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The Social Attribution of Innovation: Uncovering the Heads Behind the Guillotine

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ABSTRACT

Popular narratives often attribute innovations to a few "heroic" figures. Although scholarship has challenged this myth, it typically treats attribution as an issue of credit allocation, separating innovation production from innovator recognition. As a result, we lack an integrated account of how innovations and innovators become progressively linked through social processes of attribution.

We address this gap through a microhistorical study of the guillotine, a beheading machine enduringly attributed to—and named after—Dr. Joseph-Ignace Guillotin, a humanist, physician, and politician who did not in fact invent it. Analyzing debates on equality in penal reform during the French Revolution (1788–1792), we develop a process model of attribution grounded in the co-construction of innovations and innovators. We theorize how audiences' evaluations of a contributor's engagement with a novel solution escalate into an evaluation–attribution spiral that crystallizes the innovator–innovation link.

Our model identifies the mapping of contributors' engagement onto value-laden problem dimensions as a key mechanism and shows why, once crystallized, attribution persists even as the innovation's meaning shifts—transferring credit or blame to the attributed actor regardless of material involvement. In doing so, we advance research on innovation production, innovator recognition, and the social construction of technology.

Keywords: innovation; attribution; evaluation; social construction of technology; microhistory

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> "Some men are unlucky. Christopher Columbus cannot attach his name to his discovery; Guillotin cannot detach his from his invention. The movement spreads from the center to the periphery; the work happens below the surface, but it happens nonetheless."
>
> - Victor Hugo, "Littérature et Philosophie Mêlées" (1834 : 235)

INTRODUCTION

Innovations and their principal originators are inextricably linked in the collective imagination. The light bulb evokes Thomas Edison; the smartphone evokes Steve Jobs; the steam engine evokes James Watt; the assembly line evokes Henry Ford; and the guillotine evokes Dr. Joseph-Ignace Guillotin. Over time, *innovations* and those recognized as their emblematic *innovators* become almost inseparable in public memory, even when their idea, discovery, or development was in fact distributed across several relevant contributors. This raises a question: Why do certain solutions that come to be celebrated as innovations end up being attributed to specific individuals—among the many who contributed—leaving them enshrined in history as their symbolic "fathers" or "mothers"?

Management research generally approaches the *recognition* of innovators as a problem of credit allocation that is analytically and temporally distinct from the *production* of innovation. Research on the production of innovation emphasizes how new solutions—whether new ideas, products, or processes—emerge from complex interactions spanning multiple individual, organizational, and institutional actors (Cattani, Ferriani, & Lanza, 2017; Cowan, 1997; Podolny & Stuart, 1995) and are evaluated by audiences as innovative thanks to cultural entrepreneurs' actions (Bartel & Garud, 2009; Garud, Gehman, & Giuliani, 2014). However, it does not investigate how specific contributors come to be enduringly associated with certain innovations.

By comparison, research on the *recognition* of innovators instead addresses the question directly. It suggests that credit converges on certain individuals due to "lone inventor" narratives spread by interested actors (Lemley, 2012; Ott, 2023), organizational or professional norms guiding who gets acknowledged (Colyvas, 2007; Haeussler & Sauermann, 2013), and institutions, such as patenting

(Hilaire-Pérez, 2000; Rosenberg, 1982). These studies explain credit allocation through status effects (Azoulay, Stuart, & Wang, 2014; Merton, 1968) and inequalities (Ducor, 2000; Einav & Yariv, 2006). However, with few exceptions (e.g., Ott, 2023), they investigate recognition at a given time and ignore how particular attributions emerge, stabilize, and persist (or fail to do so) over the course of history. Additionally, this work tends to emphasize the contributors' strategic agency in securing recognition and the advantages resulting from their social position. It pays relatively less attention to the interplay between contributors' involvement in the development of innovations and audiences' active evaluation of their involvement.

Finally, a related body of research in the *social construction of technology* (SCOT) highlights both the importance of situating innovations in their context and the role of audiences. SCOT suggests that innovations are historically and socially constructed, their meanings intensely debated among heterogeneous audiences, until they reach interpretive "closure" and stabilize (Basu, 2023; Humphreys, 2005; Pinch & Bijker, 1984). This echoes work in management suggesting that audiences actively participate in the construction of worth through their evaluations (Aspers, 2009; Khaire, 2014; Khaire & Wadhwani, 2010). However, SCOT rarely examines how the identification and evaluation of the innovator are co-constructed alongside those of the innovation. All in all, scholarship still lacks an integrated, systematic account of the social processes through which innovations and innovators become enduringly linked via attributions over time.

Attribution matters—whether in academic authorship, patent inventorship, technological innovation, or scientific discovery. Exploring why certain individuals come to be recognized as innovators is "foundational to modern society" (Fisk, 2006: 50). A deep understanding of attributive processes is necessary for governing complex evaluations that allocate credit and blame to specific actors, often obscuring the fundamentally collective nature of innovation and the limited material

contributions of any single individual. The case of J. R. Oppenheimer, widely recognized as the "father of the atomic bomb," illustrates this dynamic: although the Manhattan Project depended on the decisive contributions of numerous scientists and military leaders, public memory mostly crystallized around a single figure, who attracted both praise or blame (Borpujari, 2026; Rhodes, 1986). Additionally, historical studies suggest that attributions play a key role not only in credit allocation but in the very process of the construction of a solution as an innovation (Ott, 2023; Sulloway, 1982). Hence, understanding the social processes behind enduring attributions is central to the development of an integrative theory of how solutions become socially recognized as innovations, and how meanings are reciprocally constructed and transferred between innovations and innovators. We thus ask: *What social processes explain how innovations become enduringly attributed to specific innovators over time?*

To address this question, we conducted a microhistorical study (Darnton, 2000; Hargadon, 2015; Hargadon & Wadhwani, 2023) of the process through which the French intellectual, politician, and humanist Dr. Joseph-Ignace Guillotin became recognized during the French Revolution (ca. 1788-1792) as the creator of the famous beheading machine that still bears his name: *the guillotine*. Our analysis shows that the machine became enduringly tied to Dr. Guillotin not because of his material involvement in its creation, which was minimal, but because his engagement shaped how two opposing audiences, revolutionaries and royalists, evaluated the device as both novel and a rupture from the *Ancien Régime*. Dr. Guillotin's proposal for the kingdom of France to adopt a beheading machine as a universal instrument of capital punishment directly engaged longstanding Enlightenment debates on cruelty and inequality. As a result, audiences evaluated his idea as a groundbreaking solution to well-defined societal problems, even though similar beheading devices had existed for centuries. By anchoring audiences' perception of the machine as a bearer of major

change, his proposal triggered attribution to him even before the device was built—a link that persisted despite his lack of involvement in its design and construction, and his later attempts to distance himself from it. Dr. Guillotin's status as a reformer and revolutionary intellectual further reinforced this perception of innovativeness, crystallizing an enduring association between the man and the machine, which audiences ultimately named after him: the guillotine. Ironically, the machine also reshaped Dr. Guillotin's public image, transferring to him the negative connotations of what became the first state-administered instrument of mass execution. To further elucidate the process through which associations between innovations and innovators are constructed, we also conduct a counterfactual analysis to explain why other contributors—who were often far more materially involved in the machine's technical development—failed to receive similarly enduring attributions.

Abstracting from our empirical case, we develop the first process model to explain the social attribution of innovation as it unfolds when audiences are exposed to a focal contributor's engagement in the development of a solution. We conceptualize this process as a self-reinforcing sequence of evaluative steps through which audiences socially co-construct innovations and innovators in tandem. We further theorize the conditions under which these evaluative steps mutually reinforce one another and escalate into an *evaluation–attribution spiral*, culminating in a crystallized link between an innovator and an innovation. Importantly, we show that, once crystallized, innovator–innovation links tend to persist even as the meaning of the innovation shifts, thereby extending the innovation's positive or negative new connotations to the attributed contributor.

Underscoring the role of audiences' evolving worldviews in structuring their reciprocal evaluation, our study thus shows that *innovators shape innovations, just as innovations, in turn, shape innovators*. Finally, we outline how this perspective opens up new avenues for a more integrated theory of innovation attribution as a fundamentally social and evaluative phenomenon.

THEORETICAL FOUNDATIONS

Management research suggests that solutions recognized as major innovations are typically valued not only for their novelty (Hage, 1999; Crossan & Apaydin, 2010; Schumpeter, 1947) but also for their significance—that is, for being interpreted as symbolic and substantive ruptures from the past (Kline & Rosenberg, 2009; Lubinski, Wadhwani, Gartner, & Rottner, 2024; Raffaelli & Glynn, 2015).[1] Thus, innovations are more than the linear product of interactions among networks of entrepreneurs, scientists, and engineers (Cowan, 1997; Podolny & Stuart, 1995). They are the result of complex social evaluations, where heterogeneous audiences (Isenring, Durand, & Laamanen, 2025) grant significance to a focal solution. With the term *evaluation*, we refer to the practices used to construct a socially shared understanding of a focal object and ascribe value to it (Khaire, 2014; Lamont, 2012; Zuckerman, 2012).

Entrepreneurs and managers cultivate audiences' evaluation and support of a solution as innovative through carefully crafted narratives and atypical language (Bartel & Garud, 2009; Garud et al., 2014; Gouvard, Goldberg, & Srivastava, 2023; Lounsbury & Glynn, 2001), thus allowing for "the becoming of new possibilities" (Lockwood, Soublière, & Gehman, 2025: 1). Yet this research on the production of innovation rarely considers *attribution*—the process through which innovation origination is assigned to specific contributors who come to be recognized as innovators—even though it is closely tied to how innovations are evaluated. In fact, part of this work assumes a relatively clear, ex ante link between innovators and innovations, with the former playing a key role in shaping how "their" solutions are evaluated (see, e.g., Cattani, Ferriani, & Lanza, 2017).

Research on the *production* of innovation thus tends to set aside the question of the *recognition*

[1] For clarity, we distinguish inventions (i.e., novel ideas) from innovations (i.e., novel ideas that end up stimulating, enabling, and being associated with significant societal or cultural changes), even though the research we review does not always specify this distinction. Additionally, while research in management usually focuses on changes in economic and technological systems, we adopt a broader perspective that encompasses political and social changes.

of innovators. This is instead the object of another, complementary stream of work, which has extensively examined how credit becomes attached to certain individuals despite the collective nature of innovation processes. This literature highlights three main drivers of innovation recognition: (1) "lone inventor" narratives casting targeted actors as genius inventors having experienced a sudden "eureka" moment (Guise-Richardson, 2010; Lemley, 2012; Rosenberg, 1982; Singh & Fleming, 2010); (2) organizational and professional norms shaping who is credited for innovations (Colyvas, 2007; Haeussler & Sauermann, 2013; Rabinow, 1997); and (3) institutional systems, such as patents and status hierarchies, channeling recognition toward specific actors (Merton, 1968; Hilaire-Pérez, 2000). Innovators are often portrayed as "heroes" in history (Carlyle, 1841). As Rosenberg noted:

> "[T]he public image of technology has been decisively shaped by popular writers who have been mesmerized by the dramatic story of a small number of major inventions […]. In addition, in the telling of the story, overwhelming emphasis is placed on the specific sequence of events leading up to the decisive actions of a single individual. Indeed, not only our patent law but also our history textbooks and even our language all conspires in insuring that a single name and date are attached to each invention" (1982: 55).

This body of work illuminates why attribution converges on a subset of contributors. However, it tends to treat the innovation as a given and its attribution to targeted individuals as merely the distribution of recognition. For instance, Paul Rabinow's (1997) seminal work on the emergence of polymerase chain reaction (PCR) separates, both chronologically and narratively, the story of its emergence at Cetus Corporation from that of how recognition accrued to a subset of actors, primarily Kary Mullis, who received a Nobel Prize in 1993. This stream of research tends to emphasize contributors' strategic efforts to gain recognition or the cumulative advantages stemming from their privileged status. It pays comparatively less attention to the interplay between contributors' involvement with a solution and audiences' evaluation of that involvement. In addition, the part of this conversation dedicated to unearthing the static antecedents of credit allocation, such as status, tends to be relatively ahistorical.

By contrast, audience evaluation and attention to historical context have been at the core of the literature on the *social construction of technology* (SCOT). SCOT emerged in the 1980s as part of the broader "new sociology of technology," challenging technological determinism by showing how artifacts acquire meaning through historically situated social processes (Humphreys, 2005; Pinch & Bijker, 1984). In SCOT scholarship, rather than evolving along a linear, deterministic path, technologies are socially malleable and shaped by competing interpretations among different social groups until one meaning gains dominance. Bijker, Hughes, and Pinch's seminal work (1987) consolidated SCOT through detailed historical case studies of multiple innovations—from the bicycle to Bakelite—that showed how social groups negotiated meanings around technological artifacts within their specific historical contexts. Later refinements thus introduced the concept of technological frames (Bijker, 1997), which express the shared cognitive and institutional structures guiding how groups interpret and describe technologies at a given point in time. Such work showcased—often with historical approaches—how the identification of key audiences involved in shaping an innovation's meanings, as well as the detailed reconstruction of their "theory of value," was needed to understand how solutions become constructed as innovations (Basu, 2023). This resonates with studies in management that presents audience evaluation as a key component of the construction of worth (Aspers, 2009; Khaire, 2014; Khaire & Wadhwani, 2010; Isenring et al., 2025).

However, the SCOT literature also presents notable limitations in relation to our inquiry. It focuses on the interplay between contributors and audiences' evaluation of their work but pays less attention to how audiences assign credit or blame. Thus, it seldom integrates symbolic processes of attribution and personal identities into the analysis. Hence, the social co-construction of innovators and innovations remains, in this perspective, unaddressed.

Despite valuable insights from these parallel conversations, we still lack an integrated account of

the historically situated social processes of attribution—understood as the co-creation of innovations and innovators. Yet this appears critical to developing a granular understanding of how credit and blame are allocated. More importantly, theorizing attribution advances theories of innovation. Beyond simply assigning credit, attribution shapes how solutions are interpreted and evaluated over time, even as shifts in the meaning of those solutions can, in turn, reshape the public image and historical memory of the recognized innovator.

History offers numerous examples in which perceptions of the purported innovator shape the meaning of the innovation—and, conversely, in which evaluations of innovations shape the image of their attributed innovator. An example of the former dynamic emerges in biology, where the enduring attribution of both the discovery of the Galápagos finches and the principle of adaptive radiation to Charles Darwin—particularly from the 1960s onward—turned these elements into emblems of the ascendancy of neo-Darwinian theory (Sulloway, 1982). In the process, this narrative obscured the pivotal contribution of the ornithologist John Gould, whose 1837 classification and identification of the finches were instrumental to Darwin's theorization of evolution by natural selection. An instance of the latter dynamic is the attribution of the mechanized reaper to Cyrus McCormick, a narrative actively cultivated by International Harvester. This framing positioned the reaper as the singular achievement of a "Great Man," transforming it into a symbol of American progress and national destiny, and enduringly establishing McCormick as a genius inventor (Ott, 2023).

