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The contribution of Maurice Daumas through the CNAM Survey

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Article abstract

Maurice Daumas (1910-1984) was a founder, but whose name is now forgotten. He was a curator at the Conservatoire national des Arts & Métiers (Paris), then holder of the first Chair in the history of techniques, and he directed the monumental *Histoire générale des techniques*. It was him who brought industrial heritage into the French academic field by founding the journal *L'Archéologie industrielle en France* and by publishing in 1980 a book with the same title. In this book, Daumas evokes in particular the glorious timesof industrial history in the Saint-Étienne region. Following the recent discovery of the archives of the national survey that he conducted over several years to document his book, I propose to examine the way in which he approached the industrial heritage of Saint-Étienne, the first French industrial city for a long time, by updating the methodology he used and the local networks on which it relied. In sum, this contribution is about the birth of a field of research in France and in Europe: industrial archeology.

The Advent of Europe's Industrial Heritage as a Field of Research

The contribution of Maurice Daumas through the CNAM Survey

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Preamble

European societies underwent a significant cultural shock when their production and economic system found itself in a spiral of deindustrialization: a shock not only social, economic and psychological but urban as well. A familiar landscape, under construction since the end of the 19th century, was disappearing and giving way to sites marked by devastation, emptied of their activities, reduced to ruins. The death of a model meant defeat, and we find it hard to commemorate defeats. In many cases, the temptation to start over at zero (when possible) seemed the best solution to rejoining the modern age, one which cared little for remembering. People even spoke of "Destructive hatred" (Bergeron 1997: 3979). Those lands which were "victims" of deindustrialization were doomed to escheatment or disappearance in both material and intangible terms, like a bad memory. Their future would be forgotten or rejected. Bereavement was encouraging denial. This history was highly unpopular. The indifference was widely shared, by the corporations themselves, in policy and opinion. However, little by little, a movement came forth concerned with "resilience" (a contemporary notion, in fact, of deindustrialization) for these lands and their integration as a subject for study. These lands and the story they told began to be of interest to a few historians. Their inclusion in the heritage dynamic might restore their value, even give them new life. Though at a snail's pace, we were witnessing "the incorporation of industrial heritage in the overall cultural heritage of the nation" (Bergeron 1997: 3994).

While understanding and appreciation of Europe's industrial heritage has come a long way in the last thirty years, and while there are monographs aplenty, it must still be concluded that we don't always have the advantage of seeing the big picture in terms of the current issues in European industrial heritage and heritage policies in this area. European institutions, especially the European Union, don't always seem to be giving consideration to this sort of heritage as an important part of European identity. To coin a phrase, in the words of Jean-Yves Andrieux: "The poor cousin of academic beauty, industrial heritage is a powerful basic identity for tomorrow's European city and territory."[1] Even if urban policies include it more and more in their plans for transformation and attractivity of post-industrial lands (Belot and Lamard 2011a: 13, 2010; Belot 2012: 12-22), this heritage is still seeking a place in the more general concept of "common cultural heritage" dear to the Council of Europe.

The region of Saint Étienne in France is an excellent example of this point of view. Long France's, as well as continental Europe's, main industrial city, Saint Étienne relies on a rich legacy which still shapes its urban and social landscape as well as its collection of museums. It has been able to face the difficult transition to the post-industrial era and it serves as a model, as much by its implementation of a policy of urban revitalization as by its plan for patrimonialization of this industrial past. Its university was a trailblazer in the creation of industrial heritage as a field of research worthy of academic study. It houses a "Saint Étienne School of Heritage" where scholars have distinguished themselves through the creation of new approaches. This is a living academic legacy.[2] To this give witness the study days organized at Saint Étienne and Firminy in 2019 and 2020,

