

# “Harmful to the commonality”: the Luddites, the distributional effects of systems change and the challenge of building a just society

Katharine McGowan

*Department of Marketing, Entrepreneurship and Social Innovation,  
Mount Royal University, Calgary, Canada, and*

Sean Geobey

*University of Waterloo, Waterloo, Canada*

## Abstract

**Purpose** – When complex social-ecological systems collapse and transform, the possible outcomes of this transformation are not set in stone. This paper aims to explore the role of social imagination in determining possible futures for a reformed system. The authors use a historical study of the Luddite response to the Industrial Revolution centred in the UK in the early-19th century to explore the concepts of path dependency, agency and the distributional impacts of systems change.

**Design/methodology/approach** – In this historical study, the authors used the Luddites’ own words and those of their supporters, captured in archival sources ( $n = 43$  unique Luddite statements), to develop hypotheses around the effects on political, social and judicial consequences of a significant systems transformation. The authors then scaffolded these statements using the heuristics of panarchy and basins of attraction to conceptualize this contentious moment of British history.

**Findings** – Rather than a strict cautionary tale, the Luddites’ story illustrates the importance of environmental fit and selection pressures as the skilled workers sought to push the English system to a different basin of attraction. It warns us about the difficulty of a just transition in contentious economic and political conditions.

**Social implications** – The Luddites’ story is a cautionary tale for those interested in a just transition, or bottom-up systems transformation generally as the deep basins of attraction that prefer either the status quo or alternate, elite-favouring arrangements can be challenging to shift independent of shocks. While backward looking, the authors intend these discussions to contribute to current debates on the role(s) of social innovation in social and economic policy within increasingly charged or polarized political contexts.

**Originality/value** – Social innovation itself is often predicated on the need for just transitions of complex adaptive systems (Westley *et al.*, 2013), and the Luddite movement offers us the opportunity to study the distribution effects of a transformative systems change – the Industrial Revolution – and explore two fundamental questions that underpin much social innovation scholarship: how do we build a just future in the face of complexity and what are likely forms those conversations could take, based on historical examples?



## 1. Introduction

In contemporary society, Luddites and Luddism are seen as engaged in a Sisyphean task – destroying weaving frames in an otherwise futile tantrum against the future (Sale, 1995; Krugman, 2013). Modern Luddites rail against automation in the aggregate and individually refuse things like cell phones or high-speed internet in favour of the ways of doing of their childhood (or even their parents' childhood). However, this social memory smooths out the conflict between two different paths or basins of attraction articulated by workers and owners in the first decades of the 19th century. Workers saw the push for innovation and individualism rightly as a threat to their view of the commonality, and some fought to preserve custom, while others sought to jettison an elite, unresponsive system that had in their mind let down the common weal so fundamentally as to lose legitimacy.

The secretive workers movement of Luddism acted at a time of significant systems disruption and offered a competing, alternative vision of British society. The transformations they were experiencing undermined not only a way of life, but their capacity to live and support their families. Their failure to win the argument with factory owners and Parliament gives their movement a backwards-looking glow of nostalgia, those rebelling against the future. However, a closer examination of their own statements reveals the contested nature of systems transitions. The Luddites advocated not only in their interest but also proposed fundamentally different systems arrangements than they experienced – their own, Luddite-centric alternative.

During times of change, there is intellectual, economic and political competition between groups seeking to control systems relationships, feedbacks and ultimately determine its new equilibrium. While the system ultimately settled on a set of institutional arrangements preferred by British industrialists, at the time, the Luddites presented an alternative that highlights how, in times of transformation, possible future states are contested. We use the case of the Luddites to explore the complex adaptive systems concept of a basin of attraction (Westley *et al.*, 2011) and expands it to explore transitions where there are competing developmental pathways (McGowan and Westley, 2015; Berkes *et al.*, 2003; Walker *et al.*, 2004). In doing so, we apply the panarchy framework (Gunderson and Holling, 2002) in a single rich historical case to map elements of the world in which the Luddites operated. Drawing out the contested nature of social innovation in complex systems will help us better understand the power dynamics at play during periods of transformation.

### 1.1 Research questions

Social innovation itself is often predicated on the need for just transitions of complex adaptive systems (Westley *et al.*, 2013), and the Luddite movement offers us the opportunity to study the distribution effects of a transformative systems change – the Industrial Revolution – and explore two fundamental questions that underpin much social innovation scholarship:

- Q1. How do we build a just future in the face of complexity?
- Q2. What are the likely forms those conversations could take?

The historical example of the competing Luddite-led and Industrialist-led basins of attraction in the early-19th century, with a particular emphasis on the former as a bottom-up moral appeal to a perceived unfair and unsustainable status quo, are particularly relevant to modern concerns about system transformation tied to new technology. As the casual use of

the term “Luddite” is broadly thought of as being anti-technological change implies that their positions have been thoroughly discredited, they present a particularly colourful example of a basin of attraction that failed to gain traction.