Taken together, these insights suggest that attribution is integral to how audiences define and evaluate a solution as innovative and its originator as an innovator. Once established, attributions tend to endure even as an innovation's meaning evolves, potentially generating adverse reputational consequences for the individuals to whom it is linked—who may, ironically, be recast as villains rather than celebrated as heroes. Yet this dynamic and its antecedents remain underexplored. Prior

research has often drawn a temporal and analytical boundary between innovation production and innovator recognition, paying limited attention to how audiences construct attributions in historical context. As a result, we lack a systematic understanding of how associating an individual with a solution both shapes, and is shaped by, efforts to imbue novelty with the symbolic significance required for it to attain the status of "innovation." By examining the processes underpinning attribution, we can integrate parallel yet complementary conversations on innovation *production* and innovator *recognition*, and—in line with SCOT—lay the foundation for a more comprehensive theory of innovation as a historically situated and socially constructed phenomenon.

To do so, we focus on how the multi-faceted and polarized audiences of Revolutionary France defined a controversial beheading machine as a world-changing innovation and recognized Dr. Guillotin as the innovator behind it, such that it eventually bore his name: *the guillotine*.

METHOD

Research Setting

We adopt a historical approach (Maclean, Harvey, & Clegg, 2016; Vaara & Lamberg, 2016) and, specifically, a microhistorical lens (Hargadon & Wadhwani, 2023) to investigate the guillotine's "invention" and its attribution to Dr. Joseph-Ignace Guillotin, from his 1789 "simple [beheading] device" proposal before the National Assembly to its first use on April 25, 1792, when a machine designed by Dr. Antoine Louis and built by Tobias Schmidt was first operated by Paris executioner Charles-Henri Sanson (Kershaw, 1958).

The guillotine is an ideal setting for studying the attribution of innovations. First, it constitutes a clear-cut case of a solution that became widely considered a radical innovation. As historian Daniel Arasse (1989: 4) noted, "apart from the slogan of 'liberty, equality, fraternity,' no other stereotype of the Revolution is so widely recognized." While the beheading machine was not a new device, its national-level adoption as an egalitarian method of execution marked a pivotal moment in world

history, symbolizing a shift in modern jurisprudence and human rights that eventually contributed to the abolition of capital punishment. Table 1 offers an account of social change in capital punishment in pre-modern and modern eras, including the role of the guillotine in this shift (Foucault, 1975).

[Insert Table 1 about here]

Thus, the guillotine, both as a material and symbolic rupture, links micro-level episodes to broader macro-historical events (Hargadon & Wadhwani, 2023). The guillotine was intertwined with Enlightenment debates on justice and human rights, revolving around critical controversies that continue today (Garcia & Allen, 2023). Enlightenment figures championed the guillotine as a humane and egalitarian reform of capital punishment. Ironically, the very efficiency that embodied such ideals of justice and equality also facilitated the brutal excesses of the Reign of Terror and its aftermath, tainting the device's original moral purpose and rendering it one of the most controversial artifacts of the modern era (Allen & Shavell, 2005; Camus, 1957).

Another reason why this case is ideal for studying attribution is that several individuals plausibly merited some degree of credit for the guillotine, creating a useful set of within-case counterfactuals. Besides members of the National Assembly, revolutionaries, and intellectuals who supported a penal law reform (e.g., Maximilien Robespierre, Jean-Paul Marat), five main contributors plausibly merited credit: Dr. Guillotin, who was *not* materially involved in the machine's creation but advocated in favor of a "simple device" for executions (Cavendish, 2014); the Count of Mirabeau, who, despite his aristocratic origins, was one of the fathers of the Revolution and publicly supported the guillotine's adoption (Hammersley, 2010); Dr. Louis, the Secretary of the Academy of Surgery, who designed the device; Tobias Schmidt, a piano maker, who manufactured it; and Charles-Henri Sanson, the executioner of Paris, who championed it and extensively deployed it in the public.

The case also resonates with contemporary contexts. One of the first innovations to unfold in the

modern era, the guillotine was highly scrutinized within a new "public sphere"—whereby "initially in letters, then in regular, formal reports, the growth of a system of commercial news represents the first network of information and communication independent of the state" (Nathans, 1990: 621). This gathered highly polarized audiences (Mathias, 1975; Black, 1987; Hyslop, 1960), since, as remarked by Victor Hugo's in *Les Misérables*: "the guillotine…is not neutral, nor does it allow one to remain neutral" (Hugo, 1862: 15). Additionally, the French Revolution has been defined as "world-historical" (Hegel, 1837), reshaping Europe and leading to the first abolition of slavery (Desan et al., 2013). The revolution enjoyed a global audience (Mathias, 1975), initiating a trend that would characterize many other modern phenomena (Black, 1987; Hyslop, 1960). Hence, though the French Revolution is distant in time, the global, dynamic, and polarizing role of the press during this era resembles modern-day patterns of innovation diffusion and innovator recognition.

Finally, the setting benefits from both historical distance and abundant evidence. The Revolution has been studied for over two centuries, and the guillotine, especially after Louis XVI's execution, has attracted exceptional scrutiny (Camus, 1957; Foucault, 1975; Imholt, 2017). Even today, "the Revolution continues to fascinate, perplex, and inspire" (McPhee, 2016: xvi). The Revolution's pivotal role in human history made it one of the most investigated and theorized phenomena in social sciences. Nonetheless, management scholarship has largely ignored it. By seizing this missed opportunity, we aim to "look away from the lamppost" of business-centered settings and foster "new ways of seeing" (Bansal, Smith, & Vaara, 2018; Nadkarni et al., 2018).

Data Collection

We collected three broad categories of sources in both paperback and digital formats. (Tables 2 presents the data types uses; and Table 3 the repositories containing them.)

[Insert Table 2 and Table 3 about here]

First, to understand the historical context of revolutionary France, we reviewed research by

notable historians on the public sphere in revolutionary Paris and the popular press, both French and international. We examined accounts of penal law reform and the guillotine's conception, including *History of the Guillotine* (Croker, 1853), *Guillotin et la Guillotine* (Chereau, 1870), *A History of the Guillotine* (Kershaw, 1958), *The Guillotine and the Terror* (Arasse, 1989), *Guillotine: The Timbers of Justice* (Opie, 2003), *Reflections on the Guillotine* (Camus, 1957), *Discipline and Punish* (Foucault, 1975), *Le Métier De Bourreau* ("*The Profession of Executioner,*" Delarue, 1979), and *Seeing Justice Done* (Friedland, 2012). In relation to our investigation, these studies either discuss the historical, social, and philosophical underpinnings of the guillotine's adoption, or document the events leading to its creation and (ab)use, while noting Dr. Guillotin's surprising association with the device that bears his name despite his marginal role in its design and construction. However, the studies do not explain why this attribution emerged in the first place or why it proved so enduring.

Second, we analyzed archival documents from the French Revolution, particularly from the National Assembly archives and Pichon's (1910) compendium of letters related to our focal events and characters. Third, we used the *RetroNews* online database (Table 3) to examine the public reception of the guillotine by systematically analyzing the historical French press in our focal period. To contextualize international perspectives, we included the British press, which presented a relatively established and uncensored media landscape at the time (Black, 1987).

Data Analysis

We develop a microhistorical case (Hargadon & Wadhwani, 2023) using a grounded research design to identify a process generalizable within boundary conditions (Langley, 1999; Langley et al., 2013). Microhistory juxtaposes individual actions (a microscopic lens) with broader historical and institutional contexts (a macroscopic lens) to reveal sociohistorical patterns (Brewer, 2010; Hargadon & Wadhwani, 2023; Rowlinson et al., 2014; Vaara & Lamberg, 2016). This approach is well-suited to rare and complex events, such as major innovations (Cattani, Ferriani, & Allison, 2014; Cattani,

Mastrogiorgio, & Carignani, 2024). Unlike traditional grounded theory, microhistory relies on historical sources to reconstruct how individuals thought and acted (Darnton, 2000; Carnegie & Napier, 2017); it privileges puzzling or paradoxical details as opportunities for theorizing (Weick, 1995; Sætre & Van de Ven, 2021; Timmermans & Tavory, 2012); and it presents findings through narrative reconstruction rather than coding tables (Decker et al., 2024; McBride, 2022)—as seen in exemplary microhistorical studies (Hargadon & Douglas, 2001; Lubinski & Wadhwani, 2020). Guided by the core principles for microhistorical research in management (Carnegie & McBride, 2023; Hargadon, 2015; Hargadon & Wadhwani, 2023; Lubinski, 2023), we structured our analysis in three steps. For the sake of clarity, we present them below linearly, even though our analysis was largely iterative in practice.

Step 1: Identification of the focal episode. We combined historical narratives with our analysis of primary materials to construct a timeline surrounding the creation of the guillotine (Figure 1). As we built our timeline, it became clear that our narrative would focus on the period between Dr. Guillotin's proposal for Penal Code reform on October 9, 1789—which marked the first mention of a beheading device in French debates on penal law—and the first official execution by guillotine on April 25, 1792. After this, the association between the machine and Dr. Guillotin quickly crystallized, offering limited variance to our observations.

[Insert Figure 1 about here]

Step 2: Constructing the narrative. We then developed the focal episode's narrative through an iterative, abductive approach (Sætre & Van de Ven, 2021; Timmermans & Tavory, 2012), alternating between identifying empirical puzzles and gathering additional evidence to refine emerging explanations (Carnegie & McBride, 2023; Hargadon, 2015; Hargadon & Wadhwani, 2023).

We followed Hargadon and Wadhwani (2023: 686-687) in identifying the three driving

"dialectics" of microhistory: (1) between micro level (the involvement of Dr. Guillotin) and macro level (the attribution of the machine to him); (2) between past (the envisioning of the guillotine as a means to promote humane and egalitarian conditions) and present (the negative perception of the device since the Reign of Terror); and (3) between prospective intentions (the attempts of Dr. Guillotin and Dr. Louis to avoid association) and retrospective outcomes (the fact that both were credited, though to a different degree, as "fathers" of the machine). We elaborate on the interpretative and theoretical value of these dialectics in the Discussion.

Together, these dialectics functioned as the "investigative engines" of our effort to meticulously trace all key contributors' involvement, reconstruct 18th-century debates on penal law and the categories of meanings used by Revolutionary France audiences, and interpret actors' intentions and their effect, or lack thereof, on audiences' evaluations. Figure A1 in the Appendix (Supplementary materials) provides a multilevel timeline of all focal actors' micro actions vis-à-vis the development of the capital punishment debate, their mention in the press, and the Revolution's macro events. We collected evidence, assessed alternative explanations and counterfactuals, and refined our framework until reaching theoretical saturation. The result was a granular, insightful, substantive narrative that integrates events for a theoretically informed interpretation (as per Hargadon & Wadhwani, 2023).

Step 3: From the narrative to the formal theory. Following Hargadon and Wadhwani's (2023) guidelines, we first outlined the historical context of the French Revolution, emphasizing the debate on penal law. Next, we detailed our focal episode. Finally, we examined the guillotine's historical impact. After narrating our focal episode, we abstracted away from our microhistorical case to derive its generic conceptual implications via a formal theory (Hargadon and Wadhwani, 2023; Hargadon, 2015). In line with what Berends and Deken (2021) term a "conceptualized composition," we developed a series of analytical interludes for each of the main steps of our narrative, distilling

concepts and relationships to form the building blocks of our theorical process model. We synthesized our contribution into a generalizable process model, theorizing the emergence of attribution from the way innovations and innovators are socially co-constructed through an *evaluation–attribution spiral* operating within collective debates. Our theorization was not focused on developing new constructs or labels but on understanding how to combine existing ones into an overarching explanatory model that reveals which forces drive the social attribution of innovation. We granularly checked the explanatory power of our process model by fitting it to each of our focal actors, which we used as counterfactuals (Appendix, Figure A2 a-d), and iteratively adjusting it where necessary. Once crystallized in its final form, to ensure generalizability, we also applied our model to various cases of attribution. For parsimony, we report here in detail only the attribution of the atomic bomb to J. R. Oppenheimer (Appendix, Case A1 and Figure A3).

FINDINGS

Historical Context: The Debate on Penal Law Before and During the French Revolution

In 18th Century Europe, few questions challenged the ancient order of law and punishment, divided opinion more sharply, or exposed the moral contradictions of the age more fully than the fate of those condemned by justice. As Enlightenment thinkers denounced the cruelty and absurdity of existing judicial systems, their competing visions ignited a debate that swept from Paris to Vienna, from London to Rome. The struggle to redefine penal law became one of Europe's most impassioned battlegrounds.

Capital punishment— "the legal killing of a person who has been convicted of a crime in a court of law" (Oxford Dictionary)—was one of the most divisive issues in the debate on penal law. Reformists denounced it as needlessly cruel, incompatible with the dignity of human life, and an infringement on individuals' natural rights. In his seminal contribution, *On Crimes and Punishments* (1764), Italian intellectual Cesare Beccaria thus claimed that the state did not have the right to take

the life of its citizens and called for the abolition of capital punishment, which he deemed unnecessary and wasteful. By contrast, conservatives argued that the death penalty was a fitting punishment for heinous crimes and said it deterred potential criminals—a stance exemplified in English jurist William Blackstone's *Commentaries on the Laws of England* (1765–1769).

Disputes over execution bled into a second issue: the general cruelty of the penal system. Viewing state justice as excessively brutal, many reformists denounced its regular use of torture and gruesome punishments, such as the wheel. In his "*Philosophical Dictionary*" (1764) and other writings, the prominent Enlightenment writer Voltaire criticized the cruelty of the French penal system and cited famous cases of injustice, such as Protestant Jean Calas's wrongful conviction for murdering his son, which condemned him to be "broken on the wheel." Yet, conservatives defended cruelty as a necessary component of proportionate justice—for instance, a regicide would deserve a crueler death than the murderer of a commoner—and as indispensable for deterrence. A humane penal system, they argued, would favor more crimes and bring about disorder. Thus, for conservative thinkers like Joseph de Maistre (1753–1821), a fervent critic of the Revolution, the executioner embodied the foundation of social order: "Remove this incomprehensible agent from the world and at that very moment, order gives way to chaos, thrones topple, and society disappears" (1821: 20).

Thirdly, debates also centered on whether penal law should apply equally to all individuals or vary according to social rank. Many Enlightenment thinkers, including Rousseau (1762), argued that equality in nature implied equality in rights and thus before justice. But for many contemporaries, such principles clashed with the separation of the aristocracy and clergy from the rest of society (in France, the "Third Estate"). The very idea that an aristocrat would somehow be equal to a merchant or lawyer—or worse, to a simple peasant—was not only hard to admit but verifiably false within existing social structures. For the aristocracy and clergy, privileges, including lenient punishments,

were natural extensions of their roles in maintaining order and governance, while harsher punishments for lower-class offenders contributed to reinforcing the "natural" social hierarchy.

In the Kingdom of France, one of the most infamous and heinous executions is recorded across countless sources (e.g., Arasse, 1989) and eyewitness accounts—including that of the Venetian adventurer Giacomo Casanova in his 1787 memoirs—as an event that shocked consciences and turned a new page in the debate on penal law. On March 28, 1757, Robert-François Damiens was executed for a failed attempt to stab King Louis XV (Friedland, 2012). Before thousands of morbid spectators gathered in the Place de Grève in Paris, Damiens was tortured, emasculated, and dismembered by four horses; still conscious, he was finally burned alive. His ashes were scattered, his home was razed, his siblings had to change their names, and his father, wife, and daughter were exiled. Such brutality began a collective introspection on the merit of similar verdicts and spectacles, and it likely influenced King Louis XVI's efforts to soften penal law. In 1775, he abolished the death penalty for desertion outside war, and in 1788, he increased the minimum number of judges needed for a death sentence. Nonetheless, the death penalty remained an integral part of the penal system, and the means used to implement it continued to depend on the convict's social status: aristocrats were beheaded by axe or sword; ordinary people were hanged or tortured (Wills, 1981).

