlery.

“Not in my lifetime. And not in yours. These things don’t happen overnight William, and I will not have you jeopardizing our family. You will take over the business, but as long as I’m living, I’m the boss. And you will make candles. If you want to make anything else, you can leave—the business and the family.”

“Andrew!”

“Father!”

“That’s my last word. Do not bring this subject up with me again, William. And certainly not at the dinner table.”

I got up from that table and stormed from the room. Father left shortly after. Mother’s pudding went untouched.

London, 2021 – Hindsight and Foresight

The lecture hall is silent. I tell my student’s this story each year at the end of our class on transition and innovation. I read from my great-great-great-great grandfather’s journal, and I tell them what happened next. William was kicked out of the house but continued to study under Richard Reeves. In 1675 Reeves obtained a patent for a glass reflector to be used with candles and lamps.⁷ Not much came of Reeves’ reflector, but in 1682 a newspaper announced a “new Project for Lights... (that) shall exceed six times the Light of the Candles.”⁸ The advertisers were likely Samuel Hutchinson and associates, but before they could obtain their patent a man named Anthony Vernatty obtained his own patent for a “New Sort of Lanthorn and Lamps.”⁹ Sometime between 1683 and 1689 Vernatty set up “the Glass Lights” in Cornhill, and in 1692 he was lighting the road from Clarendon House in Piccadilly to Kensington Place.¹⁰

“William and his father were both right,” I told my class, “Take the risk or lose the chance. But change doesn’t happen overnight. What are some parallels we can draw to this story today?” I gestured to a young man in the front row, “Nathan, go ahead.”

“One example is how businesses are being asked to pursue net zero strategies. My family has a long history in the coal mining industry, which peaked in the 1980s but has been declining ever since. In 2019 alone, 75% of new energy investments went towards renewables and coal generator usage fell dramatically.”¹¹

In the second row, Eileen raised her hand.

⁷ De Beer, E. (1941). THE EARLY HISTORY OF LONDON STREET-LIGHTING. *History*, 25(100), new series, 311-324. Retrieved January 2, 2021, from <http://www.jstor.org/stable/24401837>.

⁸ Ibid.

⁹ Ibid.

¹⁰ Ibid.

¹¹ Bond, K. (November 5, 2020). The Energy Transition – The Time is Now. Carbon Tracker. Retrieved from <https://carbontracker.org/the-energy-transition-the-time-is-now/>.

“The transition to renewables was amplified by the pandemic too. I read a report by the International Energy Agency that said demand for fossil fuels collapsed by 8% in 2020, while demand for renewables grew by 15%.”

“And what does that mean for companies planning to grow in the fossil fuel sector?” I pressed.

“They’ll have excess capacity. That will lead to lower prices, which reduces profits and results in stranded assets.”

“Very good. There’s an entire legacy fossil fuel system with over \$30 trillion of fixed assets,¹² and countless organizations whose strategies are still based on rising demand. This makes them vulnerable to disruption as the industry moves from growth to decline, which is what we’re seeing now. In 2008 the European electricity sector collapsed, and we’ve spent the last decade restructuring and writing-down \$150 billion of fixed assets.¹³ The hope of remaining fossil fuel companies is that the intermittency of renewables will cap growth. This has been their ongoing defense, but year-after-year renewables continue to increase their share of the energy sector.”¹⁴

I turned to my class. “Knowing this, I want you to think well about what you’re going to do as the future policy makers of our energy sector. How will you support innovation? How will you ensure families like Nathan’s aren’t left behind? Keep in mind that every economic development has social consequences, but it’s the economy that exists to support society, not the other way around. Many will put profits over people in their pursuit of progress. Be careful you don’t do the same.”

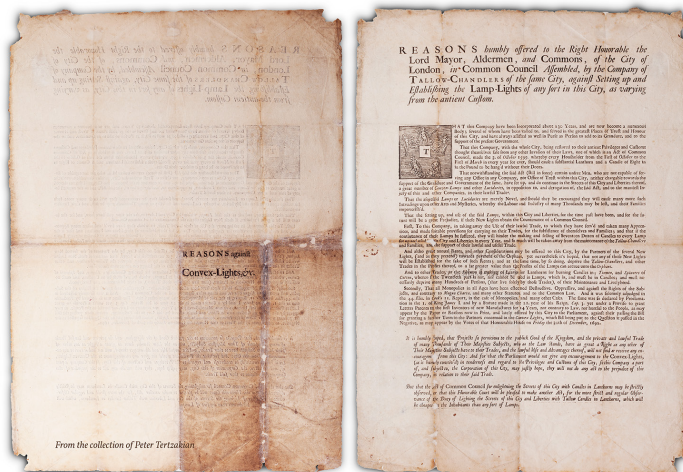
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Civilization's Growing Pains

By Ada Zhang, MBA 2021



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LONDON, 1692

Edward Clarke's return from his candle-making workshop is punctuated by the heady stench of tallow and a bellow of indignation.

"This is blasphemy - Work of the devil, I say!"

Timothy sighs at his father's exclamation. Much to his dismay, it was the fourth time he had heard this statement in as many days.

"Father, you needn't be so petulant. Your Tallow Chandlers peers have been working night and day to persuade the Common Council and public, no? Handing out that brochure with reasons to ban the convex-light?"

His father fumes wordlessly and nods.

Timothy pauses, and continues cautiously, "But truly, would it be so terrible if we used these new lights? You must admit, candles have their limitations. The little ones often lose their way once evening arrives - the candle streetlights barely illuminate the path, nor our door!"

A tense silence follows.