## 2. Literature review: social innovation and complexity

The need for transformation in complex systems is increasingly taken for granted in the face of the myriad of unsustainable relationships in the social and natural world (Scoones *et al.*, 2020, 2018). That social innovation is a critical set of tools, in that transformation is also increasingly assumed, or even expected (Westley *et al.*, 2013; Avelino *et al.*, 2017). However, historical studies of social innovation and transformation efforts hold two critical cautions: one, that systems entrepreneurs may ultimately do more harm than good, depending on a set of conditions (only some of which are in their control), and that the outcomes of transformative efforts cannot be guaranteed or necessarily positive (Westley, McGowan and Tjørnbo, 2017; McGowan and Westley, 2015). If we are to advocate for transformative social innovation, we need a more robust understanding of how competing interpretations and systems configurations are navigated and prioritized, especially as we debate systems transformations (past, present and future).

Contrary to many previous studies on failed innovations, we are not reflecting on social engineering (McGowan and Westley, 2015). Nor are we considering a response to/resistance to social innovation exclusively (Bartels, 2017; Newth and Woods, 2014; Gurviez and Sirieix, 2013), although this is one common interpretation of Luddite perspectives. Instead, we are looking at a moment of active discussion, debate or disagreement about what the future could look like between competing visions, rather than between change and the status quo.

In particular, what we are looking for here is evidence of the effort at a just transition, a concept first advanced by American Unionists in the 1970s – is it possible to shift an economy in a way that minimizes harm done (Roberts *et al.*, 2018). While the concept has gained traction in the context of climate change and “a fair and equitable process of moving towards a post-carbon society” (McCauley and Heffron, 2018, p. 2), and while the roots of our current climate crisis are very much laid in the Industrial Revolution, our focus here is uniquely on workers.

## 3. Conceptual framework: competing basins of attraction

While transformation can be a contested or vague concept, van der Leeuw and Folke (2021) provide us with a helpful framing for transforming complex adaptive systems, that transformation happens when society shifts from one basin of attraction to another; social innovation can be a driver in that process (Westley *et al.*, 2011). Folke *et al.* (2004) frame basins of attraction as factors that contribute to the stability of a given set of arrangements or a whole system; the stronger the interaction between these factors, the more stable the arrangement in question, pulling in and then holding the system in an equilibrium over time.

For simplicity’s sake, this interaction can be conceived of as a basin or trough, the depth/stability of which is an outcome of the interaction effects between the factors in question. We can also introduce into this framework the logic of thresholds, that this shift from one basin to another ultimately happens when “society’s information processing systems is no longer fit to deal with the dynamics with which the society is involved” (van Der Leeuw and Folke, 2021). To tip a system into a new set of arrangements, it must be destabilized from its original basin of attraction and moved into a new one. This can be done partially through the shallowing of those basins themselves, disrupting the interactions that make the basin stable and facilitating movement into another set of arrangements (Hwang and Christensen, 2008; Westley *et al.*, 2011). Social innovators often target these barriers to change, decreasing the attraction of the old equilibrium (hence shrinking the depth of the basin of attraction)

and increasing the attractiveness of an alternate equilibrium by aligning relevant factors and creating new, powerful interactions (hence a second, deeper basin of attraction emerges) (Westley *et al.*, 2011; McGowan and Westley, 2015). This process is illustrated in Figure 1.

The above diagram presupposes one extant and one future basin; however, in our case and in many cases, there are multiple possible new equilibria in competition with each other and the current equilibrium. In these cases, competition between alternative basins and the status quo frequently take a normative dimension; while proponents of respective alternative basins of attraction share a mutual frustration with the status quo established equilibrium, they work on different barriers and certainly for different (even mutually exclusive) ends. This dynamic of agents working simultaneously to push a system towards competing basins of attraction is illustrated in Figure 2.

The above dynamic is one we hypothesize as relevant to the Luddites' story, as both Luddites and industrialists work to pull the British system away from its pre-industrial equilibrium and towards.

### 3.1 Panarchy cycle and Luddite discourses

The Luddites often acted at a local scale (albeit with national implications), which strongly suggested the need for a cross-scale perspective, for which we turned to the panarchy cycle, and in particular, the overlapping cycles typical in a nested system (Gunderson and Holling, 2002) In doing so, we hope this study will focus on the thorny issue of systems transition rather than resilience in the face of disruption. We looked for exogenous and endogenous shocks at the micro (communities), meso (regime/industry and parliament as two interwoven planes) and macro (landscape). Additionally, we emphasize that the movement through the cycle is not a forgone conclusion, but a contested process, wherein agency and environmental fix are critical to appreciating how successful innovations like factory systems remake landscapes and ultimately overtake alternative efforts like the Luddite movement. In so doing, we sought to place the Luddites within a nested system, responding