By the outbreak of the French Revolution, the debate over penal law had become the spark in a political powder keg. Historians remark that "During the revolutionary decade it became compulsory to take political sides and make these allegiances both seen and heard" (Carrabine, 2024: 350). Between 1789 and 1791, the National Assembly held 235 heated debates on justice reform, making it the second most discussed issue of the period (see Figure 2). The controversy soon spilled beyond the Assembly into the wider public sphere: during those same years, 1,177 press articles engaged with the question of justice reform (see Figure 3)—a staggering number in an age when printing was

expensive and much of the population remained illiterate.

[Insert Figure 2 and Figure 3 about here]

Many revolutionaries campaigned against the death penalty. For instance, revolutionary leader Jean-Paul Marat, argued for rehabilitative approaches to justice in his book *The Friend of the People* (1792). However, conservatives and royalists firmly opposed justice reforms as threats to order. In *Reflections on the Revolution in France* (1790), Edmund Burke speculated that attempts to impose equality would lead to chaos and disorder, while in *Considerations on France* (1796), Joseph de Maistre defended the use of capital punishment and opposed the idea of legal equality between classes. However, different positions could be found within each side of the ideological barricades. On the reformist side, the Count of Mirabeau, while supporting the Revolution, did not fully endorse the idea of equality before the law, for fear it would dismantle the social hierarchy entirely. Even Marat himself rejected equality in punishment across social classes, yet in reverse logic, he argued that counter-revolutionaries, often from the upper classes, should receive harsher punishments than common criminals, as they betrayed the people of France (Marat, 1792). It is against this intricate backdrop of competing principles, entrenched ideas, and heated debates that the figure of Dr. Joseph-Ignace Guillotin enters our analysis.

Analytical Summary: Emergence of a Collective Debate along Specific Problem Dimensions

In the decades leading to and during the Revolution, heated public debate transformed penal law from a taken-for-granted institution to the object of constant challenges and contestation across 18th-century Europe. Over time, three *problem dimensions* emerged from and came to structure the debate: (1) the need for capital punishment, (2) the cruelty of penal law, and (3) the inequality of its application. These themes provided a structure for defining the current challenges and evaluating alternatives. Each carried value-laden poles—maintenance vs. abolition, cruelty vs. humanity, inequality vs. equality—associated with sharply different judgments among debate participants.

Actors thus positioned their contributions in the public debate by using these different problem dimensions, which were associated with different, and often opposed, value judgments. This shared yet contested problem structure provided the interpretive backdrop against which various proposals would be defined and evaluated.

Focal Episode: How the Quest for Humane Punishment Ended with a Beheading Machine

Introducing Dr. Guillotin, the Revolutionary Doctor and Deputy

Born to a provincial lawyer on May 28, 1738, in Saintes, a town in the southwest of France, Dr. Joseph-Ignace Guillotin first appeared in the public eye when the Parisian press celebrated him for winning a competitive scholarship to study at the prestigious Paris Faculty of Medicine (Kershaw, 1958). This marked his entry into the high-status world of medicine in the capital of the Kingdom of France and established his status and legitimacy as a brilliant physician (La Gazette, April 15, 1768).

After graduation, Dr. Guillotin became a respected intellectual, eventually obtaining a prestigious chair as *docteur régent* (full professor) at the Paris Faculty (Weiner, 1972). In the 1770s, he developed a keen interest in public matters and authored reports on issues such as poverty, orphans, and the disinfection and drainage of swamps (Donegan, 1990). During this period, the distinction between science and the humanities was blurred (Porter, 1990), and Dr. Guillotin—who had studied theology—engaged with Enlightenment philosophy. In research on rabies, he supported Diderot's argument for using individuals sentenced to capital punishment in medical experiments as an alternative to their otherwise torturous and certain death (Donegan, 1990). By 1784, Dr. Guillotin's credibility and intellectual standing was cemented when King Louis XVI enlisted him into a commission of illustrious intellectuals, including Benjamin Franklin and Antoine Lavoisier, to investigate Antoine Mesmer's controversial use of "magnetism" as a medical practice (Garrison, 1960). The public's highly favorable reaction to the commission's discrediting of Mesmer further raised Dr. Guillotin's profile.

From this prominent position, Dr. Guillotin began to address political issues, such as the corruption of the aristocracy, the troubled state of the French crown, and the disenfranchisement of the Third Estate. This culminated in a radical manifesto sponsored by Paris' merchant guilds, *Pétition des Citoyens Domiciliés à Paris* [Petition of the Citizens of Paris] (1788), which called for political representation of the Third Estate equal to that of the aristocracy and the clergy. About 6,000 copies of the *Pétition* were distributed, an impressively high number for the time. After attempting to suppress its circulation, the Paris court of law arraigned Dr. Guillotin, but the petition's many supporters ensured his acquittal (Schama, 1989). Support among the Parisian bourgeoisie and lower classes established Dr. Guillotin's popularity but also earned him many enemies in the French aristocracy. His polarized fame even reached the other side of the Channel:

> M. Guillotin, a physician, has penned a petition…which is one of the boldest remonstrances that was ever presented to a king. It was signed by some thousands… [Guillotin's supporters] thronged round the forum, with the intent to place the civil crown on the head of the writer. (Saunders's Newsletter and Daily Advertiser, Dublin, January 2, 1789)

Having become a public, popular, yet polarizing figure, in the spring of 1789, Dr. Guillotin was elected a deputy of the National Assembly (Donegan, 1990), just a few months before the July 14 storming of the Bastille. Once in the Assembly, Dr. Guillotin became known for his attention to both the health of his colleagues and the mechanics of governance. Early in the summer of 1789, for example, he warned that the "heavy and pestilential air exhaled from the bodies of more than 3,000 people" in the packed meeting hall risked making deputies ill. Recognizing his expertise, his fellow deputies appointed him to oversee the building and design of the Assembly Hall (Journal des États Généraux Convoqués par Louis XVI, June 17, 1789). Later that year, after the Assembly resolved to relocate to Paris, Dr. Guillotin was among the commissaries tasked with identifying a suitable venue (Veillées d'un Français, October 13, 1789). By that time, he was sufficiently popular to be recognized by Parisians as he visited a site close to the Palais-Royal (Le Courrier de Versailles à Paris et de Paris

à Versailles, October 14, 1789). That same autumn, as deputies wrestled with the scope of the King's authority, Dr. Guillotin proposed four questions to clarify the limits of the royal veto, which sparked heated debates (Journal des États Généraux Convoqués par Louis XVI, September 17, 1789). His sense of civic duty extended beyond parliamentary activity: in October, the King himself appointed him to look after the pregnant widow of a murdered baker—a case that drew sympathetic press coverage (Journal de Paris, November 20, 1789).

These varied interventions reinforced Guillotin's status as both a physician attentive to human wellbeing and a legislator focused on the core political issues of the Revolution. Press coverage of his actions was, however, polarized and controversial: Although some outlets would celebrate him as a "skilled physician, good politician, wise and methodical writer, author of the famous petition" (Courrier des Planètes, February 1, 1789), others—generally, members of the royalist press—derided him. For instance, the royalist satirical outlet *Le Livre des Rois et du Nouveau Testament* (1789) included his name in a "Qualitative Rollcall," a mock roster in which deputies' names were interspersed with disparaging terms and insulting wordplays crafted to sound like French nouns.

It was from this unusual vantage point as a physician steeped in Enlightenment ideals and a deputy active in the Assembly's key debates that Dr. Guillotin would present his revolutionary proposal to reform the penal code—one that would ultimately change the course of history.

Analytical Summary: The Status of the Focal Actor

Dr. Guillotin gained a distinctive status, defined here as "an effective claim to social esteem in terms of positive or negative privileges" (Weber, 1978: 305) that "can be based on style of life, education, and hereditary or occupational prestige" (Piazza & Castellucci, 2014: 292). As a cognitive shortcut, the status of a public individual enables observers to quickly and easily interpret and evaluate actors' new actions or proposals. By 1789, Dr. Guillotin's status was of a high caliber: he was a respected physician and a deputy of the National Assembly. At the same time, his perception polarized

audiences. His *Pétition* made him a hero to the Third Estate, sufficiently well-known to be recognized on the streets of Paris. However, he faced fierce hostility from royalists, who viewed him as a dangerous agitator threatening the social hierarchy. This division was amplified by polarized press coverage that reinforced contrasting symbolic associations: for some, he was a principled reformer, for others, a disruptive radical. Such conditions led many of his proposals to be interpreted through a complex mix of conceptual associations and skewed evaluations.

Dr. Guillotin's contribution to the debate on penal law and its reception

On October 9, 1789, Dr. Guillotin triggered the defining moment of his public life by proposing a six-article Bill to the Assembly to reform the Penal Code (National Assembly Archives, 1789). Starting with his reports on public health in the 1770s, Dr. Guillotin had expressed an interest in Enlightenment beliefs. Similar to many likeminded thinkers, he had opposed the death penalty. However, likely aware of the resistance that a proposal for its abolition would be met with (which proved true, as we will see), he instead advocated for a humane and egalitarian mode of execution. Dr. Guillotin's bill was nonetheless revolutionary: it secured the rights of the convicted person's family over the executed body, absolved them of blame or retribution, and abolished the confiscation of the deceased's property (National Assembly Archives, October-March 1790). Importantly, Dr. Guillotin also advocated for a new method of execution, arguing that the existing class-based distinctions in capital punishment violated the Revolution's principle of *égalité* (Wills, 1981). His proposal, designed to ensure a swift and reliable death, aimed to eliminate unnecessary cruelty.

> Whenever the death penalty is decreed its execution shall be identical whatever the crime. The culprit shall be *beheaded by a simple mechanism*. (Dr. Guillotin's Bill—as quoted in Donegan (1990): 638—emphasis added)

However, Dr. Guillotin's idea of a beheading device was not new, per se; it likely was based on accounts of existing machines (see Appendix, Table A1 for details). In France, such devices had been

used for executions in the Toulouse area as early as the 17th century.[2] Dr. Guillotin readdressed the Assembly on December 1, 1789, and January 21, 1790. When presenting his bill for the second time, Dr. Guillotin "established as a principle that the law should be equal when it punishes as well as when it protects" (National Assembly Archives, December 1, 1789) and "dwelled on the tortures that put man below ferocious beasts" (Journal des Etats Generaux, December 1, 1789). He then succinctly described the "simple mechanism": "the mechanism falls like thunder; the head flies off; blood spurts; the man is no more." This line was reportedly met with laughter from deputies (Journal des Etats Generaux, December 1, 1789). In January 1790, he reiterated that "the criminal will be beheaded […] by means of a simple mechanism" (National Assembly Archives, January 21, 1790).

The reception of Dr. Guillotin's proposal was as polarized as that of his *Pétition*. In a vitriolic and sarcastic response, the popular Royalist periodical *Les Actes des Apôtres* [the Acts of the Apostles] (Biard, Crépin, & Gainot, 2002) mocked both Dr. Guillotin and the Enlightenment ideals of his proposal by recasting him as the machine's inventor:

> The legislation and arts attain perfection each day. Thanks to the latest discoveries in the field of anatomy and philosophy…It was reserved to M. Guillotin, a Parisian deputy, as much a skillful doctor as a genius mechanic, to present to the world the outline of a decapitating machine, that would extend the glory of the French name to the shores of the Bosphorus. (Les Actes des Apôtres, November 2, 1789)

Here, the attribution of the machine contributed to define it as the perverse excess of Enlightenment science, of which Dr. Guillotin was an eminent representative, twisting reason into barbarity. This interpretation was further cemented in the same outlet, which published the earliest known use of the term *guillotine*—a satirical song said to have been widely sung throughout France.

> Guillotin, politician, and physician, bethought himself, 'tis plain, that hanging's not humane nor patriotic; And straightaway showed a clever mode to kill—without a pang—men; Which void of rope or stakes, suppression makes of hangmen…. The patriot keen, Guillotin, the best advice to have before the next debate. Consults 'Coupe-tete' Chapelier and Banarve; And then offhand, his genius planned that machine that "simply" kills—that's all—Which after him we call "*guillotine*." [ibid. – emphasis

[2] In his memoirs, the Knight de Puységur reported that "In that region, they use an axe set between two pieces of wood, and when your head is placed on the block, they release the rope" (de Puységur, 1690).

added]

The authors of *Les Actes des Apôtres* despised Dr. Guillotin, whom they saw as an Enlightenment revolutionary who threatened the social order of the *Ancien Régime*. However, Dr. Guillotin was not the sole target of *Les Actes des Apôtres*. The publication also proposed Count of Mirabeau, an aristocrat who was considered a hypocritical traitor to his own class, as a potential namesake for the new device, given his involvement in the penal law debate:

> It is well known with what fervor Mr. de Mirabeau has so far seized upon the motions that have dealt the greatest blows to tyranny. His well-known essays on criminal jurisprudence give him indisputable rights to the proposed monument. With a slight amendment, the honorable member could take charge of this machine, and the name "*Mirabelle*" [emphasis added] would replace, to the great satisfaction of good Frenchmen, that of "guillotine." [ibid.]

By contrast, Dr. Guillotin's proposal received plenty of support from revolutionaries. Just like *Les Actes des Apôtres*, supporters of the Revolution saw Dr. Guillotin's proposal as the embodiment of the Enlightenment's ideals within the debate on penal law, but with opposite evaluations:

> …making men equal in front of the law as they are made in the eyes of our Supreme Creator…this is the aim of the proposal made by M. Guillotin, a proposal conforming equally to the religious, philosophical and moral principles of the nation. (Bill of M. Guillaume, October 9, 1789)

As argued by historian Simon Schama, "the machine described to the Assembly by Dr. Guillotin seemed to meet those specifications perfectly" (Schama, 1989: 620). Dr. Guillotin's proposal thus received support from a large swath of the revolutionary press. *Le Moniteur*, the major newspaper of the time, rebuked "the levity with which some periodicals have made trivial and indecent remarks" (a reference to *Les Actes des Apôtres*) and gave its full support for Dr. Guillotin's machine, claiming:

> The innovation of replacing the executioner with a machine which, like the law itself, separates the sentence from the judge, is worthy of…*the new age that we will soon enter* [emphasis added] (Le Moniteur, December 18, 1789)

Praise of Dr. Guillotin echoed throughout the Parisian press and eventually throughout France, with the *Journal de Provence* (based in Marseille) asserting in a somewhat exalted style:

> Sensitive souls will fervently join us in hoping that these wise Decrees [Dr. Guillotin's proposal] will have more influence on public opinion than those which Philosophy, Humanity, and Religion have long since pronounced against a prejudice as absurd as it is useless to the good of society. (Journal de

Provence, February 4, 1790)

Nonetheless, a minority among the revolutionary press did express discontent with Dr. Guillotin's proposal. For instance, an article in *Le Modérateur* (1789) praised Dr. Guillotin's intent to limit cruelty and promote equality, but expressed the fear that decapitation "reserved in our country for the high nobility, has acquired a certain air of distinction […] (so) that, in cases where it is still deemed necessary to make use of the death penalty, the rope should be preferred to decapitation." The article further suggested it would have been preferable to make the condemned useful to society as a substitute for the death penalty.