1. https://ehne.fr/printpdf/204.
2. The Department of Cultural Heritages in the Faculty of Human and Social Sciences (https://fac-shs.univ-st-Étienne.fr/fr/departements/histoire-civilisations-patrimoine.html) offers two Masters programmes devoted to cultural heritage: a Masters in *Histoire-Civilisation-Patrimoine* and an international Merit programme: the Erasmus Mundus Joint Master Degree *DYCLAM+*, co-financed by the European Commission. The Parcours METIS du master *Histoire-Civilisation-Patrimoine*, organized by the Ecole nationale des travaux publics de l'Etat (ENTPE) around the issue of renewing the built heritage, was awarded the title IDEX presented by the Université de Lyon. In some of its components, the laboratoire UMR-CNRS EVS n°5600 (Lyon-Saint Étienne) takes part in this pursuit.

and this edition of *Ethnologies*[3] is the concrete evidence.[4] It was a matter of retracing the development of the concept of industrial heritage and of taking stock of the new issues (political, architectural and technological) in the outlook for urban renovation that would take into account the action of restoring industrial heritage across Europe.

The beginning of the process of academization of the industrial heritage owes a great deal to Maurice Daumas (1910-1984), pioneer and founder, whose name has been somewhat lost to history. Curator at the National Conservatory of Arts and Crafts in Paris, afterward holder of the first professorship in the History of Technology, he directed the monumental *Histoire générale des techniques* (PUF, 1968-1979). It was he who introduced industrial heritage to the French field of academics in founding the journal *L'Archéologie industrielle en France* and in publishing, in 1980, a book of the same name. He was co-founder, in 1969, of ICOHTEC (International Committee for the History of Technology),[5] a worldwide network of researchers, still active, which confers great importance on industrial heritage.

Following the recent discovery of the archives from the national survey which he led for a number of years to provide documentation for his book, we propose studying the way in which he approached the industrial heritage

3. My thanks to Richard Cantin, teacher-researcher at the Ecole nationale des travaux publics de l'Etat, in charge of the Parcours METIS (dubbed IDEX/Lyon) du master Histoire-Civilisation-Patrimoine, who participated in the overall design of the project, and Luc Rojas, PhD in history and teacher in this same Masters programme, who carried forth the momentum of the seminars and who acted as coordinator in the preparation of this issue. I am grateful to Professor Laurier Turgeon for having welcomed our participation in this journal.
4. These study days were designed by the Université Jean Monnet and ENTPE and organized by the Department of Heritages and Cultural Landscapes in connection with the European Jean Monnet Chair EUPOPA: https://eupopa.univ-st-Étienne.fr and with the Erasmus mundus Joint Master Degree DYCLAM+. They have been supported by the Association *Histoire-Mémoire-Patrimoine*, of the cities of Saint Étienne and Firminy (where some of the seminars took place). The HCP and DYCLAM+ y Masters students were not only contributors but also actors in a showcasing project of panoramic photography at a Saint Étienne industrial site, supervised by the Laboratoire d'enquête ethnologique et multimédia of Professor Laurier Turgeon (Université Laval), who also came in as a Scholar in terms of the DYCLAM+ Masters. A master class has been held each year by Professor Pierre Fluck in connection with his book which is an authoritative work on the subject: *Manuel d'Archéologie industrielle. Archéologie et Patrimoine*.
5. Whose 50th congress was hosted in 2018 by the Université Jean Monnet (Department of Heritages and Cultural Landscapes).

of Saint Étienne, by updating the methodology he used and the networks which were his support. Saint Étienne had long been the first industrial city of France and its influence was Europe-wide and, in fact, worldwide. The violent abandonment which it underwent in the 1970s brought local actors (university academics, social stakeholders, politicians) face to face with the necessity of reflecting on what was to become of this industrial heritage which had distinguished the physical and social landscape of this region. We will seek to demonstrate that the CNAM survey, underway at this moment when "deindustrialization" is occurring, was a factor in the legitimizing of actions taken by a core group of researchers at the University of Saint Étienne who began to take interest in this phenomenon. In the final analysis, it is a question of witnessing the birth of a field of study in France: industrial heritage.