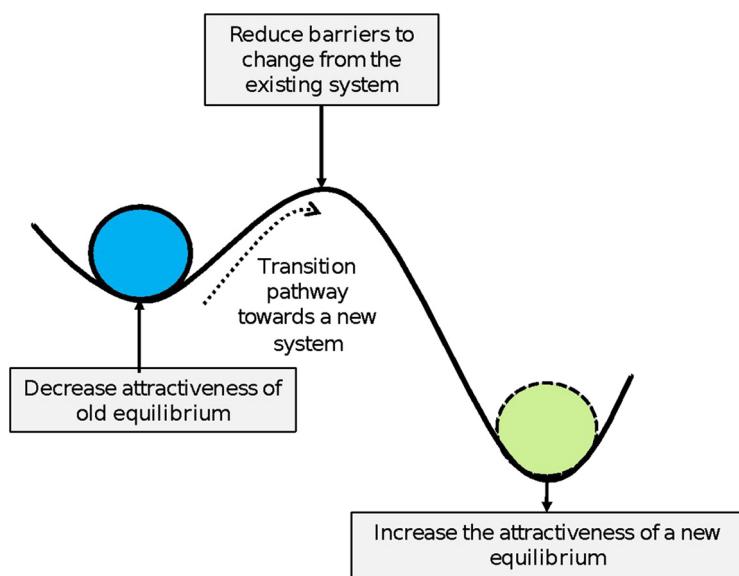
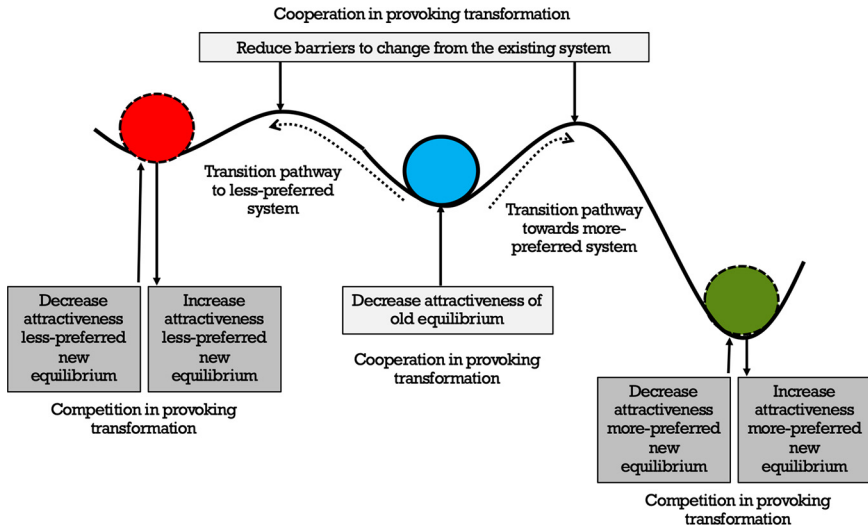


Figure 1. Basins of attraction



**Figure 2.**  
Competing basins of attraction

to meso- and macro-level pressures while simultaneously acting at a local level using local knowledge. Managing these cross-level realities of competing social innovations is critical to bringing agency and ethics to social change.

Hence, we have chosen to focus on and seek to map economic and political-economic relationships and system dynamics, especially in Section 4. This is an analytical choice and does not capture the totality of the Luddite world, nor even wholly explain Luddism, which was deeply entwined with local and folk culture. For example, this included religious elements, as Magistrates and vicars were often one and the same, who made explicit claims about family relationships and gender roles, particularly admonitions against women working. Ergo, we have chosen to look at only a few tiles from a rich mosaic.

### 3.2 Methodology: populating the panarchy cycle with Luddite discourses

To populate both the panarchy cycle and to understand the possible competing basins of attraction, we turned to the Luddites themselves. The Luddites present a paradox: collectively, they produced a fair amount of advocacy, but individually, they stayed remarkably true to their oath of silence. Their words that survive are anonymized but frequently express discourse associated with moral entrepreneurship (Antadze and McGowan, 2017), a working defence “against an encroaching capitalist political economy” (Navickas, 2011, p. 73).

Even now, there is tension between the Luddites’ intent and outcome, and the secretive nature of membership means we have little access to the inner thoughts of those involved – we only have what they wanted others to know, providing an interesting opportunity for a historical ethnographic content analysis (Krippendorff, 2018). This question of projecting motive on the Luddites is as old as the Luddites themselves, as officials contemporaneously speculated about the movement’s conspiratorial and revolutionary intent. Ergo, this seemed like a good opportunity to return to the Luddite texts themselves to better understand their messages and explore their meanings. Texts’ meanings are so rarely fixed and universal, offering both fodder and frustration for historians for well over two centuries.