Across both royalist and revolutionary outlets, commentators frequently attributed the device to Dr. Guillotin. Whether derided or praised, his proposal was interpreted as the expression of the reforming intentions of both himself and the broader revolutionary movement, then in its incipiency. This is plain in the sarcasm of *Les Actes des Apôtres,* but is also found in revolutionary outlets:

> M. Guillotin, so known for his profound knowledge in politics as for his talents in the science of Hippocrates, has sent … articles to add to this penal code: one sees here the principles of humanism, of justice and of reason that have always distinguished the honorable Member. (Suites des Nouvelles de Versailles, October 10, 1789)

Overall, royalists and revolutionaries alike were clearly struck by Dr. Guillotin's proposal. They not only alternately blamed or praised him for his contribution to the debate on penal law, but further interpreted his proposal in the light of his (real or perceived) intentions as an Enlightened politician and physician. More broadly, attributing the machine to him allowed them to situate it within the larger struggle over the Revolution's meaning. Attributions to Dr. Guillotin were thus central not only to credit or blame, but to constructing the very significance of the device as a harbinger of change. Nonetheless, as we will see, despite its initial impact on the ongoing debate on penal law, Dr. Guillotin's proposal was soon set aside for a considerable period, until other key actors emerged.

Analytical Summary: Mapping of the Focal Actor and Evaluation-Attribution Spiraling

Dr. Guillotin's proposal was his primary—and ultimately only—direct engagement with the

development of the beheading machine. Yet his status ensured that his bill received wide attention. By anchoring the proposal in two central dimensions of the penal reform debate—cruelty and unequal punishment—he presented the machine as a universal instrument capable of delivering a humane death while ensuring equality across ranks. This framing enabled diverse audiences, from Third Estate deputies to royalists, to interpret and evaluate the device. Revolutionaries embraced it as aligned with reformist ideals; monarchists rejected it as a threat to deterrence and social order.

Through this mapping, audiences reinterpreted existing beheading devices as symbols of major change, thus elevating them to the status of innovation. Satirical press coverage amplified this shift by casting the machine as both instrument and emblem of Enlightenment reform. These evaluations reinforced attributions linking the device to Dr. Guillotin, reshaping his identity and eventually attaching his name to the machine itself. A reinforcing evaluation–attribution spiral had begun—though it would advance fully only once audiences witnessed the change the machine enacted.

Shelving the Beheading Machine: The Entry of Sanson as a New Advocate

After attracting considerable attention in late 1789, Dr. Guillotin's proposal soon faded from public debate, remaining largely out of view until June 1791. This decline is evident when press references to Dr. Guillotin are tracked alongside articles on penal law reform. During his two widely publicized proposals in October and December 1789, *RetroNews* lists 20 and 19 articles mentioning his name, respectively. Yet, by June 1791—when more than two hundred articles on penal reform appeared—only two referred to him (see Figure 4).

[Insert Figure 4 about here]

Two reasons explain this year-and-a-half hiatus. First, Dr. Guillotin deliberately distanced himself from this increasingly controversial debate. In 1792, he declined an invitation from Pierre-Louis Roederer, the *Procureur-Général Syndic* (Attorney General) of Paris, to be involved with the design or construction of a suitable beheading machine, though his status, formal proposal, and

medical expertise made him the ideal candidate.[3] As a result, official documents saw him disappear completely from the debates, even as all parties had to be (and were) meticulously recorded, particularly on such a delicate matter. Concurrently, public attention progressively shifted away from Dr. Guillotin, and by June 1791, he was no longer seen as central to the debate on penal law reform.

Second, the ongoing debate switched its focus from Dr. Guillotin's proposal—focused on cruelty and equality in execution rights—to the need for capital punishment itself—the one problem dimension that Dr. Guillotin had purposefully left out of his proposal. After months of work, in May 1791, the Criminal Jurisprudence Committee proposed another reform. Notably, its rapporteur, Lepeletier de Saint-Fargeau, submitted to the Assembly that the death penalty should be replaced with 12 or 24 years of prison (National Assembly Archives, May 23-24, 1791). Although supported by some deputies, including the influential Robespierre (Courrier Extraordinaire, May 31, 1791), the Assembly eventually rejected the proposal and instead resolved on that "every person condemned to the death penalty shall have their head severed." Deputies eventually agreed that the "privilege" of decapitation—which they viewed as more merciful and dignified than hanging, and more practical than gas chambers and other solutions considered—should be extended to the entire population, "who thus acceded, in the best egalitarian fashion, to the 'dignity of the block'" (Arasse, 1989: 20).

However, despite agreeing on decapitation as the universal means of execution, no agreement was reached on the instrument. Such stagnation exacerbated the conditions in the prisons that were experiencing an exponential increase of incarcerations. By 1792, several officials from across the country had appealed Roederer for action, as shown in this letter from the Royal Commissioner:

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[3] Roederer asked Dr. Guillotin to join a meeting: "I would be very indebted to you, my dear ex-colleague, if you could come visit my department …to soften the death penalty given the intention of the law that it is not a cruel torment" (letter from Roederer to Dr. Guillotin, March 10, 1792). However, Dr. Guillotin most likely did not attend: Though the process was meticulously documented, there is no evidence of his involvement in the later development of the machine, unlike those of other actors. Thus, Dr. Guillotin is remarkably absent from all official communications gathered by Pichon (1910) related to the development of the machine, and reports claim he was not present when the machine was designed and first tested.

> I have gauged from your silence that you have still not yet made a decision on this subject [the instrument of decapitation] …Assassinations are increasing, and good citizens complain and moan about inertia and negligence in law enforcement. [Letter: Verrier to Roederer, March 2, 1792]

Roederer and Marguerite-Louis-François Duport-Dutertre, the Minister of Justice, tried to unblock the impasse by seeking the advice of executioners, including—*primus inter pares*—Charles-Henri Sanson, the Royal Executioner of Paris.

In 18th century France, executioners such as Sanson occupied a stigmatized position due to their valued yet morally profane duties. The inheritance of their role across generations fostered a close-knit, insular community that was further isolated by endogamous marriages. Those born into this grim profession were marked by distinctive clothing and titles like "master of high and low works," reflecting their broader societal marginalization. Besides executions, they managed stray animals and latrines, responsibilities that reinforced their social otherness. Their pariah status was further emphasized by their *droit de havage*, or right of tolling, which allowed them to collect goods from traders without physical contact (i.e., by using a tin spoon). Despite efforts to normalize the executioner's institution in the early Revolution, many deputies denied that they could be treated like other citizens. Sanson himself faced accusations of supporting royalists in 1790, probably due to the distrust associated with his position (Simonin, 2021). He entered this stigmatized profession reluctantly upon his father's death, to support his family, and ended up playing a key role in transitioning France's executions to the guillotine (Du Bois, 1843; Friedland, 2012).

In his *Memorandum* (1792), Sanson reported his clear preference for instruments of decapitation that offered a quick, systematic, and sure death. He claimed instruments that prolonged torture were ignominious and inhumane for both the victim and the executioner. He also argued that the need to deliver multiple beheadings during the same execution complicated the executioner's task: The blade would dull, thus requiring multiple hits to complete the job, resulting in copious bloodshed and uneven conditions across the convicted. Sanson even shared technical details regarding the cost of

blades and explained how human weakness could come in the way of humane executions:

> At each execution, the sword is no longer in a condition to carry out another […] therefore, a sufficient number of swords, all ready for use, would be required. […] They cost 600 livres each. It should be considered that, when there are several condemned persons to be executed at the same moment, the terror caused by this execution […] will instill fear and weakness in the soul […]. Such weakness will create an insurmountable obstacle to carrying out the sentence. If the subject can no longer stand, and one wishes to proceed regardless, the execution will become a struggle and a slaughter. (Sanson's *Memorandum*, March 1792, as in *Physiologie de la Guillotine* by Louis-François Du Bois, 1843)

Essentially, Sanson's *Memorandum* echoed Dr. Guillotin's earlier emphasis on reducing cruelty in executions but added new, practical concerns about efficiency, economic convenience, and the executioner's capacity to effectively perform the task. His comments, along with those made by other executioners, were relayed to the National Assembly on March 3, 1792, by Minister of Justice Duport-Dutertre, who commented:

> In the case of a death sentence, our new laws see only the simple deprivation of life. […] to achieve this end, it is necessary to seek out and generalize a method that meets it, and which enlightened humanity may perfect as the art of thus delivering death. The Assembly will allow me not to enter into details which I have been condemned to hear; a kind of torture that some of its members will perhaps consent to share, so as to be in a position to make their report. I will confine myself to saying here that, from the observations that have been made to me by the executioners, it appears that, without precautions of the kind that once briefly occupied the attention of the Constituent Assembly, the punishment of decapitation will be horrible for the spectators. (Letter from Duport-Dutertre, Minister of Justice, to the National Assembly, March 3, 1792)

Interestingly, by mentioning the "precautions of the kind that once briefly occupied the attention of the Constituent Assembly," the Minister of Justice directly referenced Dr. Guillotin's suggestion that a beheading device would be the best way to achieve the law's aim of a humane death. The use of a mechanical device operating with "clockwork precision" (Foucault, 1975) provided more humanity to both victim and executioner, and it was a solution used for centuries in other areas: "It was simply a question of importing the most modern and effective model" (Arasse, 1989: 14). Eventually, under circumstances described below, the National Assembly finally agreed on March 20, 1792, that "decapitation should be by means of a machine."

During the ten months between the National Assembly's decree that decapitation would be the

universal means of execution and its decision that decapitation should be made by a machine, ongoing debates at the National Assembly reignited discussions of Dr. Guillotin's initial proposal. During this period, it was often referenced in the French press, alongside explicit attributions of the beheading machine—which was sometimes called a "guillotine"—to Dr. Guillotin:

> Not so much time ago, with even more genius our Representatives have discussed *the invention of M. Guillotin* [emphasis added] about the mode of death that should be applied to those who deserve it. (Journal Général de l'Abbé Fontenai, March 20, 1792)

> It seems that the guillotine, so ridiculed by the Actes des Apôtres, would soon be reborn from its ashes; the other days the Assembly had a lively discussion about this killing machine. (Journal General de la Cour et de la Ville, March 27, 1792)

Between June 1791 and March 1792, 30 articles mentioned the "guillotine" in 10 of 42 journals retrieved from *RetroNews* for this period, as compared to just six explicit attributions of the machine to Dr. Guillotin in the French press between October 1789 and June 1791 in 3 of 67 journals retrieved from *RetroNews* for this period. This attribution of the beheading machine to Dr. Guillotin, despite his absence from public debates since January 1790, was likely fueled by the impact that his proposal originally had on French public. By contrast, we found virtually no trace of Sanson's contribution to the debate in the French press; his *Memorandum* was not even included in the transcripts of the National Assembly debates. In fact, it was published in full only in 1843 by the French historian Louis-François Du Bois, whose effort made it possible to recognize Sanson's contribution to the development of the guillotine—a contribution that would most likely have otherwise been forgotten.

Analytical Summary: Obstacles to the Recognition of Alternative Contributors

The evaluation-attribution spiral that began around Dr. Guillotin's initial proposal in late 1789 quickly lost momentum. Deputies debated for more than a year before agreeing to decapitation as a universal means of execution and another year before deciding on the use of a machine. In this gap, there was no machine, no executions, and no evidence of substantive change. Consequently, the

potential evaluations of beheading devices as innovative, of Dr. Guillotin as an innovator, and the associations linking the two did not gain further traction. Still, these prospective evaluations and attributions remained vivid in collective memory, which explains why audiences could reactivate them two years later when the discussion around beheading devices was collectively reignited.

Sanson's engagement with the machine, by contrast, illustrates how the evaluative reinforcing sequence and eventual spiraling fueled by attributions to Dr. Guillotin could have failed much earlier under different circumstances. Sanson's status as an executioner led to a filtering out of his contribution to the Assembly, which was lumped with that of other stigmatized executioners. His positioning of the contribution likely did not help: He briefly touched on recognized problem dimensions of cruelty and equality, but primarily emphasized a new one, *efficiency*, that positioned his advice as a set of technical considerations rather than a morally charged one. Additionally, this dimension may have made his *Memorandum* too stark and crude for the deputies, whose sensibilities led them to prefer arguments based on ideals and values, rather than ghastly practicalities—as shown by Duport-Dutertre's unwillingness to dwell on the visual details of Sanson's crude account. As a result, Sanson's contribution triggered neither sustained evaluation of beheading machines nor attributions of the machine to himself. The reinforcing sequence dissipated early on, leaving almost no trace in the public sphere and historical accounts.

"Inventing" the Guillotine: Paging Dr. Antoine Louis and Tobias Schmidt

By March 1792, deputies faced pressure to define how decapitations would be performed. Following Duport-Dutertre's letter on March 3, the Assembly charged the Legislation Committee with writing a report on the means of decapitation. The Committee sought advice from a prominent physician, Dr. Antoine Louis. On March 13, the Legislation Committee delivered its report to the Assembly, including Dr. Louis's *Avis*, which resulted in the adoption of beheading "by means of a machine" on March 20. Importantly, this was based in no small part on Dr. Louis's *Avis,* which asserted:

> Considering the structure of the neck, […] it is not possible to be assured of a prompt and perfect separation when entrusting it to an agent whose skill may vary due to moral or physical causes. For certainty in the procedure, it must necessarily depend on invariable mechanical means, whose force and effect can be equally determined. (Dr. Antoine Louis, Avis sur le Mode de la Décollation, National Assembly Archives, March 13, 1792)

Dr. Louis thus presented favorable arguments and a general design for a beheading device, based on detailed mechanical and anatomical knowledge, that "would cause no pain and would scarcely be noticed at all" [ibid.]. His *Avis* profoundly impressed the Assembly, as reflected in a letter he received from the Legislation Committee, which praised his "reflections born of humanity and profound anatomical knowledge" (Kershaw, 1958: 37). On March 23, 1792, Roederer thus entrusted Dr. Louis with producing blueprints for the device. But who was this Dr. Louis, whose medical expertise and status seemingly matched that of Dr. Guillotin, to be entrusted with such a delicate task?