Maurice Daumas and instrumental heritage

A social movement can never be reduced to one person. However, sometimes it happens that one individual stands out as a pioneer, a trailblazer. Such is the case of Maurice Daumas: 1910-1984. You could say that it is his initiative which brought industrial heritage to light for academia and provided a framework to a societal dynamic. His unique intellectual and professional journey enables a better understanding of why he was chosen to play this role.

Curator at the Museum of Arts and Crafts

In its development, Daumas' research follows a logic of progressive expansion in the understanding of the technical phenomenon. After his studies in chemistry at the Université de Montpellier, he becomes an engineer at the Laboratoire municipal de la préfecture de Paris (1934-1942), and then at the laboratoire de recherche et développement de l'entreprise Paul Doittau (Corbeil) which dominates the activity of starch making, in relation to the milling industry. In 1944, he joins the Fondation Alexis Carrel, which will become INED (1947). There he meets, among others, Alfred Sauvy. Thus, he gains experience in applied research, but demonstrates an early sensitivity to the phenomena in contemporary society.

Such is evident from his first publication about a new industrial commodity showing extraordinary future promise (today it is the third most manufactured product after cement and steel): *Les matières plastiques* in 1941

in a new popular collection by the Presses universitaires de France ("Que sais-je?") founded by Paul Angoulvent, curator at the Louvre Museum, after studying at the Hautes Études Commerciales. This modest book enables him to better understand the driving force of the industry in innovation: "The progress in chemistry, in one century, is due to the fact that chemists received from industrials greater and greater means for research. They were the first to benefit from this systematic assistance" (Daumas 1957: 162-163). The fast pace of development in industrial chemistry and the study of the appearance of a new field of research enable him to understand that, in this field, technique and industrial development have preceded science: "The first plastic materials owed nothing to the theories of chemical synthesis" (Daumas 1962: xii).

He arrives at the same conclusions when he publishes a biography of *Lavoisier* (1941), which, in 1955, will become: *Lavoisier, théoricien et expérimentateur*. Lavoisier represents a demonstration through experience, by "irrefutable evidence." He is, as well, a reformer, under Louis XIV, something Daumas acknowledges: he does not consider science and technology as an autonomous reality in relation to society. That is what he appreciates in Arago, whose biography he completes in 1943: Arago is the scholar but also the statesman and popularizer who, from 1813 to 1846, gave a public course in "popular astronomy." Daumas in interested in the politics of science at Liberation, and he provides articles to the newspaper born in the Resistance: *Combat*. It seems, however, to be Arago who inspires him when, in 1947, he decides to become curator at the National Conservatory of Arts and Crafts (until 1976), a symbol of the scientific and progressive Republic (created by decree in the Convention of October 10, 1794). In this position he will take an interest in the object conceived and on display, *the object as a source of scientific and technological heritage*. His reflection begins with the concrete object, since the object is science through experimentation, through instrumentation. Daumas sees himself as the bearer of a long tradition of the preservation "of instruments of the past and devices with a memory of significant discoveries attached." Beginning in the 16th century, in Dresden, there exists a *Mathematics and Astronomy Fair*. Instrumental heritage is perhaps the oldest of the heritage types: in all the countries of Europe (17th-18th centuries) collections (both private and public) of instruments and machines are brought together. Universities house collections of scientific instruments (London, Cambridge, Oxford). CNAM in Paris also sees itself as a "public repository of machines, tools, models, illustrations, descriptions and books of all kinds on arts and crafts." In inheriting historical instruments kept by the Academy of Sciences,

CNAM becomes the museum of modern technology. It is thus that Daumas, in his History of Science, presents CNAM, describing its mission as follows: "All these objects have necessarily become historical documents and this is still an important role which this museum fills, that of preserving as many objects as possible which can give concrete and useful witness to the development of science and technology" (Daumas 1957: xxvii).