For this analysis, we treat the Luddites as honest in their concerns and their perception of threat to their livelihoods, that their attributions and assertions were meant to be taken seriously. Without evidence to the contrary, we assume that they saw the path of economic and political development in the early-19th century as existential threats. However, as Binfield notes, “the Luddite writing is best considered not as a totality but rather as a set of discourses generated under unique local circumstances” (200, p. 17), ergo, at best, we can use their comments as pieces in an incomplete puzzle. Given COVID-19-related travel concerns, we focused on published collections of Luddite documents, specifically Binfield’s (2004) *Writings of the Luddites*, Bailey’s (1998) *The Luddite Rebellion* and Sale’s (1995) *Rebels Against the Future*. While these are not ideal to capture the universe of Luddite documents, given current realities, it has the benefit of having consistent biases in their collection.

In the search of meaning in Luddite statements, we used a historical source-based semantical content analysis, with a focus on attributions (regarding employers, politicians, workers) and assertions (what was the current state? Desired state?). To illustrate our understandings of the relevant attributions and assertions, we have provided examples in Table 1. In putting this puzzle together, we asked if a particular Luddite-attributed document provided information on at least one of three points: the Luddite perception of the current working/living conditions; an articulation of past, present and future employment relations; and an articulation of what the Luddites imagined success looking like as opposed to the emerging industrialist-articulated future.

Specific local threats without rationale (i.e. “we will burn down your mill,” full stop) have been excluded from analysis, as we assume those were intended for a hyper-specific audience and offer little to explain greater Luddite perspectives and projections of intent. We excluded most private letters on similar grounds – their expression of meaning cannot be assumed to be for broad audiences. This filtering resulted in a database of 43 unique Luddite-affiliated public statements ( $n = 43$ ), which we arranged both chronologically and geographically, as well as the level to which the letter was directed (local, regional or national). In Table 1, we have included the most common attributions and assertions within those 43 statements, including their frequency and illustrative examples.

#### 4. Findings

The below considers the Luddite discourses, and maps those discourses across the panarchy cycle and basins of attraction. To support this discussion, we also provide a bit of historical context.

##### 4.1 Luddite movement

Who were the Luddites? The Luddites are frequently framed as innovation-phobic, “staid and archaic” (Shearmur, 2016, p. 807) – more a rhetorical tool in a wider discussion of automation. However, the term originated in an early-19th century workers’ movement, named for the apocryphal machine-breaker Ned Ludd; between 1811 and 1817, a secret group(s) of skilled workers wrote threatening letters, broke labour-saving machines such as finishing frames for stockings, occasionally attacking and even killing factory owners. Parliament was so fearful they were facing an American- or French-style revolution emerging from these secretive groups that they sent 12,000 troops to the Midlands, Yorkshire and Nottinghamshire – larger than Wellington’s British contingent of the coalition fighting Napoleon in Portugal in 1808 (Gardner, 1994, p. 74) to suppress the activity (it is important to note Wellington’s army was part of a coalition). They also offered bribes to those willing to break ranks and sought to plant spies in possible Luddite associations and

| Critique  | Frq | Example  |
|---|-----|--|
| Uselessness of government                         | 12  | “ . . . long and tedious oppression that you are labouring under, and the prospect before you only tends to embitter yr days, yr existence will be shortened and yr many children will become fatherless if you tamely submit much longer to wear the yoke and to Bear that Burden which is intollerable for human nature to endure frequently you have uselessly applied to Government, to Magistrates and to Manufacturers, but all to no purpose” (pp. 243–244)   |
| Grievance against the current set of arrangements | 11  | “We know that every machine for the abridgement of human labour is a blessing to the great family of which we are a part. We mean to begin at the Source of our grievances as it is of no use to petition, We mean to demand and command a redress of our grievances. We have both the will and the power. What? must the industrious artisans or the humble cultivators of the soil, be always robb’ed of the rewards of their labours? must they be forever doom’d to behold their helpless infants unfed, unclothed, untaught, in short deprived of every comfort that makes existance worth holding must see the Vultures of Oppressions legally robbing them. . .” (pp. 184–185)  |
| The need for revolution                           | 11  | “You are requested to come forward with arms and help the redressers to redress their Wrongs and shake off the hateful Yorke of a Silly Old Man, and his Son more silly and their Rogueish Ministers, all Noble Example of the brave Citizens of Paris who in the Sight of 30,000 Tyrant Redcoats brought A Tyrant to the Ground. By so doing you will be best aiming at your own Interest. Above 40,000 Heroes are ready to break out, to crush the old Government, and establish a new one” (pp 207–208)   |
| Current arrangement causes misery                 | 9   | “You will then do right to express your Detestation of the Conduct of those Men who have brought this Country to its present distressed State, and are entailing Misery on Thousands of its industrious Mechanics” (pp. 169–171)   |
| Tyranny/tyrants currently in power                | 9   | “ . . . [you] will you still calmly submit to endure that Arrogance Tyranny and Oppression that hath so long been exercised over you . . . yourselves insolently degraded by those very men that are living in luxury and extravagance from the fruits of yr labour „,you will immediately see that nothing is justly a mans own but that he is in possession of, you will soon see that it is not right for him yo do what he pleaseth with it - admitting it doth no harm to any creature. But if it can be proved that his proceedings are injurious to Society, then Society hath an undoubted right to put a sudden stop to his Vile preceedings . . . not an inch of the habitable Globe is yours. Tyranny has deprived you of it. Nor have you time to behold the fair and Free Creation of heaven the wide realms of necessary Care before you. . .” (pp. 234–236) |
| A desire to shift towards reciprocal/fair trade   | 9   | “As we have nothing in view but a reciprocal Advantage in the Trade, both for ourselves and you, and a mutual good understanding in all our actions. . . On account of the great rise of all the Necessaries of life, a Man that has full employ,  |