A member, secretary, and "glory of the *Académie Chirurgicale*" [Academy of Surgery] (Lacassagne, 1908), Dr. Louis enjoyed credentials comparable to those of Dr. Guillotin. He was a notable contributor to Denis Diderot's *Encyclopédie* (*Encyclopedia*) (1771), one of the most important works of the Enlightenment, having authored the section on "Death"—a signal of high intellectual status. The historian Kershaw (1958) claims to have accessed an unpublished account written by Dr. Louis's grandnephew, Émile Bégin, which recounts that Dr. Louis held Sunday evening gatherings attended by notable politicians, including Robespierre and Roederer. Whether apocryphal or not, the story underscores Dr. Louis's reputation as a man of both science and politics, socially and intellectually well placed to advise the Assembly. His expertise in perfecting surgical instruments further suggested him as the ideal candidate to design the beheading machine (Kershaw, 1958). Its construction was to be carried out by Guidon, the King's carpenter (Pichon, 1910):

> Should there be a few errors of detail herein, they could be easily rectified by even the stupidest builder. (Letter: Dr. Louis to M. Guidon, 30 March 1792)

Yet, both Roederer and Etienne Clavière, the Minister of Finance, deemed Guidon's quote for the machine "exorbitant" (Letter: Clavière to Roederer, April 9, 1792), thus deciding to opt for a

more convenient supplier: Tobias Schmidt, a German piano maker. Dr. Louis had pinpointed him as an alternative builder two weeks earlier, after commissioning some musical instruments from him:

> A German, a maker of clavichords, believes he would be able to transfer his expertise to the decapitation machine. I do not know him, but I recognize his skill…I make it my duty to refer this mechanic to you. (Dr. Louis's Letter to Roederer, March 24, 1792)

At a cost of almost one-tenth of Guidon's quote, Schmidt thus built the machine under Dr. Louis' watchful eye. Schmidt's engineering contribution appeared so valuable and essential to the conception of the guillotine that he was considered deserving of a financial bonus for the invention, even if Roederer was to select another manufacturer as the actual supplier of the devices (M. Giraud, architect, to Roederer, May 26, 1792).

Before developing the guillotine's iconic inclined-blade design, Dr. Louis and Tobias Schmidt first experimented with a model resembling the English Halifax Gibbet, which featured a curved blade similar to an axe.[4] Finally, with the help of Sanson, they conducted several tests of the prototype on 17 April 1792 at Bicêtre Hospital in Paris—on straw bales, a live sheep, and finally human corpses. Declared a striking success, the guillotine was first used on April 25, 1792, when it fell on the neck of Nicolas-Jacques Pelletier, a highwayman, in Paris's Place de Grève.

Contemporary accounts of the beheading machine's first uses go to great length to describe its design, which seem to have particularly impressed audiences:

> The patient is delivered into the hands of a minister of the chapels. He then leaves the palace clad in a red shirt. Being come to the Grève, he mounts a broken ladder, furnished with two railings that lead him to the scaffold. The executioner of high works gathers up his hair above his head, binds his hands behind his back, fastens him by the feet and about the middle of the body upon a plank serving as a seesaw. He is then overturned, and his neck is caught in a crescent-shaped collar. Another such crescent descends to join the first and is fixed firmly in place. At the top of two upright beams is a heavy block armed with a cutting instrument, shaped horizontally and held by a cord which the executioner lets fall. Dropping perpendicularly upon the neck of the patient, it decapitates him. The head rolls into a basket, and the body remains exposed for some time after the execution. The scaffold and its dreadful accessories are painted red. The preparations are terrifying, yet the execution is finished in the

[4] According to the memoirs of Sanson, Louis XVI—an amateur locksmith with mechanical interests—suggested during a test at the Louvre Palace that the crescent blade be replaced with an oblique one to ensure a cleaner cut. Some historians, however, consider this anecdote apocryphal.

twinkling of an eye. (La Feuille du Jour, April 27, 1792)

The public's morbid interest in the device, which attracted an "immense crowd" (Journal General de l'Abbé Fontenai, 27 Avril 1792), and its design was satirized in the press. A short story in May 1792, *La Feuille du Jour*, a journal of moderate positions, reported on how a (probably fictional) condemned person asked the executioner for various details of the machine's design and advised him to oil the sliders so that the blade could fall smoothly. In June 1792, the revolutionary newspaper *Le Thermomètre du Jour* published an article caricaturing the alleged bloodthirstiness of counterrevolutionaries by depicting them playing a game in which revolutionary leaders were executed with a small-scale model of the beheading machine.

In this early period, explicit attributions of the machine to Dr. Louis circulated widely, both in the press and in popular parlance. Dr. Louis himself thus regretfully noticed how the machine might end up being named "La Petite-Louison"—something he strenuously tried to avoid, even as he implicitly reinforced its attribution to Dr. Guillotin:

> I considered the guillotine as an act of humanity and did no more than rectify the shape of the blade…My enemies then attempted, stopping at nothing in their use of the press, to have the fatal machine named Petite-Louison, though they were unable to substitute this name for that of the guillotine. I was foolish enough to be greatly upset by this vile act. (Dr. Louis' letter to a friend (1792), quoted in Arasse, 1989, p. 24)

Other witnesses confirmed the temporary prevalence of "Louison" or "Louisette." For instance, the historian and contemporary of the Revolution Louis-François Du Bois (1773-1855) attested that the machine was "for a while, in 1792 [a time when he took part to the Revolution in Paris], called Louison or Louisette, due to the care that Dr. Louis had taken in its improved construction" (Du Bois, 1843: 18). The journalist François-Fortuné Guyot de Fère (1791-1868) similarly witnessed:

> It is worth noting that at first it was not given the name "guillotine"; it was called "Louise" or "Louison," after Mr. Louis, who had overseen the trials and made various modifications to it. (Guyot de Fère, 1830: 7).

Early variations in the machine's naming reveal the public's uncertainty over whether credit

should go to Dr. Guillotin or Dr. Louis. In April 1792, the *Journal Général de l'Abbé Fontenai*, a prominent royalist journal, thus calls it "louiso-guillotine," while the *Courrier Extraordinaire*, a revolutionary outlet, declared, when discussing Pelletier's upcoming execution:

> Upon this criminal will be made the trial of the petite Louison. Such is the name given to the instrument with which the executioner of high justice will strike off the head—after its inventor, the surgeon Louis. A surgeon ought indeed, in the matter of operations, to have the advantage over a physician. Thus, no more shall men speak of the Guillotine of Doctor Guillotin. (Courrier Extraordinaire, April 1, 1792)

Probably concerned that the machine would ultimately be attributed to him, Dr. Louis did his utmost to distance himself from its creation. Yet his sudden death on May 20, 1792, less than a month after the first execution by guillotine, limited both audiences' interest in attributing the machine to him and his attempts of distancing himself from the attribution. "Louis downplayed his role in inventing the machine, which had come almost entirely from his own mind," wrote historian Delarue (1979: 147). "Like Guillotin, he later came to regret having his name associated with a machine whose horror had not, at first, been apparent to him." This is evidenced by the outright lie he told a friend (falsely claiming that he "did no more than rectify the shape of the blade") and by his reference to "Monsieur Schmidt's machine" in a letter to Roederer (Dr. Louis to Roederer, April 19, 1792). Eventually, Dr. Louis' attempts proved unnecessary, as these early names did not outlive him. By late 1792, the term "guillotine" had taken hold, eclipsing "Louison" or "Louisette," firmly attaching Dr. Guillotin's name to the device and crystallizing attribution to him, despite his lack of involvement since his 1789 proposal (statistics in *RetroNews* between October and December 1792 derived from Figure 4 show 36 outlets out of 42 using "guillotine" in that period).

Unlike Dr. Louis and Dr. Guillotin, the wider public never associated Tobias Schmidt's name with the machine. Yet, in the second half of 1792, Schmidt did try to patent "his" decapitation machine, relying on an intellectual property law passed on January 7, 1791 (Arasse, 1989). This action likely originated in Schmidt's dissatisfaction with the "bonus" awarded by Roederer in May

1792 for his work—a bonus that did acknowledge him as the machine's inventor (Giraud to Roederer, May 26, 1792, cited above)—especially since Roederer subsequently attempted, in negotiating a contract for a larger number of machines, to reduce Schmidt's remuneration (Roederer to Clavière, June 7, 1792), and then even tried to contract alternative suppliers (Roederer to Beaulieu, July 13, 1792; see also Taschereau, 1835; and Pichon, 1910). Schmidt's patent application was rejected on the apparent grounds of the nature of the device as both morally repugnant and as an instrument of government:

> Humanity is repelled by the idea of granting a patent for an invention of this kind. We have not sunk to such a barbarous level. Although Monsieur Schmidt has made a useful discovery (of a funereal variety), since it can serve only in the execution of sentence, the government is the proper organ to which he should propose it. (Letter: Minister of the Interior to Schmidt, July 24, 1792)

The Minister of the Interior did, however, recognize Schmidt as the inventor of the machine. By comparison, Roederer expressed his disdain for Schmidt's claim of any intellectual property on what he believed was Dr. Louis' original design:

> M. Schmidt, who had not dreamed of obtaining a patent for a machine of which *he was not actually the inventor* [emphasis added], and to which he only made a few changes to M. Louis' design; M. Schmidt, who had manufactured those of Paris, Versailles and several other departments [e.a.] and had made an agreement with M. Claviere without thinking of obtaining an exclusive privilege independent of this contract, believed he could avoid its termination, by obtaining a patent. (Roederer to Beaulieu, Minister of Finance, undated)

Roederer thus asserted that Dr. Louis was responsible for this invention, if anyone was. However, his opposition to Schmidt's claim was also motivated by a self-interested attempt to reduce the production cost of further machines. It is unclear whether Schmidt's application was rejected because of Roederer's or the Minister of the Interior's reasons. Either way, outside of private correspondence, we found no attributions of the machine to Schmidt in the French public sphere.

Analytical Summary: Counterfactuals to the Focal Actor

Dr. Louis's engagement offers a plausible counterfactual to Dr. Guillotin's role. Like Dr. Guillotin, he was a prominent physician and Enlightenment intellectual whose status ensured high consideration

when the Assembly consulted him in 1792. He framed his intervention as resolving debates over the reform's application by guaranteeing humanity and equality through a precise machine design. Although more technical than Guillotin's proposal, his *Avis* mapped directly onto the same problem dimensions, enabling audiences to promptly evaluate it.

From April 1792, discussions of the machine's effectiveness further reinforced evaluation and triggered attribution to Dr. Louis as designer. Both royalist critics and revolutionary supporters fueled these attributions, reshaping his status and inviting further attribution—even as the device's image darkened. This evaluation–attribution spiral halted with Dr. Louis's death in May 1792, reducing motivations for continued attribution. Once executions began, evaluation intensified, and attribution converged instead on Dr. Guillotin, whose earlier ideological positioning regained salience.

By contrast, Tobias Schmidt's status as a craftsman led audiences to filter out his engagement. His contribution was not mapped onto core problem dimensions and thus generated neither evaluation nor attribution, despite its material importance and Schmidt's attempts for recognition.

Historical Consequences: Crystallization of the Innovator-Innovation Link around Dr. Guillotin and the Namesake Beheading Machine

In late 1792, the guillotine's history entered a larger and darker stage, as its symbolic promise of equality and humanity clashed with the brutal realities of revolutionary justice (Carrabine, 2024). Contemporaries initially envisioned the guillotine as a more equal and less painful means of execution—"the most gentle of lethal methods" (Chamayou, 2008)—thus representing a clear break from the shunned *Ancien Régime*'s torturous means of execution. The guillotine also aimed to surgically purge execution of its human touch. By replacing the executioner's hand with the fall of a blade, it depersonalized death—unlike the spectacle of manual beheading or the lingering cruelty of the wheel. In doing so, it sought to both civilize punishment and redeem the executioner, transforming him from a shunned outcast into a state servant endowed with the same rights and

duties as any other citizen.

Yet, between 1792 and 1794, the guillotine became not only a fixture of revolutionary justice but also Europe's first state-administered technology of mass executions. It enabled extensive bloodshed during the Reign of Terror, when paranoia and fear of counterrevolutionaries rose at their cusp among the French (Tackett, 2018). In total, 15,000 to 17,000 people were guillotined during the Revolution, and in just 47 days (June 10–July 27, 1794), 1,376 people were decapitated in Paris alone (Rioult & Fathi, 2023). This outcome vindicated Sanson's claims of efficiency, but also transformed the device from a symbol of humane, egalitarian reform into a scarlet emblem of the Reign of Terror. In so doing, it endured as a symbol of the Revolution, yet with a meaning entirely opposite to that which Revolutionaries had anticipated—and, in a twisted turn of fate, echoing conservatives' darkest fears. During the Revolution, Sanson became the machine's "lead user," performing 2,918 executions using the guillotine. His most notable executions included Louis XVI and Charlotte Corday (the assassin of Jean-Paul Marat) and numerous revolutionaries, including Hébert, Danton, Desmoulins, Saint-Just, and Robespierre. His association with the machine was so strong that a popular engraving decrying the Reign of Terror under Robespierre depicts Sanson beheading himself with the guillotine after beheading all of France and remaining the last man standing (*Gouvernement de Robespierre*, 1794 or 1795).

However, even Sanson's tight association with the machine was not enough to displace Dr. Guillotin as its main originator in the public imagination. His brief and limited proposal continued to define him as the machine's "father," an irony that deepened as the guillotine's meaning shifted from Enlightenment reform to revolutionary terror. As the meaning of the machine evolved, so too did the image of its perceived originator. Increasingly, Dr. Guillotin was stained by the excesses of revolutionary bloodshed, which largely overshadowed the humane principles that had inspired the

original bill. Thus, the contemporary journalist Guyot de Fère reports, upon meeting Dr. Guillotin as an old man in 1810, recalled:

> At that time, people were still trembling with the gloomy memories of the Revolution, its wounds not yet healed; and I, though still very young, had witnessed its bloody ruins, the mourning it had spread everywhere. Having been struck far more by its murders and crimes than by the good it had also produced, I could not help but feel a painful sentiment against this man who, through the invention of a punishment at once swift and easy, had perhaps contributed to increasing the number of victims sacrificed to revolutionary fury. I could not believe that the inventor of the guillotine was a good and sensitive man, and I was astonished to have seen in him a face at once venerable and handsome. (Guyot de Fère, Notice Historique et Physiologique sur le Supplice de la Guillotine, 1830)

The blackening of Dr. Guillotin's image, so prophetically prefigured by *Les Actes des Apôtres*, would endure throughout the almost two centuries in which the guillotine left its indelible mark. Between 1933 and 1945, under Nazi rule, the device claimed roughly 16,000 lives. It continued to be used in French colonies, including during the war in Vietnam. In France, the blade fell for the last time on September 10, 1977, yet the guillotine itself remained suspended in legality until 1981, when the death penalty was formally abolished. Dr. Guillotin was long remembered as the sole father of the machine, until historians and social scientists began to revisit his story and seek out "the real Doctor Guillotin" (Weiner, 1972). Despite these efforts, in France and around the world, the good doctor continues to be falsely remembered to this day as the infamous "inventor" of the terrible guillotine.

Analytical Summary: Crystallization and Enduring Evaluation-Attribution Spiral

The historical consequences of the guillotine show how the link between Dr. Guillotin and the machine crystallized, endured, and evolved. Sanson became central to the machine's use but never escaped his stigma; his role reinforced macabre associations but did not invite any recognition. Schmidt was never publicly acknowledged as one of the machine's originators. Mirabeau was attributed occasionally, but he died in April 1971, about a year before the passing in May 1792 of Dr. Louis, whose attribution emerged but faded. With no other contenders, attributions to Dr. Guillotin diffused widely and rapidly, soon becoming unquestioned. Attribution to him became irreversible in part precisely because, as the meaning of the machine shifted to darker tones, the association grew

undesirable, thereby discouraging any attributable individual from claiming any connection.