"My boy," Charles replies, his rage melting into sadness as he rubs his temple with calloused fingers. "The Clarke's have been chandlers for generations. I am afraid we will lose our livelihood if these convex-lights become commonplace. We would become impoverish'd."

With this, Timothy thought of his dearest mother, near bursting with child, and his six younger siblings, thin and often shivering in their hand-me-down garments. Winter would be upon them soon and they could not afford to lose nourishment.

An abrupt surge of motivation jolts Timothy from his seat.

"Let us go to the city square and help distribute brochures," he insists earnestly, "Certainly more hands would persuade the Common Council to understand the consequences of this invention."

And so, father and son determinedly trek to the city square.



There is a flurry of activity at the square, with members of the Tallow Chandlers hurriedly handing out brochures. The rare bypassing Common Council member would be quickly swarmed by the members, imploring him to truly think of families who would go hungry if not for policy intervention.

Edward and Timothy are waved over by a familiar crowd of chandlers but stop in their tracks to acknowledge an approaching acquaintance.

“Good day, Doctor Bownell,” greets Edward, nodding at the tall, wiry man.

Doctor Walter Bownell was certainly the most unique individual in the city, known for his rambunctious, vocal nature and his eccentric foresight.

“Good day Edward, Timothy,” the doctor cheerily welcomes the duo, “Are you gentlemen here to participate in this convex-light protest?”

“Well, yes, but what is your business here?” Edward curtly asks.

“Ah, just looking to gain some new perspective and enjoy some titillating discourse!” The doctor replies, somewhat mischievously.

Edward grimaces. “New perspective?”

Unaware of or indifferent to his disdain, Walter heartily responds, “It is simply marvellous to witness the birth of such new technologies, is it not? Think of all the ways our city will benefit! The luminescence! The new applications!”

Unamused, Edward retorts, “So, what do you suggest we do to feed our families should the convex-light replace our candles?”

The doctor ponders at this, eyebrows furrowing.

After a beat, he snaps his fingers and exclaims, “Soap!”

Edward appears confused, though his son immediately understands. Timothy has heard of tallow being used to create soap, a product growing in popularity in some regions within London.

The doctor continues his trail of ideation.

“Nay, you can use your nimble fingers in other crafts, tallow-related or otherwise. Perhaps we can negotiate with the Common Council for new apprenticeships, ensuring all members of our city can maintain a living.”

His eyes glimmer with inspiration, “Let us teach all the chandlers to make convex-lights! We must make haste for the future!”

At this point, Edward has had enough of Walter’s naive romanticism. He had spent his life as a chandler and there was far too much at stake to pursue this gleaming illusion of a ‘future’ when the present was already sufficient.

Meanwhile, Timothy is divided. Surely, his father was close-minded and the doctor was idealistic, but both parties were oversimplifying a complicated matter. He couldn’t help but think that, perhaps, Walter was on the brink of a brilliant idea. Perhaps the convex-light was *not* the enemy, after all.

If only we could truly collaborate with the Common Council for the good of the kingdom...

His thoughts are interrupted by the tail end of Walter’s impassioned speech, “I also know of an old friend looking to employ coal miners in the East end of our city. He has been mighty successful since London’s wood sources have been depleted and if you ask me, that coal trade has a good bit of promise.”

Though Edward scoffs at the prospect, Timothy’s interest is piqued. He had never been fond of the repugnant scent of tallow and preferred physical labour, given his athletic form.

As such, the younger Clarke decides that the coal mine might just be the place for him to forge his own path.

Little did Timothy know, he was about to join the next phase of an energy revolution.

LONDON, 300 YEARS LATER

“What is this nonsense! I will not stand for it!”

An irate Edgar Clarke slams the newspaper down on the kitchen table, fuming at British Coal’s announcement of closing 31 of its 50 remaining mines and laying off tens of thousands of miners.¹ The impact nearly extinguishes his wife’s favourite lavender candle centrepiece.

Martha rolls her eyes, realizing that her father was on the brink of yet *another* tangent.

“Our family has been in the coal industry for centuries, but the bloody government keeps tightening the noose around our necks with pit closures,” Edgar rants.

“They’re killing our coal mines—our livelihood! And now these natural gas plants are popping up and stealing our limelight.”

Before he can continue, Martha quickly interjects.

“But is it so terrible? Do recall the Great Smog of London, father. Surely, cleaner gas energy is beneficial for everyone!”

Edgar frowns and clears his throat, starting a lecture on the lengthy history of Britain’s coal production and the economic ramifications involved in its diminishment. This, of course, included a summary of the vicious political war between Margaret Thatcher and the National Union of Mineworkers.

Martha straightens in her chair. She always had a special interest in environmental causes and was prepared with counterpoints to her father’s old-fashioned perspectives.

In the living room, the other two members of the Clarke family observe the father-daughter energy debate with passive interest.

“It’s quite fascinating, mother,” Henry muses, tapping a page of the heavy Psychology textbook he was reading for a university assignment.

“In 1988, the ‘status quo bias’ was coined. A study found that people have a disproportionate preference for the current state of being.”

¹ <https://www.nytimes.com/1992/10/14/business/britain-to-shut-most-of-its-coal-mines.html>

“Even if the potential benefits outweigh the losses?” Emily asks, taking a sip of tea.

“Even if so,” replies Henry. “I suppose it can’t be helped, it’s simply human nature.”

His mother tilts her head thoughtfully and smiles. “Ah, but there’s nothing simple about that, is there?”

Henry chuckles. He reminds himself to share this amusing exchange with Martha later, after helping her prepare for her interview with British Gas.

And so, another cycle of civilization’s growing pains begin.