*(continued)*

**Table 1.**  
Luddite messages/  
expressions

Table 1.

| Critique                                 | Frq | Example   |
|--|-----|---|
|  |     | with all his industry, and a Woman, with all her care and economy, can by no means support a Family with any degree of Comfort. . . still worse, what must the situation of those be that have none at all, which is the Case with INCALCULABLE NUMBERS at this time. . . We wish to live peaceably and honestly by our Labour, and to train up our Children in the paths of virtue and rectitude, but we cannot accomplish our wishes” (pp. 77–78) |
| Oppression by industrialists/parliament  | 6   | “The poor cry aloud for bread, Prince Regent shall lose his head, And all the rich who oppress the poor, In a little time shall be no more, with deep regret, I write these things, They’ll come to pass in spite of kinds” (p. 183)  |
| A need for regulation                    | 5   | “were much rejoiced to hear that the Gentlemen Hosiers were taking into their consideration to redress the Grievances the Workmen labour under; and to establish a respectable, regular and permanent Price” (pp. 86–87)  |
| France/America as parallel develop paths | 5   | “You say that Bonyparty he’s been the spoil of all, And that we have got reason to pray for his downfall; Now Bonyparty’s dead and gone, and it is plainly shown that we have bigger tyrants in Boneys of our own” (p. 195)   |
| Liberty as a new basin of attraction     | 3   | “ . . . let me persuade you to quit your present post, lay by your sword and become a friend to the oppress’d- for curs’d his the man that even lifts a straw against the sacred cause of Liberty” (pp. 178–179)  |

locations – with very little success (Sale, 1995; Bailey, 1998). Luddites rarely turned on each other.

Frame-breaking, union organizing – referred to in legislation as combination at the time – and oath taking were made capital offences, leading to several hangings and many deportations (Roberts, 2017; Bailey, 1998). These were extreme responses to challenges to the industrialist development pathway, and they could be enacted for the great to the small: while several Luddites were hanged outside York Castle for their involvement in the death of a factory owner, one Thomas Helliker, who was hanged for refusing to name his compatriots in a friendly society/union under the Combination acts (Bailey, 1998, p. 13).

Despite the simplicity with which the Luddites are remembered, there is no consensus on the Luddites’ goal and place in the historical literature. Some argue that the Luddites represent a moment within the story of the working class organizing and cultural development, one step in a larger story of conflict over unionization and working conditions, economic theory and even identity (Hammon and Hammond, 1919; Thompson, 1963; Hobsbawm, 1964). Others have focused their attention on the communities or specific trades involved, which served to enrich but also obscure the movement as a movement or coherent whole, often emphasizing the anti-technology outcomes of Luddite actions as primary (Bailey, 1998; Randall, 2002; Rule, 1986; Calhoun, 1981; Bohstedt, 1983). This focus can have the effect of emphasizing the backwards-looking elements of Luddism, in contrast to the more politically charged quality of especially Hobsbawm. Indeed, Bailey (1998) disregards the political intent of the Luddites nearly entirely in favour of a more fine-grained historical storytelling.

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#### 4.2 *Luddite messages/expressions*

The Luddites are often framed as anti-progress, which would suggest they were trying to push the British system back to a previous set of arrangements. While there certainly were such sentiments in the Luddite statements, theirs was a far more complicated and varied world view. Of the sample we considered, 26 made an explicit claim about the state of life for Luddites, 22 discussed Luddite relations with employers or the state, including parliament and the Crown, and 18 made some claim on the future. These were not mutually exclusive codes as most considered statements were broad.