However, this crystallization of the association did not freeze the process of social co-construction. As the guillotine's image coagulated in bloodshed, it reverberated back onto Dr. Guillotin, darkening his reputation and giving an oxymoronic twist to his status as the original "Doctor Death" (Carver, 2025). Overall, this case exemplifies how attributions lie at the heart not only of audiences' efforts to give credit for innovations but of the construction of innovations themselves. Although Dr. Guillotin did *not* invent the guillotine, his engagement with its development became central to the evaluation of the beheading machine as an instrument of capital punishment in a revolutionary rupture from the *Ancien Régime*. Attributions of the machine to Dr. Guillotin both resulted from and reinforced this evaluation, concomitantly weaving the device into the fabric of his public image—for better and for worse. And so it was that "guillotine"—and not "louison," "louisette," "schmidette," "sansonette," or "mirabelle"—became the machine's common name for centuries to come.

DISCUSSION

Theorizing the Social Attribution of Innovations: A Process Model of the Social Co-Construction of Innovations and Innovators

Drawing on the case of Dr. Guillotin and the eponymous machine, our study identifies a generalizable process model through which *innovators and innovations* are *socially co-constructed*. This process unfolds as a focal solution—e.g., an idea, discovery, process, or object—is evaluated as innovative, while a contributor to that solution is simultaneously recognized as an innovator. These two forms of recognition are mutually reinforcing, as attributions of the solution to the contributor both fuel, and are fueled by, evaluations of innovativeness. Figure 5 graphically depicts the process.

[Insert Figure 5 about here]

We conceptualize the process as an escalating flow of audiences' evaluative steps—(i-viii) in

dark grey boxes—and conditioned by key process contingencies—(a, b, c) in light grey boxes. The objects of the evaluative process are actors who are perceived as having some degree of engagement with the development of a solution. Audiences seek to filter, interpret, and evaluate the contributors' engagement as well as the solution itself through successive evaluative steps that reinforce one another. Depending on how the process unfolds, the contributors' engagement may be ignored, be integrated, or become central to an evaluation of the solution as innovative, leading to an escalating *evaluation-attribution spiral*, which constitutes the central attributive mechanisms in our model—(iv-vi) dark grey boxes inside the white rounded box.

The process allows for multiple concurrent evaluations, as several co-construction processes may occur simultaneously for different contributors to the development of the same solution—as when, for instance, we considered Dr. Louis's and Schmidt's parallel contributions. Such processes may coexist while being at different stages of development—for instance, when we considered Dr. Louis and Dr. Guillotin. Additionally, the process for a focal contributor extends over time and may be interrupted, ended, or started again depending on various contingencies—as in Dr. Guillotin's case, which came to a halt for almost two years. Figure 6 applies the model to the focal historical case of Dr. Guillotin. In Figures A2 a-d of the Appendix, we instead apply our model to our historical counterfactuals, focusing on four key contributors to the guillotine ideation, creation, or adoption: Mirabeau (a), Sanson (b), Dr. Louis (c), and Schmidt (d). To understand this parallel development, the various evaluative processes need to be seen as overlapping each actor's timeline in Figure A1 (Appendix). We will now describe each step of the process in greater detail.

[Insert Figure 6 about here]

Process main steps. The proposed process starts when (i) *audiences perceive one or more actors engaging with the development of a solution*. Once audiences are exposed to the contributor's

engagement, they then proceed with (ii) *filtering of the contributor based on their status*, which suggests whether their engagement is worthy of consideration. The third step is the (iii) *audiences' mapping of the contributor's engagement against value-laden problem dimensions*. Audiences may draw on existing dimensions or introduce new ones, thereby associating the contributor with a particular camp or perspective. This mapping is evident in participants' reactions to the contributor's engagement with the solution. Because problem dimensions are inherently value-laden, the mapping process is both conceptual and evaluative, reflecting audiences' own positions. For example, Dr. Guillotin and Dr. Louis were associated with Enlightenment ideas of humanism and equality, as well as with medical principles to perform a surgical death, while Sanson was associated with economic convenience and practicality. The attribution process is likely to advance for those contributors whose associations are seen as coherent and valuable—e.g., Dr. Guillotin (Figure 6) and in the Appendix, Dr. Louis (Figure 2Ac) —while it stalls for those that do not—e.g., Sanson (Figure 2Ab).

If the mapping of the contributor's engagement is successful, the evaluation–attribution spiral begins. The first step of this spiral involves (iv*) audiences evaluating the solution through the contributors' engagement*, which is mapped along the value-laden problem dimension. For example, revolutionaries could have viewed the machine as a humane and revolutionary rupture from *Ancien Régime* justice as they mapped Dr. Guillotin's engagement to the pursuit of equality and gentler punishment. Conversely, counter-revolutionaries could evaluate the machine as dangerous, grotesque, or gruesome as they associated opposite value judgments to the focal problem dimensions.

If the solution is reevaluated as a source of change, this triggers (v) *audiences attributing the solution to the focal contributors*. In this stage, the first tentative associations between the source of observable change and their originators start to materialize, regardless of the actual origin of the solution. For example, the beheading machine, despite predating the French Revolution by centuries

(in his *Avis,* Dr. Louis explicitly mentioned the "English machine" as a starting point of his design), was reinterpreted as an instrument of modern Enlightenment reformism in the Kingdom of France. It embodied the intentions of its most impassioned advocates: the French Enlightenment intellectuals of the Revolution, among whom Dr. Guillotin stood out for his active engagement with penal reform. Attribution thus also serves a sensemaking function. If the contributor's engagement enables audiences to view the proposed solution as a source of change, the solution is simultaneously understood as an expression of the contributor's agency. For example, Dr. Guillotin explained the innovative value of a "simple device" as a means of execution; hence, the resulting machine was seen as an expression of his revolutionary plan. These attributions, in turn, feed back into the evaluation of the solution itself, as meanings associated with the contributor become a lens through which the change is interpreted. In this manner, the machine became an expression of Enlightenment ideals that polarized audiences, just like Dr. Guillotin's public engagement. The combined evaluation of the solution and its attribution to some contributors are therefore mutually reinforcing, constituting the first "cog" in the *evaluation–attribution spiral*.

At this stage, the association between the contributors and the solution is increasingly unquestioned. In some cases, the crystallizing of the association corresponds to *naming it* after the innovator (e.g., "guillotine"), replacing former names (e.g., Halifax Gibbet, or—in Louis' own words—the "English machine") and alternative names based on weaker attributions (e.g., "louisette/petite," "Louison," "mirabelle"). However, while many innovations may be named after their attributed originator (e.g., "sandwich," "Molotov cocktail," "diesel engine," "silhouette," "negroni"), not all innovations are named after a specific individual, despite enjoying strong attribution (e.g., the atomic bomb, the harvester, finches). This is why "naming" is presented as "*optional"* (phase v.)—an enhancing yet unnecessary step in the attribution process.

Attributions lead to (vi) *audiences evaluating the focal contributors on the basis of the solutions attributed to them.* This step represents the polar mechanism, where the meanings and perceptions of the emerging innovation reflect back on the attributed actor's public image. For example, as the beheading machine became associated with revolutionary violence, Dr. Guillotin could shift from being seen as an enlightened physician devoted to justice and public health to an icon of ruthless revolutionary justice. As evaluations of the contributor come to mirror those of the solution, the perceived link between them hardens, crowding out alternative candidates. This mutual reinforcement between (v) *attributing the solution to a contributor* and (vi) *evaluating the contributor on the basis of that attributed solution* constitutes the second "cog" of the *evaluation–attribution spiral*. Together, the two cogs drive a recursive move: audiences first (iv) evaluate the solution through the contributor's engagement, next (v) attribute the solution to the contributor (sometimes consolidating the link through naming), and finally (vi) evaluate the contributor through the attributed solution—and further reinforce the attribution by operating in reverse order.

Finally, as the *evaluation–attribution spiral* escalates, it may culminate in (vii) *audiences crystallizing the innovator–innovation link.* This crystallization makes the association between the contributor and the solution increasingly taken for granted and unlikely to be questioned. Once the link is crystallized, even if evaluations of the solution or the contributor later shift, these changes lead audiences to reconsider the contributor in light of the new meanings, which culminates with (viii*) audiences associating new meanings to the innovation and thus to the attributed innovator*. Crucially, these new meanings do not reopen the question of origin; instead, they become anchored in the crystallized innovator–innovation link, thus reinforcing it further. This is evident in the guillotine's trajectory. When the meaning of the machine shifted universally—even among its initial supporters—toward that of a terrible instrument of state-administered mass execution, the link to Dr.

Guillotin did not dissolve; it hardened. Consequently, Dr. Guillotin's public image shifted toward that of a "Doctor Death," one that persists until today (Carver, 2025), despite accounts of "the real Dr. Guillotin" (Weiner, 1972) and his Enlightened, humane aims.

Process contingencies. Three contingencies may either facilitate or hinder the process. The *(a) contributors' positioning of their engagement against problem dimensions* facilitates the audiences' mapping, and in turn the start of the evaluation–attribution spiral. By contrast, if contributors fail to frame their engagement in terms of recognizable and coherent problem dimensions, audiences may find it harder to map, making the process more likely to stall. For instance, Dr. Guillotin's bill was based on problem dimensions, such as fairness and equality, that were closer to the deputies' ideals, which fueled superior attributions than Sanson's considerations of savings and practicality.

The *(b) audiences' exposure to perceived evidence of change* supports the collection and processing of evaluative cues. Conversely, the absence of such evidence may stall the process. In our case, the public use of the guillotine and its growing toll made the societal change brutally visible to audiences, catalyzing more definite evaluative positions.

Finally, (c) *audiences' biases and motivations to praise or blame the focal contributor* act as powerful enhancers of the process. When audiences take clear positions toward a solution, they seek a champion to whom they can attribute credit for a change they value. Conversely, detractors search for a scapegoat to assign responsibility for an outcome they deem undesirable. In both instances, such predispositions intensify the pursuit of attribution. In our case, the polarized reception of the machine prompted opposing camps to cast Dr. Guillotin either as a champion or as a scapegoat.

Theoretical Contributions

Our study advances a unified theoretical contribution: It explains, though a generalizable process, how innovations and innovators are socially co-constructed through attribution, and why this linkage, once crystallized, becomes remarkably durable—even when the meaning of the innovation later

changes, sometimes with adverse consequences for the attributed actor. In doing so, we elevate attribution from a secondary outcome of innovation to a foundational socio-evaluative process through which novelty becomes meaningful, consequential, and historically enduring.

Our first and most central contribution is to provide the first process model of the social attribution of innovation. Prior research has typically treated attribution as a problem of credit allocation, analytically separated from the evaluation and production of innovation (Cowan, 1997; Podolny & Stuart, 1995; Colyvas, 2007; Haeussler & Sauermann, 2013). By contrast, our model shows that attribution emerges from audiences' evaluations of a contributor's engagement in a solution's development and can only be understood though a processual lens. Attribution is not merely about who gets credit at a given point in time; rather, it is a progressive, spiraling mechanism through which audiences stabilize the meaning of novelty with an explanation of its origin. By anchoring a focal solution to a recognizable figure, audiences thus render that solution interpretable as an innovation, one endowed with purpose, agency, and direction (Khaire, 2014; Lamont, 2012; Zuckerman, 2012). Our framework, for the first time, integrates the literatures on the *production* of innovation (Hargadon & Douglas, 2001; Cattani et al., 2017), the *recognition* of innovators (Lemley, 2012; Colyvas, 2007; Haeussler & Sauermann, 2013), and the *social construction of technology* (Pinch & Bijker, 1984; Bijker et al., 1987; Rosenberg, 1982), which have largely developed in silos.

Second, we granularly detail the intertwined mechanisms through which audiences co-create both innovations and innovators. Existing work on innovation evaluation generally emphasizes how audiences assess novelty, usefulness, or legitimacy, and often assume that the innovator–innovation link is given (Hargadon & Douglas, 2001; Cattani et al., 2017). Our findings challenge this assumption. We show that audiences actively construct this link through a reinforcing *evaluation–attribution spiral*: Evaluations of a contributor shape how a solution is understood, while emerging

attributions to that contributor feed back into how both the solution and the contributor are evaluated. In this sense, innovations do not simply emanate from innovators; rather, they can *shape* innovators, their status, image and historical memory, as contributors become symbolically elevated—or tainted—through the association with "their" solution (Merton, 1968; Piazza & Castellucci, 2014). This innovative reframing complements the traditional focus on actors' individual agency with a less investigated role of audiences in stabilizing shifting innovation narratives (Garud et al., 2014; Gehman & Soublière, 2017).

Third, and crucially, our study explains why attributions may persist even when the meaning of an innovation shifts. We show that attribution unfolds in two analytically distinct phases. In the first phase, audiences co-create the meaning of an innovation by linking it to a contributor whose engagement helps make sense of the ongoing change, and in doing so start associating the actors with the change itself. In the second phase, once the innovation–innovator link has crystallized, subsequent changes in the innovation's meaning no longer destabilize that link. Instead, new meanings—positive or negative—are retroactively transferred to the attributed actor. This recursive dynamic is central to understanding the "dark side" of attribution. In our case, the beheading machine's shift from a symbol of humanitarian reform to an emblem of state terror did not weaken its association with Dr. Guillotin; rather, it inverted his legacy, transforming the image and memory of a reformist physician and humanist into a historical villain (Camus, 1957; Arasse, 1989; Weiner, 1972).

Our insights thus complement research treating enduring attributions as mere historical errors or cognitive biases (Cobb & Comfort, 2023; Haeussler & Sauermann, 2013) by suggesting they are instead outcomes of interested parties' evaluations. Attributions persist precisely because they help audiences make sense of critical changes, perhaps because they respond to specific needs in a consequential way. In this sense, attribution can also serve political purposes, as it may be used to

endorse or discredit particular actors or ideas. Importantly, once an attribution becomes embedded in collective memory, it acquires a stabilizing function that resists later factual correction, even when alternative accounts of contribution become available (Sulloway, 1982; Ott, 2023). This helps explain why early clarifications of contribution may matter, whereas later revelations rarely reshape established attributions.

Our theory also directly contributes to the conversation in SCOT by showing that interpretive closure concerns not only what an innovation is, but also with whom it is associated. Stabilizing the meaning of an innovation often requires stabilizing the narratives of its origin around a focal figure (Pinch & Bijker, 1984; Bijker, 1997). Attribution thus operates as a socio-political device that connects artifacts to moral worldviews, ideological positions, and collective identities (Humphreys, 2005; Basu, 2023). In polarized contexts, this device becomes especially powerful, as audiences are more motivated to assign praise or blame through personalized narratives of innovation (Bartel & Garud, 2009; Garud et al., 2014).

Taken together, these insights reposition attribution as a core mechanism in theories of innovation. By theorizing attribution as a dynamic, recursive process through which audiences co-construct innovations as well as innovators—and by showing how these links persist and transform as meanings evolve—our study offers a more complete account of how novelty becomes historically consequential. In doing so, it highlights a paradox at the heart of innovation: the same socio-evaluative processes that elevate individuals as emblematic innovators can later trap them in legacies they neither intended nor controlled (Rosenberg, 1982; Fisk, 2006).