One of his ambitions in terms of heritage is the creation of an International Repertoire of scientific instruments which spearheaded significant discoveries. ICOM and UNESCO began the movement: a credit is advanced in 1953. In 1956, he succeeds in tasking the Union internationale d'histoire des sciences with the setting up of this repertoire and having himself named as an expert. His expertise is, thus, recognized internationally: he becomes editor in chief of the journal *Archives internationales d'histoire des sciences* and a member of the general Association of Curators of Public Collections. He is one of the rare researchers in this period interested in the heuristic and instructional mission of the technical object. In his application letter for the position of curator, it seems to him vital to "contribute to guiding young people toward scientific and technical careers, while still preserving and even enriching the historical character which it (CNAM) has had since its founding."[6] He believes in the mission of CNAM and of himself to build and undertakes to do everything in his power in order that this place touch the public: "At present, although it has high prestige, the museum is not well enough known and definitely welcomes too few visitors. After an age of great prosperity, from 1855 to 1900, it has experienced years of being almost totally forgotten after the Great War."

How to achieve this? Through an attractive presentation, by replacing the front window, something that isolates, with a demonstration bench: "All means must be used to explain: large-scale photos, lit-up diagrams, sound recordings…" He will also develop temporary exhibits on current themes, such as the exhibit on Automatons or the one devoted to the "Birth of an airplane" in winter 1969-70. The underlying goal is to enable citizens to "come into contact with contemporary industrial and scientific activities." At the same time, he wants to "create modern sections," something which will provoke hostility on the part of Loiseau, his boss. These are the new sections created by Daumas (1959-1969): Railways; Metallurgy; Steelmaking; Ironworks; Farming techniques; Photography and cinema; Sound recording; Telecommunications; Technology and daily life. This

6. Personnel file of Maurice Daumas. CNAM Archives (Paris).

ambition, however, regretfully for him, has its limits because of the poverty of resources, which speaks of the lack of awareness of industrialists to the patrimonialization of their activities: "Various major gifts of late show that it is not impossible to pique the interest of industrialists and professional groups in this museum."

Historian of the object and of techno-scientific innovation

Maurice Daumas does not only see himself as a museum curator. His intention is also to be a researcher and to take his place in the academic arena. Scarcely has he been named to the CNAM when he decides to undertake a study program under the supervision of Gaston Bachelard, a poet and epistemologist, who left his mark as an intellectual in 1938 when he published his thesis on the development of scientific thought in the early 17th and 18th centuries. Of course, it is a prestigious recommendation. Daumas' thesis deals with scientific instruments in the 17th and 18th centuries. He defends it on June 13, 1953 and succeeds in publishing it that same year at the Presses Universitaires de France. What is remarkable for the time period is the fact that he fails to keep to his subject. He makes it part of an eco-systemic process by evoking the "economic and social factors," but also the "technical and industrial factors" and the "great scientific problems."

Behind the curator, the historian is coming through. His secret ambition is to become a professor of the history of technology. Since 1960, he has been directing the Centre for Documentation in the history of technology (CDHT), in connection with the École Pratique des Hautes Etudes (VIth Section) and the CNRS. This overshooting of his mission does not please the CNAM. In a letter to the boss of the CNAM, he relates this problem:

> I am not unaware that the main and lasting criticism levelled at me by Mr Loiseau seeks to centre my focus on the history of science and technology. (…) All of the opportunities for me to enter into contact with contemporary industrial and scientific activities have been rejected by Mr Loiseau; moreover, all the opportunities for creating modern sections have failed under the direction of the curator despite his attendance at numerous symposiums and conferences. The latest museum acquisitions are not of a sort as will rejuvenate our collections.[7]

His persistence enables him to become, in 1969, a professor at CNAM, holder of the chair in the history of technology. There too he serves as