In terms of the claims on the future, they fell into two general sub-categories: a more reciprocal benefit of trade and revolution. The Luddite statements considered here made nine references to some rebalance of trade benefits towards workers or at least equal benefits with owners; five additional references were made to regulation as a tool to achieve peace and harmony. Conversely, statements made nine references to tyranny or tyrants, 11 to anti-monarchy revolution and three additional explicit references to freedom or liberty. Lastly, the statements made 12 references to the uselessness of government in handling the current crisis or in general. To better illustrate the criticism of current systems arrangements as well as their future preferred systems, see [Table 1](#), based on semantic content analysis coding of the Luddite data set, including the frequency of assertion and attribution types/categories within the 43 statements above and illustrative examples. All examples have been taken from [Binfield's \(2004\) \*Writings of the Luddites\*](#) for editorial and curatorial consistency, but page numbers have been provided.

While the Luddites generally perceived the past as preferable to the present, the system of arrangements they proposed was a mixture of reforms that accommodated old priorities focused on a respectable remuneration for their work with new demands such as education and price controls, with a few radical proposals such as republicanism included in some visions. While we have identified the workers' level of the system as in reorganization, it is clear from the historical record that the Luddites were not in an advantageous position or even equal footing with owners; the resort to "Luddism, though a calculated tactic, issued from the desperation of the knitters" ([Roberts, 2017, p. 393](#)). The choice of violence may be seen as a result of there being fewer if any avenues open to them: "Luddism, though a calculated tactic, issued from the desperation of the knitters" ([Roberts, 2017, p. 393](#)). At the time, several observers compared the general feeling of unrest and unhappiness with that of the time of Charles I, immediately preceding and precipitating the English Civil War and the brief Republic ([Gardner, 1994, p. 74](#)).

It is clear from the historical record that the Luddites acted at the local level but responded to pressures from higher levels that directed their actions, making some things possible, and others less so. Across the range of Luddite discourse, there are clear preferences for specific paths and systems arrangements, ones that would protect the value of some part of the skilled labour while increasing their capacity to achieve political aims, from legal protections right up to revolution. We can consider this Luddite basin of attraction, held in tension between a desire for the previous era's stability and sense of purpose, and a strong sense that the current set of political arrangements was either insufficient or outright faulty and in need of reform. While this latter concern likely hurt their capacity to appeal beyond a specific group of like-minded individuals, and requiring complete systems transformation, it may also help explain the effectiveness of Luddite secrecy oaths.

It is important to put the violence of the Luddites into a wider context. Multiple attempts to work within the established British Parliamentary system to improve their economic condition were repeatedly rejected or met with oppositional responses. As Gardner laments,

“petition after petition was sent to Parliament without the slightest hint of support from the parliamentary elite or any kind of ameliorative action” (1994, p. 78), including ones for children of out-of-work labourers to be granted apprenticeships, and multiple petitions for minimum wage or wage protection bills, and even the return of Tudor anti-labour saving device bills (Bailey, 1998; Sale, 2004; Krugman, 2013). Formal and informal protests were endogenous, and failure of the former seems to have driven the latter, as increasingly desperate workers (examples embedded in Table 1) found fewer and fewer options open and the need for action inversely increasing. This should give many of those currently in power pause, as competition over path dependency may not remain limited to policy debates and intellectual conflict if those suffering feel the pull of the need for change and the push of the limitations of the old system.

### 4.3 Mapping the Luddites

Below (Figure 3) we have mapped the discussion in Sections 4.1 and 4.2 onto a nested multi-level panarchy. The four panarchy levels were created based on historical secondary source data, with a focus on common social-economic and discursive coherence: the Luddites functioned in local niches, but demonstrate some level of organizational cohesion between said niches through common languages, images and expressions of meaning; the textile industry and British parliament each has sets of rules and grammar (even if in the case of the former employers compete, and in the latter, membership changes) and their rules and decisions seek to constrain (or destroy) the Luddites. These two meso levels are further constrained by functioning within the amorphous landscape of British society, including values and norms around emerging capitalism and shifting understandings/expressions of Christian ideals.

While each of these levels do, often intentionally, influence each other it does not follow they are at the same point on the panarchy cycle (Gunderson and Holling, 2002). Ergo, based on aggregates of their own expressions/declarations of meaning contained in the historical texts we reviewed above, we inferred the micro level (Luddite movement) as experiencing reorganization, the meso levels of the textile industry and British Parliament in exploitation and conservation, respectively, and lastly, the British society as between conservation and