Finally, our study offers an empirical contribution that exemplifies the value of micro-historical approaches (Hargadon & Wadhwani, 2023) for advancing innovation research and management scholarship more broadly. Whereas much management research abstracts from context, a

microhistorical perspective connects situated events and interactions to broader societal transformations and to the formation of beliefs that later become taken for granted. Making sense of these dynamics requires reconstructing audiences' worldviews within their historical context and tracing how they evolved to reshape innovation evaluation and innovator recognition over time. By doing so, we uncover mechanisms that have remained largely invisible in decontextualized accounts, drawing inspiration from historical scholarship in adjacent disciplines. We hope future research will further leverage microhistory to open new theoretical vistas and revisit established phenomena with fresh analytical lenses (Bansal, Smith, & Vaara, 2018).

Boundary Conditions, Generalizability and Limitations

We highlight three boundary conditions of our model. The first is that such processes are most likely to emerge when multiple audiences are actively following a solution's development and attaching symbolic stakes to it. In these contexts, audiences are more inclined to map contributors' engagement, and contributors to work to situate their involvement against value-laden problem dimensions. By contrast, when attention is narrow or stakes are low, such mapping attempts may fail to take hold. History is full of innovations that required the adoption of cultural shifts yet never turned into a debate sufficiently large or value-laden for our attribution model to be relevant. For example, the common association of the "razor-and-blade model" to an invention of King Camp Gillette is a questionable association that did not attract much attention, thus failing to trigger an attribution process similar to the one we highlighted.[5]

The second boundary condition concerns audience polarization in the evaluation of both the innovation and its originator. The attribution mechanisms outlined in our model are more pronounced

[5] In his historical study, Picker (2010, pp. 2-3) claims, "Gillette certainly didn't do that (the razor-and-blade model) … In some sense, it was Gillette's multi-blade competitors who invented razors-and-blade and they did so to separate themselves from the high prices that Gillette charged for razor handles."

in polarized contexts, where attributions become tools through which audiences advance their evaluative positions and contest those of others. Polarization heightens incentives to assign credit or blame to the innovator, thereby amplifying either positive or negative interpretations of their contribution. In more consensual contexts, by contrast, both evaluation and attribution tend to be more routinized and less contested, although they continue to operate through the same underlying mechanisms. For example, the attribution of the discovery of the Galápagos finches to Darwin (Sulloway, 1982)—despite not involving a controversial discovery—nonetheless reflected a similar process of social co-construction between innovation and innovator, albeit in the absence of sharp evaluative conflict.

The third boundary condition is that our model is more likely to hold when contributors' material involvement in a solution's development is ambiguous or difficult to observe. Although later revelations about actual contributions rarely alter crystallized attributions, early clarification of an actor's limited contributions may disrupt the spiral by enabling established credit-allocation institutions to override the co-construction of innovators and innovations, thereby stalling the attribution process altogether.

Beyond those boundary conditions, we explored the generalizability of our model by applying it to another historical case: the attribution of the atomic bomb to J. Robert Oppenheimer. Due to space constraints, this can be found in Appendix, Case A1 and Figure A3, which contain a detailed narrative, presented and mapped against the structure of our theoretical model.

Our study has three main limitations. First, the guillotine's development occurred in a context of institutional crisis. Perhaps in stable contexts, the process we describe could be more constrained by institutions governing the allocation of credit—a possibility that future work could explore further. Second, the co-construction of innovation and innovator began as a largely prospective endeavor,

with two years passing between Dr. Guillotin's initial proposal and the beginning of the machine's material development. Prospective evaluations may leave more space for emerging attributions than retrospective evaluations based on established historical evidence. Future work could thus benefit from examining the latter cases more closely. A last limitation stems from our reliance on historical sources, which are influenced by common biases of historians and archivists (Evans, 1997; White, 1973). Given the granular historical attention paid to both the French Revolution and the guillotine, it seems unlikely that we have overlooked any major evidence that would overturn our narrative. That said, future research could test this by examining contemporary cases.

CONCLUSION

As the opening quote by Victor Hugo asserts, the attribution of an innovation "happens below the surface, but it happens nonetheless." Our effort has been to delve beneath that surface and unearth the intricate process of attribution which plays a central role in the co-construction of innovation and innovators. By tracing this process through the case of the guillotine and the "heads" historically credited with its creation and adoption, we showed that attribution is not merely about allocating credit; rather, it represents a central mechanism through which novelty becomes significant, identities are reshaped, and histories are written. We hope to encourage future research on innovators, audiences, and the evaluative processes that shape both what counts as innovation and who is remembered by history—research that is novel, impactful, sharp, and perhaps even "revolutionary."

ONLINE APPENDIX AVAILABLE AT THIS LINK:

https://osf.io/623ux/files/3ne2t?view_only=5c8e7bed3a534de68740d8c16730ec21

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TABLE 1
Social Change in Capital Punishment in Pre-Modern and Modern Eras, and the Role of the Guillotine

	Pre-Modern Era	Modern Era	Role of the guillotine in the transition
Application of the law and delivery of punishment	Differential, depending on social class.	Egalitarian, regardless of social class.	It provides a single mode of execution across social classes.
Death's objective	To be painful as social retribution for the victims, punishment for the convicted, and deterrence for the public.	Social retribution for the victim does not match the punishment. The punishment is painless for the convicted; death, when applied, is aimed at removing the dangerous individual from the social life.	It aims to be a painless method and equally effective across executions.
Trials	Private, to hide differences in the application of the law.	Public, to showcase the fairness in the application of the law.	The guillotine is the material representation of a shift towards a fairer application of the law, without preferential treatment for higher classes.
Executioners	Social outcasts, stigmatized, instituted by the monarch's will.	Civil servants, respected in society as any other citizen, and instituted by the legal system.	The guillotine separates the executioners from manual killing and torture, limiting their role to mechanically activating the machine.
Executions	Public, to deter and entertain masses; prolonged, to deliver pain until death.	Private, to surgically remove the convicted; rapid, to avoid pain	General public has been increasingly excluded from executions. Since 1939, no executions in France have been open to the public.
Recording of executions	Permitted.	Avoided.	Taking pictures of guillotine executions was forbidden beginning in 1909.

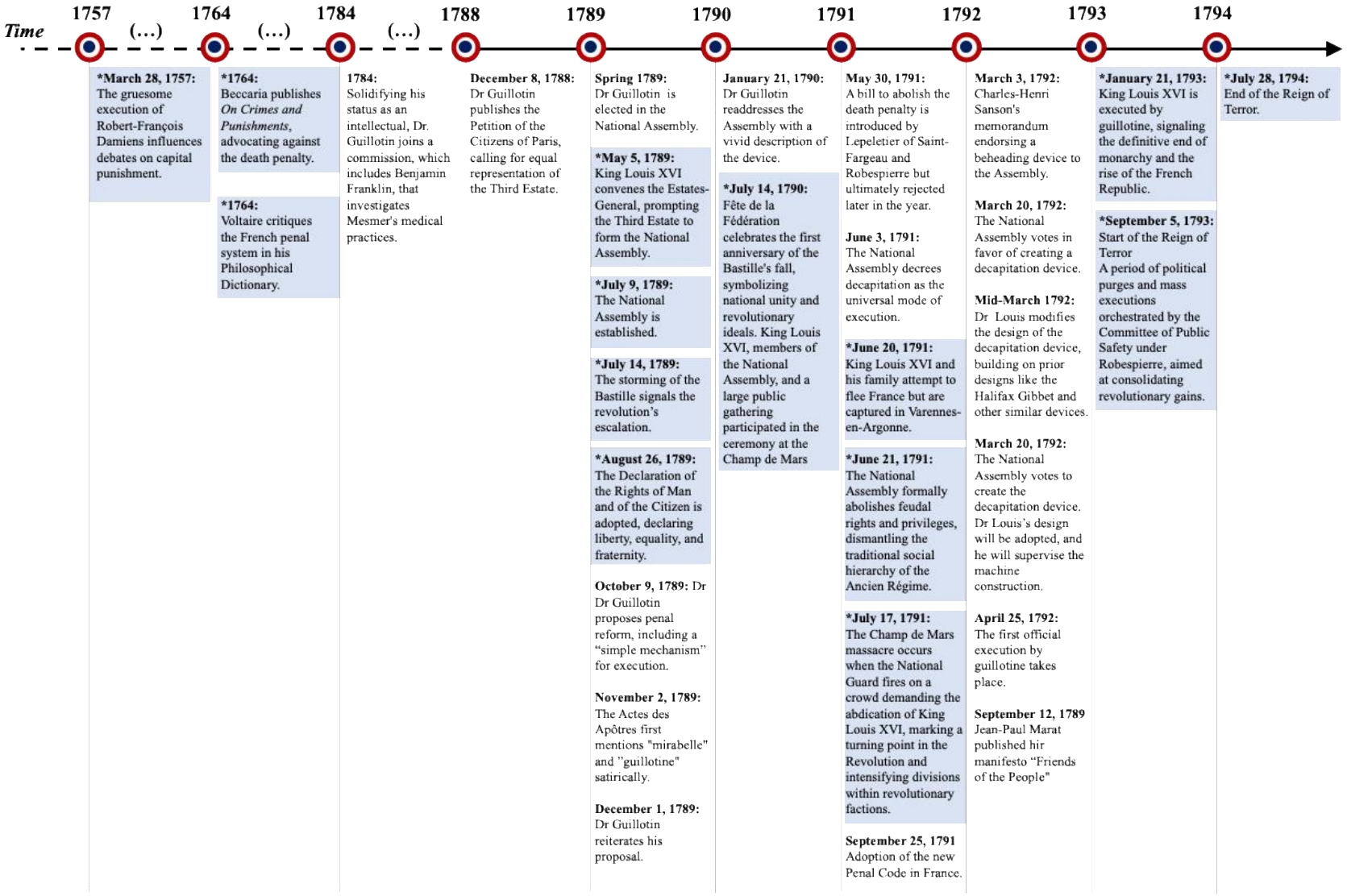
TABLE 2
Summary of Data Types and Use

Data Sources	Use in the Analysis
National Assembly (Parliament) Official Documents: Official parliamentary documents containing the most relevant news: Total number of sources analyzed: 208. Total number of sources selected for quotes: 18. Total number of pages of documents selected for quotes: 685.	These documents offer the complete transcription of French Parliament sessions (at the time called "National Assembly"), including the audience's short comments and reactions, which reflect what was precisely happening during each session. While Parliamentary Archives present the complete reports of the sessions, other parliamentary documents (e.g., *Le Moniteur*) include a selection of the most relevant parts of sessions. We used them to identify the main actors' positions and contribution to the public debate, and the reaction of peer audience.
Historical Annals and Collections Total number of sources analyzed: 87. Total number of sources selected for quotes: 3. Total number of pages of documents selected for quotes: 1,070.	These sources offer an overview of the political life, including extended opinions and judgments about the main happenings. The sources present divergent views of the political and societal events in the French society. Some of these are rather critical, which allows a deep and varied appreciation of events, decisions, and main political actors.
Historical French Press Total number of sources analyzed: 792. Total number of sources selected for quotes: 109. Total number of pages of documents selected for quotes: 1,355. ***Historical British Press*** Total number of sources analyzed: 129. Total number of sources selected for quotes: 11. Total number of pages of documents selected for quotes: 137.	These sources report the sequence of events, stressing the most significant decisions, facts, opinions, and critiques, and the public audience's reactions and sentiments. Press analysis allowed us to evaluate the popularity of some public figures to a wider audience (e.g., repeated news and opinions about Dr. Guillotin's activities) and to reconstruct the appearance and evolution of the terms related to the beheading machine, up to the use of the word "guillotine."

TABLE 3
Digital Repositories of our Data Sources

Digital Repository	Content of the Archive and Use
National Assembly Website: https://www.assemblee-nationale.fr/	This is the official website of the National Assembly (what today is known as the French Parliament) containing various historical documents. The archive was used to check and complement information retrieved from the National Assembly archive.
Persee (Parliamentary Archives 1789-1791) Website: https://www.persee.fr/collection/arcpa	Persee Project contains the digitalized collection of the Parliamentary Archives dedicated to the French Revolution. The complete transcription of each Tome is accompanied by a specific list of topics discussed during each session. We used Persee to and retrieve the relevant pages of the National Assembly sessions where the focal topics were debated from Tom VIII (May 5, 1789) to the Tom XXXII (September 30, 1791).
Stanford Libraries (Parliamentary Archives 1791-1792) Website: http://searchworks.stanford.edustanford.edu	Stanford Libraries contains the digitalized collection of the Parliamentary Archives dedicated to the French Revolution. Digital documents were used to integrate the analysis from Persee documents, with documents from Tom XXXIX (October 1, 1791) to Tom XL (March 30, 1792) which cover the National Assembly sessions not contained in Persee.
RetroNews Website: www.retronews.fr	RetroNews is an official project of the French National Library and its partners that offers a digital collection of historical press and news. RetroNews was used to check statistics of the terms associated with the beheading machine and of how the use of “guillotine” started to substitute Dr. Guillotin's representation in the press and other public sources (e.g., annals, collections of news).

FIGURE 1
Timeline of Micro Episodes and Macro Events in Focus



Note: "*" indicates macro events.