7. Letter from Daumas to Mr Ragey, CNAM director, March 13, 1958. CNAM Archives.

a pioneer, for instruction in this field is non-existent: "The history of technology, which has never been the subject of real scientific teaching in France, must include the study of various technical or scientific factors with reference to the current level of knowledge. With this in mind, we must highlight the influence of social factors (for example, demography)." He wishes to put in place an "interdisciplinary approach."[8] His course curricula clearly show his approach. Industry and industrialization hold a prominent place: machinism and automatism in industry; steam-operated machines; mining and metallurgical resources in the 18th century; the industrial revolution; innovation downstream from the industrial current; industrial exhibitions (1789-1848); international exhibitions (1851-1855), "the first expression of an industrial civilization"; the process of industrialization in the 18th and 19th centuries.

In these courses, theoretical questions arise which will haunt him all through life: the "technical complex and its environment"; the dynamic of the development of contemporary techniques; the influence of world and colonial wars; "the groundbreaking role of technology: steam and thermodynamism"; "the groundbreaking role of science: electromagnetism and its sectors of development" (1971-72 course). In the space of five years, he puts out two major works under his direction. First comes *Histoire de la Science* in 1957, in the outstanding collection La Pléiade with Gallimard. In the preface, Daumas denounces the "apathy of official French teaching" and regrets that a question on the history of the sciences has been withdrawn from the ensemble of the history curriculum. He prides himself on the fact that the history of the sciences wi "one of the youngest of history's subject areas." The ambition behind this book is to take stock of the history of all the sciences, but it allows Daumas to say a few words on the Science/Technology relationship, the issue at the heart of his research. His big idea is that "technology is not simply applied science" and that "science does not directly lead to technology." The connections which form between the two universes "are much more complex than simply a cause and effect relationship." To access this complexity, it is essential that "all the disciplines (be) interrelated in their destiny." It is also essential that the relationship of Science and Technology be incorporated in the social, human realm: "The history of science can no longer ignore the history of the men who have been its main actors. It is not a matter of the history of each man in particular, but that of their mutual relationships and their place in the social and economic fabric where they lived." Daumas will invent the notions of "technical complex" and "technical creativity."

8. Excerpt from the Council of Development, March 18, 1969. CNAM Archives.

The second *opus magnum*, one of note, is *Histoire générale des techniques, Tome 1, Les origines de la civilisation technique*, published in 1962 by Presses universitaires de France. There too, Daumas wants to make clear the interest that will follow a "history" which "is still little known to us." This dark corner of history, looked down on by that which dominates, he wants to bring to light and appreciation: he speaks of "the greatness of this adventure focused on technology."He is astonished that no such work exists in French, since, for him, its inclusion is indispensable if one wishes to understand with any degree of seriousness "the story of humanity" which begins with "industry," in other words, with the transformation of natural materials (hence, "the invention of manufacturing processes and interaction among people"). For Daumas, "invention is never the doing of a single man. It is the product of an era, an environment." Technical progress, therefore, is "the result of a collective experience, one which goes on cumulatively." And contrary to popular opinion at the time of his writing, Daumas seeks to reverse the order of the parameters: "the technologies have proposed to scholars subjects for their research"; "steam-powered machines had been in operation for 70 years before the theory was worked out."

Maurice Daumas "inventor" of industrial heritage

This contrast of his career and his vision of the relationships between technology, science and industry enables an understanding of why Maurice Daumas was destined to take interest in "industrial archeology" at the very moment (and such shows his ability for grasping trends and the issues in present time) when the process of *deindustrialization* was beginning, in a still low-key fashion, its inevitable and enduring journey. It could be said that there is a meeting between long-term theoretical research and a moment of post-industrial transition.