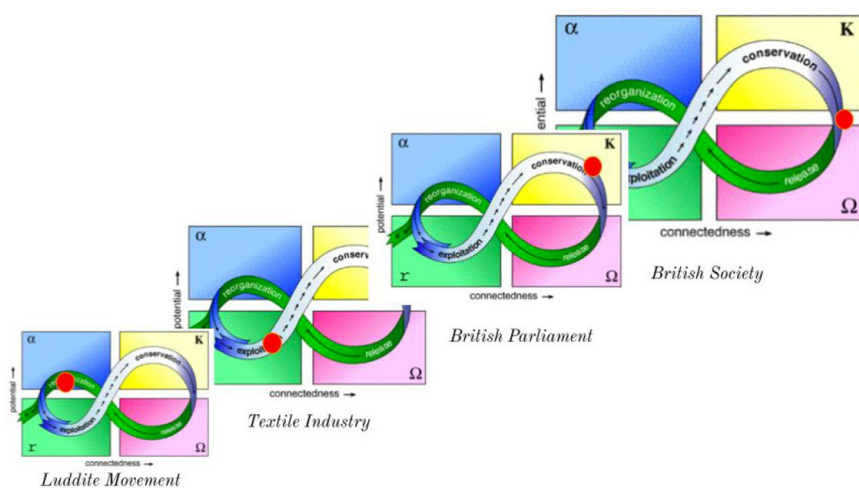


Figure 3. Luddite panarchies

release, as it was caught between the Industrial Revolution's disruption and a conservative socio-political order.

Two Tudor monarchs, Edward VI and Elizabeth I, had enshrined in law a set of arrangements that favoured workers over technology, establishing in the 16th century a system that was untenable by the early-19<sup>th</sup> century. This shift is partially explainable through a multi-level approach, considering changes at the landscape and regime levels, as well as effects of bad harvests and war. At the industrial/textile production regime/meso level, the perfection of the steam engine at the Watt and Boulton shop in 1776 built technological/innovation and economic/centralized investment momentum that destabilized the economic landscape of cottage industry "task-scapes" and self-reliant communities (Sale, 1995, pp. 27–29; Navickas, 2011, p. 73). What emerged was large-scale factories that hollowed out the middle range of the skills premium among British workers, in favour of a small few at the top and driving many more into the bottom (O'Rourke *et al.*, 2008). These were the first factory systems, with far-reaching consequences at the macro and micro levels across Britain.

Machine breaking itself was not new: since at least the 17th century, workers destroyed machines if and when they felt employers violated custom or laws such as the Framework Knitters Charter (Binfield, 2004, pp. 14–15). This action was common enough, it triggered formal, if ineffectual, parliamentary responses through the 18th century and what Hobsbawm evocatively calls "collective bargaining by riot" (1964, p. 1). Similarly, Navickas (2011) described property damage as "one of the most common forms of expressing a grievance" – presumably focused on economic grievances (p. 59).

However, several key meso-level policy decisions and landscape-level shocks minimized the support for skilled and semi-skilled tradespeople and made these riots more desperate. Enclosure of almost 85,000 acres of common lands between 1787 and 1810 increased the pressures on rural and semi-rural workers to be entirely supported through wages by removing their access to food and material through grazing rights applied to these lands. While a consequence of the enclosures were the subsequent restoration of the forests, which gave Luddites places to hide and organize, the overall picture was one of increased desperation (Roberts, 2017, p. 391). Consider this contemporary commentary from George Sturt "the enclosure [. . .] left people helpless against influences which have sapped away their interest, robbed them of security and peace, rendered their knowledge and skill of small value and seriously affected their personal pride and their character" (as quoted in Sale, 1995, p. 35).

The extended conflicts with France, clustered together as a Napoleonic Wars, had stressed the public purse, driven up prices on food and pushed down some wages, particularly for some textile workers (Gardner, 1994, p. 73). In the immediate years leading up to the peak of Luddism, wet winters devastated crops, further driving up food prices (Navickas, 2011, p. 64). The status quo of the Tudor skilled worker was rapidly disappearing, and those who established it were rapidly leaning towards supporting this new, frightening equilibrium that favoured industrialists.

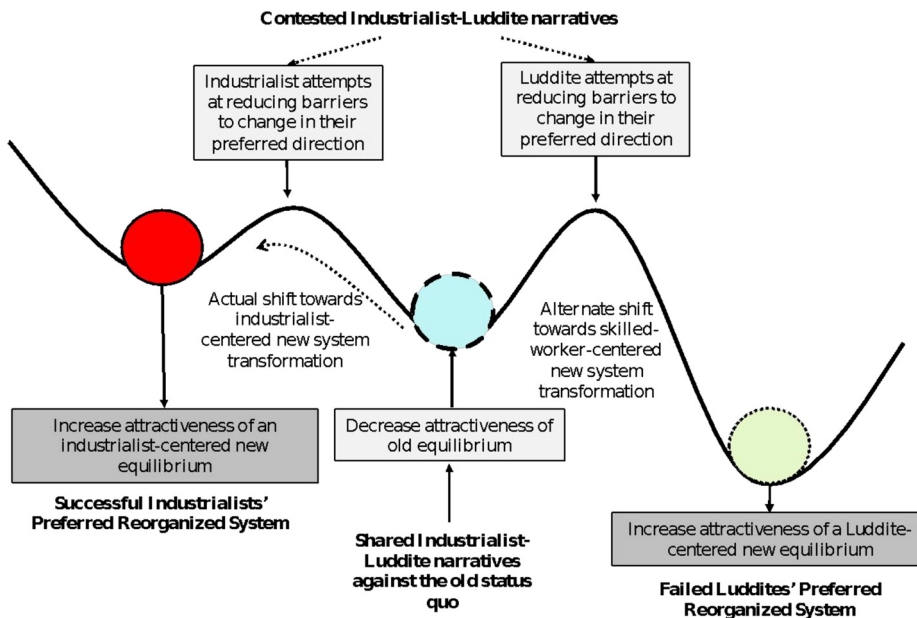
Lastly, while the British Parliamentary system was in relative conservation at this time in terms of form and function, several key factors seem to have shifted it away from its Tudor focus on the commonality and towards the path of *laissez faire*. The sheer amount of invention and wealth associated with factories and industry cannot be discounted in this – a tipping point of technological innovation.