FIGURE 2
Total Number of Debates per Main Topic in the French National Assembly

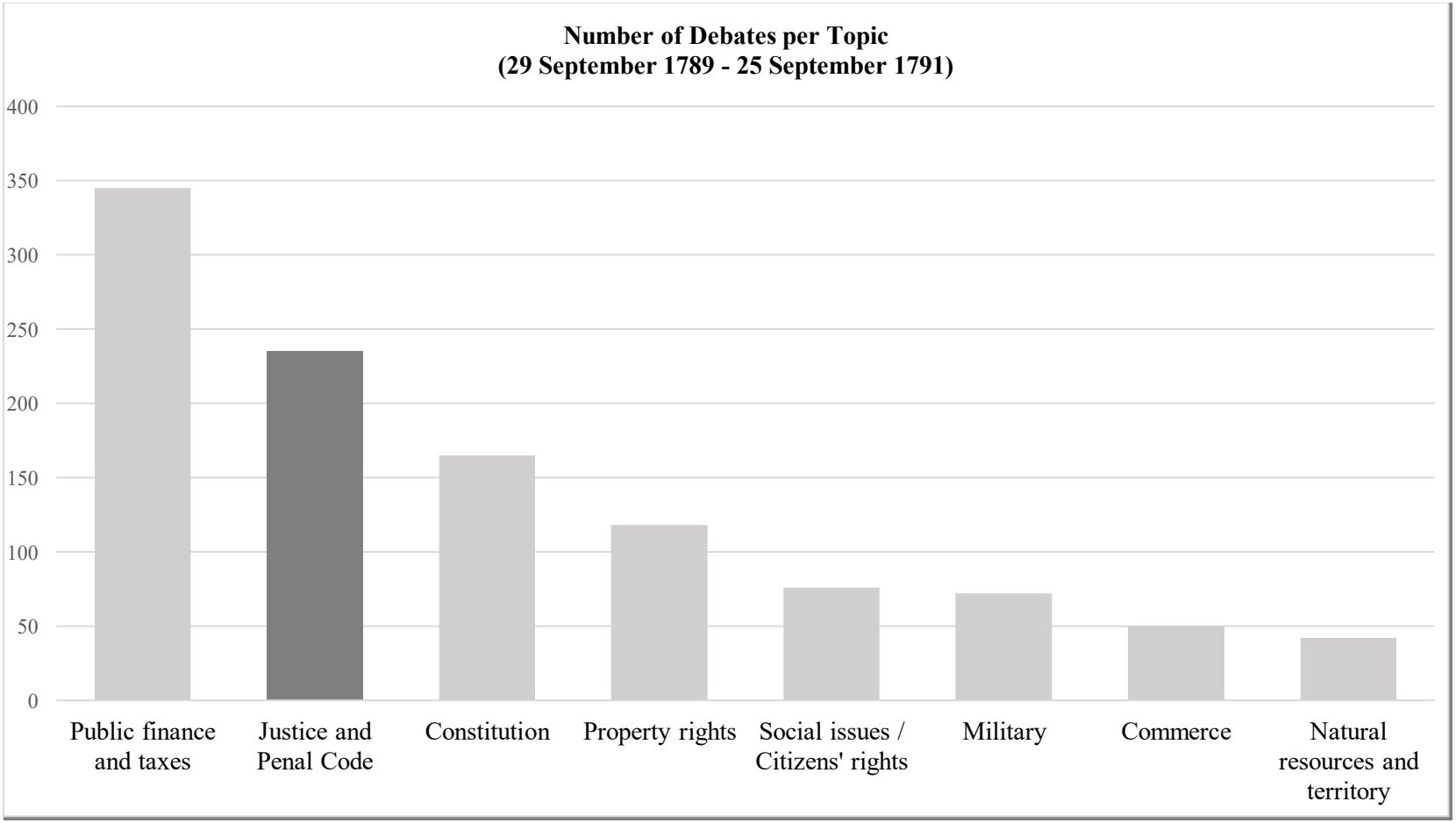
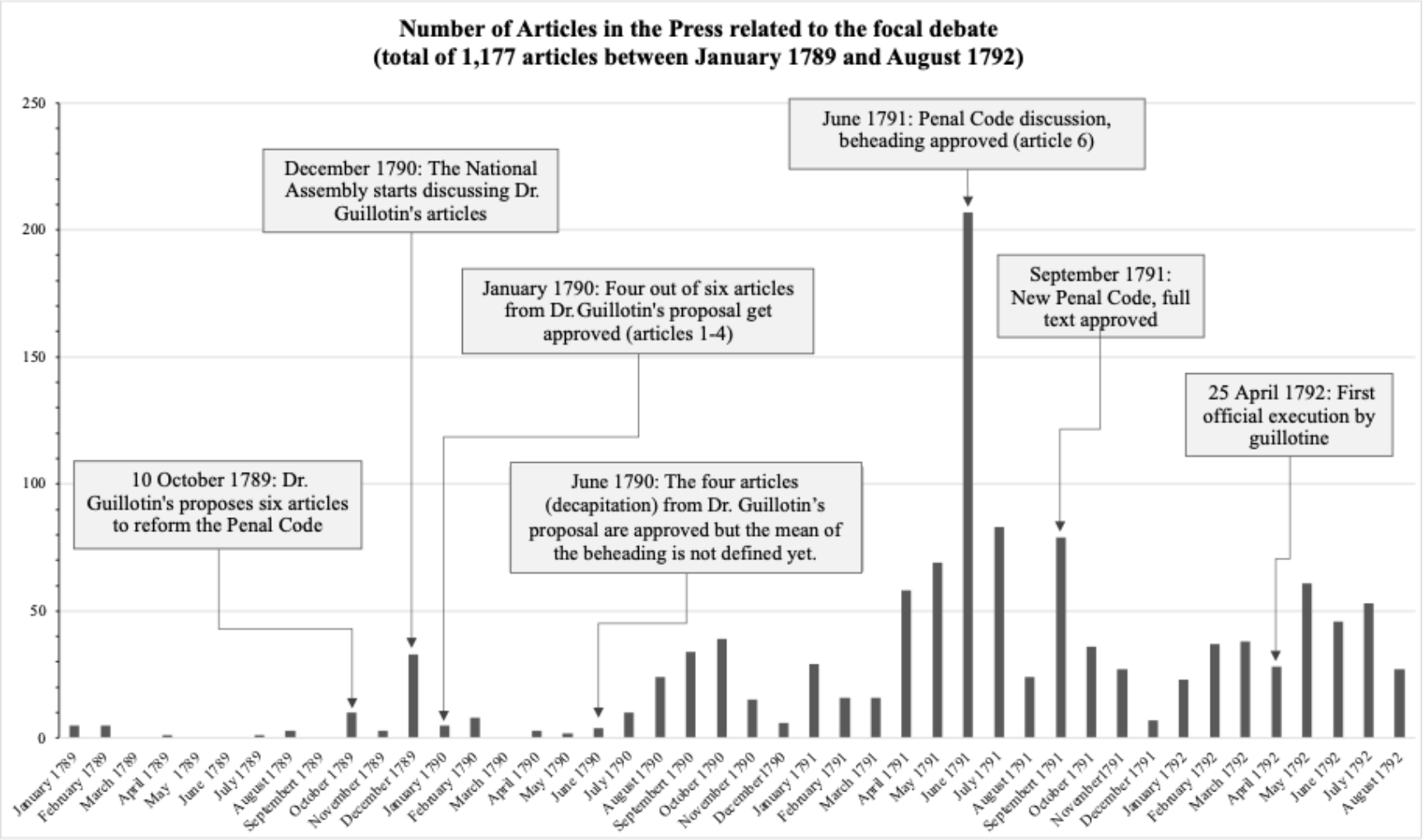
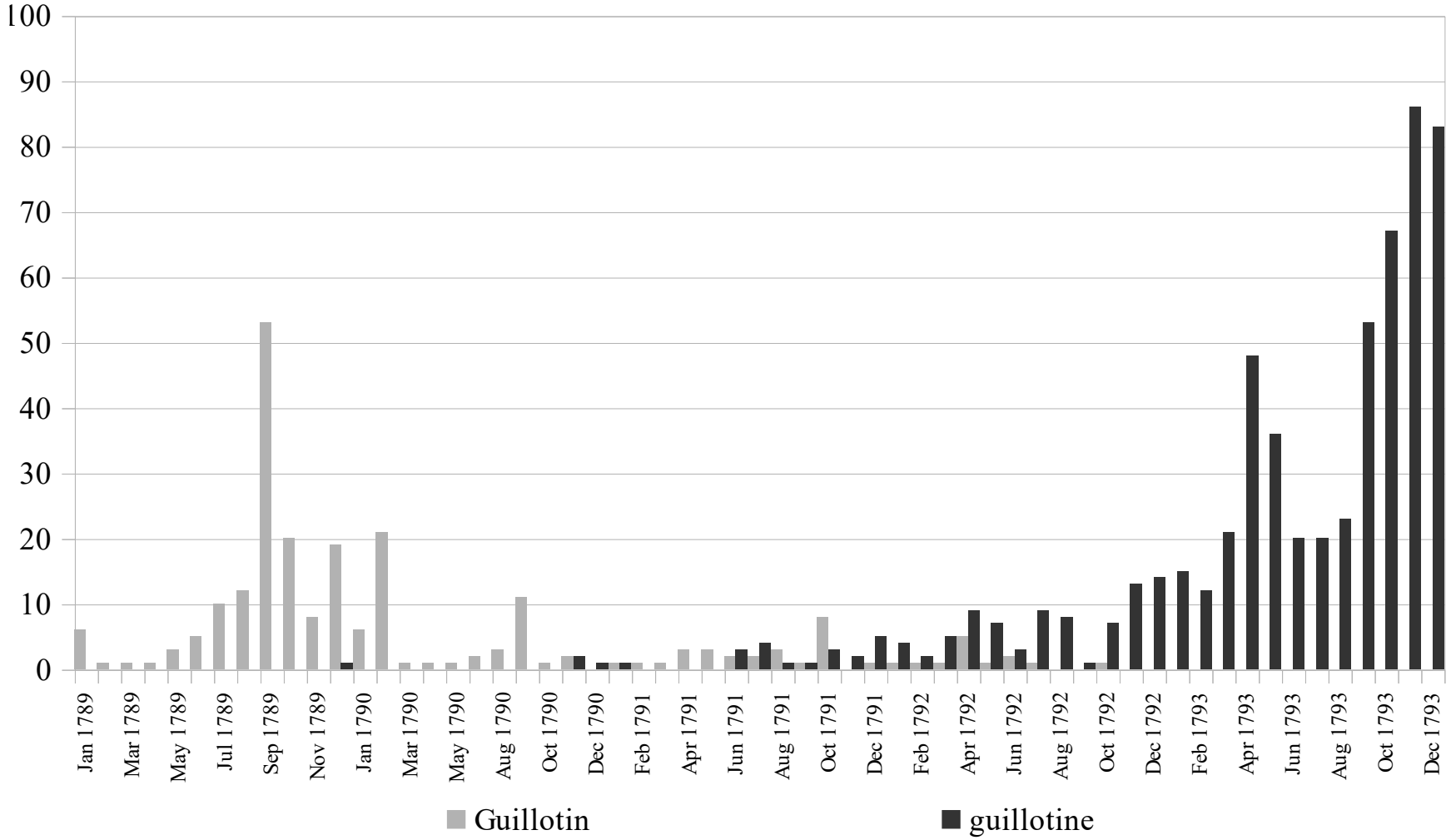


FIGURE 3
Timeline of the Total Number of Articles in the French Press Related to Death Penalty and Penal Code Reform



Note: Re-published articles have not been counted (i.e., they are counted individually).

FIGURE 4
Mention of the Words "Guillotin" and "guillotine" in the French Press



Note: The graph reports only months with at least one mention.

FIGURE 5
The Social Attribution of Innovation: A Process Model of Innovation and Innovator Co-Construction

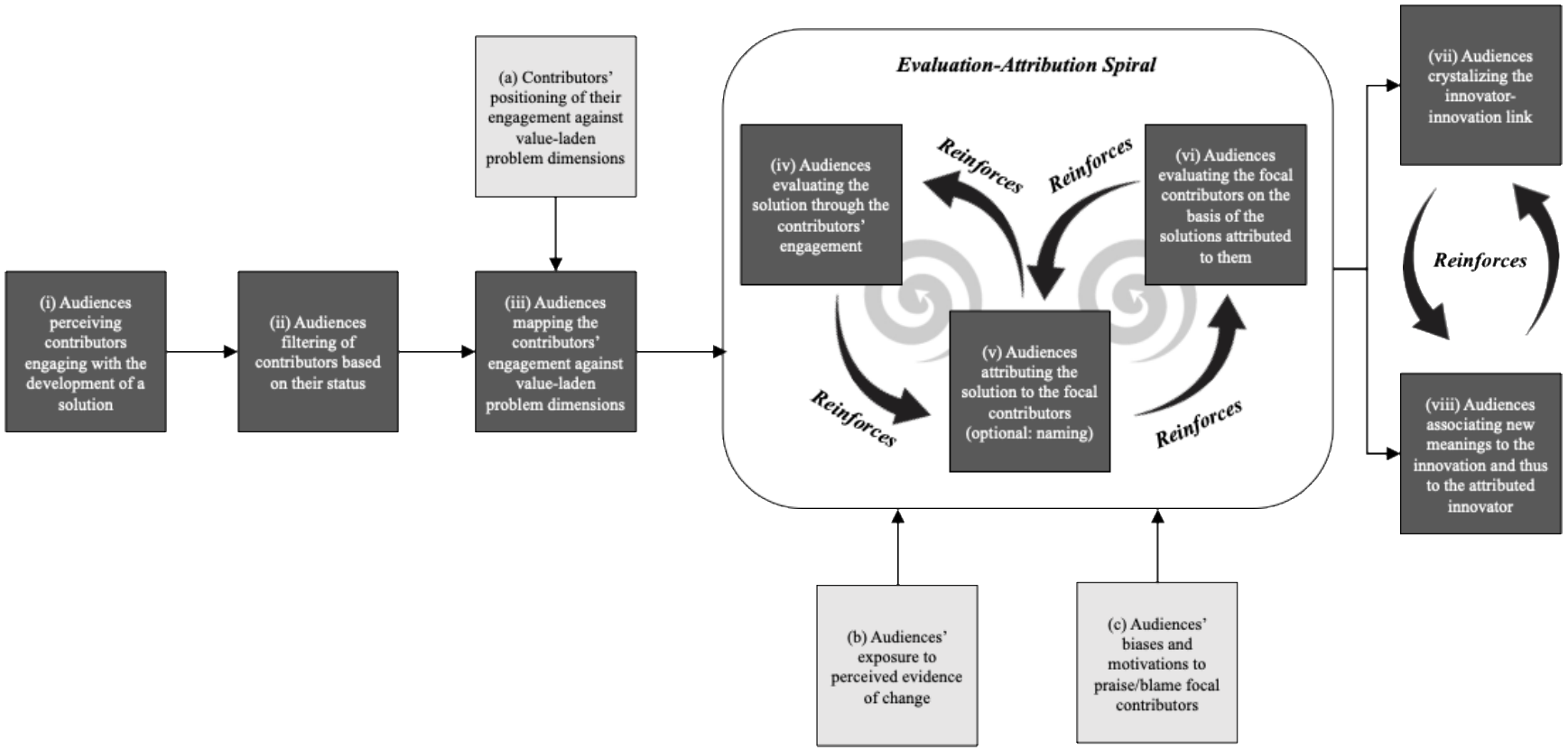


FIGURE 6
Application of the process model to Dr. Joseph-Ignace Guillotin – October 1789 – ongoing

(i) In October 1789, The National Assembly recorded deputy Dr. Guillotin proposing to use a beheading device as universal means of execution in France.

(ii) As both a physician and a deputy, Dr. Guillotin possessed high status on the issue, and with numerous supporters and opponents, his proposal quickly drew wide attention from revolutionaries and monarchists alike.

(a) Dr. Guillotin presented his proposal in terms that resonated with two of the problem dimensions of the penal law reform.

(iii) Evaluators actively positioned Dr. Guillotin's proposal as a solution to the long-recognized problem of unequal and cruel punishment in 18th-century penal debates.

Evaluation-Attribution Spiral

(iv) Both revolutionaries and monarchists evaluated beheading machines as instruments of revolutionary justice.

(v) Both revolutionaries and monarchists attributed the machine to Dr. Guillotin—praising or blaming him to make sense of the change it heralded.

The machine starts being named "guillotine"

(vi) The machine gradually became central to Dr. Guillotin's identity, with him being praised or derided as a 'mechanical genius.'

Reinforces

Reinforces

Reinforces

Reinforces

(b) In the months following Dr. Guillotin's proposal, the machine does not materialize and the expected change remains theoretical; the process thus comes to a halt after its initial spiraling. After the machine began to be used, the process re-accelerated very quickly.

(c) Revolutionaries and monarchists alike have strong yet opposite motivations to praise or blame Dr. Guillotin, which fuels attributions

(vii) Audiences retained the emerging association despite fading from public debate before the reform implementation. The attribution crystallizes for good after the machine starts to be used.

Reinforces

(viii) The perception of the machine progressively shifts toward negative connotations, extending these new meanings to Dr Guillotin.