"A subject so new"

The interest shown to industrial heritage is not a chance occurrence. It is part of a long intellectual movement in the history of technology which originated in 1941 and which was fueled by its museographical activity. At a given time, Daumas wanted to understand the way in which technology takes shape and becomes industry and social capital. He says himself in the introduction to *L'Archéologie industrielle en France*, his major work on the subject: he wanted to go from a technical history of technology to "a more general history where the influence on it (the technical system) would show, which factors external to the technical complex had brought to bear"

(Daumas 1980: 7). Two notions will inspire his last research projects (the "technical complex" or the "technical milieu"), namely an analysis of the environment (material and intangible) where technology is deployed. A researcher in industrial archeology, warns Daumas, must "reposition the site or building under study into the context of the various human factors in the midst of which the activity occurred to which it was dedicated" (Daumas 1980: 436).

Beginning in 1972, he begins a research project on the "industrial geography of Paris and its suburbs in the 19th century," using a cartographic approach considered innovative. The heuristic perspective is basically building related, guided by a particular interest in "the personality of old industrial buildings." It involves a *physical* encounter with the emerging industrial civilization and its tangible vestiges in 1972: "we were thus physically in the presence of a materiality from Paris' industrial past." This initial research encourages him, in 1975, to propose a new theme for investigating the industrial buildings of the 18th and 19th centuries. He uses an ethno-archeological approach, and thus Daumas begins to develop the idea of "industrial archeology."

He is not alone in his interest in this phenomenon. Daumas gets us used to thinking of the inventor and the process discovered in their "environment." The researcher is subject to the same rule. Daumas is a networking man. He takes part, for example, in the 1969 creation of ICOHTEC (International Committee for the History of Technology), a worldwide network of researchers which is still active (Belot and Rojas 2018: 3-19). He knows that one of his British colleagues, R. Angus Buchanan, has popularized the concept of industrial archeology. He had worked on the Bristol region and produced the first study in 1969, both an inventory and a methodology, with maps of the industrial sites. Buchanan is even part of ICOHTEC. The two men know each other. Buchanan widens the scope and in 1972, publishes a comprehensive and defining work: *Industrial Archeology in Britain* (Buchanan 1972).

The innovative nature of this study lies in the concern to collect testimonies and systematically capture, in photos, sites and objects for the purpose of creating a database and taking notice of everything that deals with the social environment, with habitat and with literature. Beyond the work of Buchanan, it could be said that Great Britain was ahead in the emergence of the idea and its dissemination in Europe (Falconer 2006). It is deeply involved in the launch of TICCIH (The International Committee for the Conservation of Industrial Heritage), the first international

scholarly society devoted to this theme (1978). However, in 1973 across the Channel is formed the *Association pour l'Archéologie industrielle*. Daumas gladly recognizes the leading role of the British in the coming to fruition of this discipline. He thinks, along with Neil Cossons (1975: 19), that the expression "industrial archeology" first appeared in a text printed in 1955.

The launch of the 1972 inquiry is not a chance occurrence. Thanks to Maurice Daumas and his book published in 1980 – *L'Archéologie industrielle en France* –, prepared through a long ethno-historical inquiry, France takes as its own the concept born across the Channel and gains a foothold in the field, giving rise to vocations as well as an academic research stream. A new cultural institution reflects this: in 1973 the exhibition *L'usine, travail et architecture* opens its doors (under the responsibility of Vincent Grenier) at the Centre for Industrial Creation of Paris' Centre Pompidou, created in 1969. It should be noted that the undertaking is not yet linked to what today is called "deindustrialization." The word appears in Daumas' 1976 internal reports but is not mentioned in *L'Archéologie industrielle*. At the *Commission de réflexion sur l'avenir du musée du CNAM, on May 28, 1976*, the record stipulates that "Mr Daumas presents several documents…. A provisional report on a research project about the *process of industrialization and deindustrialization* in Paris and in the region, the first issue of the newsletter from the Industrial Archeology section of the Centre for Documentation in the history of technology...."