This was accompanied by the publication, and more importantly, uptake among parliamentarians of Adam Smith's *The Wealth of Nations*. Its contents could be interpreted as justifying avoiding minimum wage bills, banning unions and generally favouring owners

over workers. Contemporary workers' advocate Gravenor Henson lamented "the writings of Dr Adam Smith have altered the opinion of the polished part of society, on this subject. Any attempt to persuade the government to fix wages would now, it was feared, be like trying to 'regulate the winds'" (as quoted in Bailey, 1998, p. 86). Whatever the motive, the affinity between Smith's philosophy and the British ruling class built a strong basin of attraction – one that the Luddites sought to challenge (Figure 4).

### 5. Discussion

The story of the Luddites' failure is one of selection pressures – who makes decisions, why and environmental fit. Competing basins of attraction can be assessed on how they deal with or address with the (new) dynamics a system encounters *vis-a-vis* the original basin and each other (van der Leeuw and Folke, 2021). Whose proposed/enacted basin of attraction is easiest/preferable for those making decisions, helps justify their choices and supports their preferred arrangements? (Figures 1 and 2). Simply put, the Luddites' argument had poor environmental fit compared with the capitalist one, that emphasized competition, innovation and profit. This speaks to the importance of a compelling narrative that facilitates certain paths/choices for those making key selections. In the 1810s, the industrialists had articulated a clear post-feudal vision focused on the *laissez faire* of Adam Smith, which appealed to the governing class. The Luddites could harken back to the Chartists or Levellers, but their vision of a post-feudal society was not as clear. Obvious alternatives such as Owens' New Lanark Mill were still relatively new – and as a factory, may not have appealed to skilled workers. Additionally, the explicit reference to revolution and Napoleon in some Luddite discourse significantly decreased the attractiveness of their proposed basin of attraction to those who would suffer most – Parliament.



**Figure 4.** Competing basins of attraction: Luddite vs industrialist

What is clear is that this was not the story of a just transition in which change was managed to minimize harm on those adversely affected by it. Nor does that seem possible, given Parliament's general commitment to the industrialists' preferred model of society, impassioned speeches from characters like Lord Byron excepted (Bailey, 1998). Whether the Luddites' vision can be considered more just may depend in part on the perception of their violent threats – where they final acts of desperation or an explicit war on capitalism, or both? Regardless, the Parliamentarians' belief in the invisible hand absolved them of responsibility for their people, and the shift from the Tudor commonality was complete.

## 6. Conclusion and application

Paul Krugman, in a 2013 lament for the Luddites' concerns today, mused: "I can already hear conservatives shouting about the evils of 'redistribution.' But what, exactly, would they propose instead?" Perhaps that is the wrong question, but how long can those defenders of the status quo systems arrangements maintain their hold on/dominance of the selection pressures that determine which new ideas and innovations are filtered and incorporated into the norm. Likely we are leaving conservation now, are we entering into the same kinds of competition we saw in this period? And, how does that bode for the possibilities of a just transition?

The Luddite story may initially seem a cautionary tale to those working for change from the bottom. That transformation needs to be presented in user-friendly packages to those most in need of change. However, the effectiveness of their secrecy generally points to something else, that environmental fit is contextual, and in Luddite places, they enjoyed support even in the face of state bribes and threats. Those seeking transformation may want to target the system's level or landscape they are most likely to change in the moment, as a step to making their basin of attraction more attractive to more people, and lowering the barriers of change. Relying exclusively on the morality or rightness of your cause in the abstract or general is less likely to succeed than seeking out those who are open to listening. And lest they be prepared to declare war on their own people, those in power should pay attention to emerging tensions as opportunities for meaningful reform, as "You tyrants of England, your race may soon be run, You may be brought unto account for what you've sore'ly done" (Binfield, 2004, p. 195).

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#### Further reading

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#### Corresponding author

Katharine McGowan can be contacted at: [kmcgowan@mtroyal.ca](mailto:kmcgowan@mtroyal.ca)

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