His initial approach is rather a reaction against the indifference and the neglect of a heritage which is not considered as such. Daumas expressed it very well:

> This is the way that through general indifference, at Tournon, the first bridge suspended from cables, built by Marc Seguin in 1824, was destroyed a few years back because of a lack of funding for its upkeep. The remainder of the industrial equipment whose use was abandoned over time is also destined, for the most part, to destruction without thought given to the value it might hold in terms of its witness to a type of activity which, on the same basis as works of art or political or military events, plays a vital role in our country's history (Daumas 1976).

Consequently, for Daumas "to make something part of heritage" means, first, to struggle against a threat: the anti-cultural culture of modernity and of the profit which sees little value in the past, in history, and prefers the "systematic erasing of all authentic representations of an industrial past which makes us what we are today." He was appalled by the destruction (which he labels "political") at the Halles de Baltard taken over by small groups specializing in "counter-culture" in the May 68 movement.

It is necessary to alert and, at the same time, recognize, inventory and document those sites that testify to the development of the industrial phenomenon in the 18th and 19th centuries. This will serve toward their conservation. The main goal of industrial archeology being "research and study of the sites where these kinds of activity took place, along with the cultural testimonies and artefacts still remaining," Daumas insists on the fact that such is not enough to describe this "new discipline." It is necessary to take into account the "concern for protection" and the "historical value" which, he thinks, matches the longing for a "view" that does not accept, without a struggle, the disappearance of part of its familiar landscape (Daumas 1980: 428-429). He takes as witness the project to develop London's former Euston station which was to see its famous Doric gateways removed. Associations were rallying against this destruction, but their voice was not heard and the destruction occurred in 1962. The ontology of heritage is thus located somewhere between research and opinion, between the academic and the communal.

Some think, as does Patrick Fluck, that there is reason to distinguish industrial heritage and industrial archeology, *heritage* being concerned first with "mediation" (Fluck 2017: 45). As if heritage were confined to a category considered as inferior. Such might be the case (and was so for a long time before the emergence of heritage as science), when, for example, it is a question of preserving collections of objects or restoring a building. Daumas takes care to distinguish between a pseudo-museum which would be content to exhibit old automobiles and a "real" museum based on a scientifically supported narrative. For him, the Mulhouse railway museum which presents "static vehicles" is not be "a place of industrial archeology despite its interesting offering and its originality." The concept of "heritage" today can no longer be related to a downgraded mode of archeology.

Yet in the double idea of *selection* and *conservation* (of the object and, at the same time, of its cultural value and its history), lies the groundwork for the process of adopting something as heritage which rests on "a choice." This choice is governed by the idea of passing on a body of knowledge, a history, a culture and it presupposes setting these within an "environmental" context and surrounding them with a narrative. In the case of Daumas, who is a teacher and museum curator as well, there is constant regret of the lack of this kind of teaching and of the French people's lack of awareness. His ambition goes beyond an issue which was purely scientific: it involves having them "grasp the value of our industrial heritage" (Daumas 1980: 9). Of course, it is possible to pass on knowledge through various kinds

of narrative, such as museums, exhibitions or books. The need to choose is linked to the fact that it is not a matter of preserving everything. The choice demands a perspective gained through establishing criteria in order that the memory not be tolerated but chosen, and that it serve the cause of history, and so that the achievement is an act of heritage or archeology:

> The most direct action consists of saving industrial monuments which illustrate the various stages in the industrialization of our country. But of course, the objective, naturally, is not to mobilize resources which are disproportionate to restore or keep intact all that still remains. It is necessary to make a choice which will take into account various factors: real historical interest, geographic location, the density of the different kinds of monument by region, according to their past or present industrial vocation, the state of conservation, the possible devolution in the case of escheatment, the material support expected subsequently in order that the fruit of initial investment not be lost, etc.

We could diagram the process of transforming the utility value of an object or a site into cultural value (Figure 1). This might be termed "patrimonial transfiguration."

The historical significance of recognition as heritage will become clear if attention is not embedded in the object but succeeds in replacing it in the "environment" where the activity which is tied to the object has been developed (material transformed, social relations, equipment, organizational models, etc.).

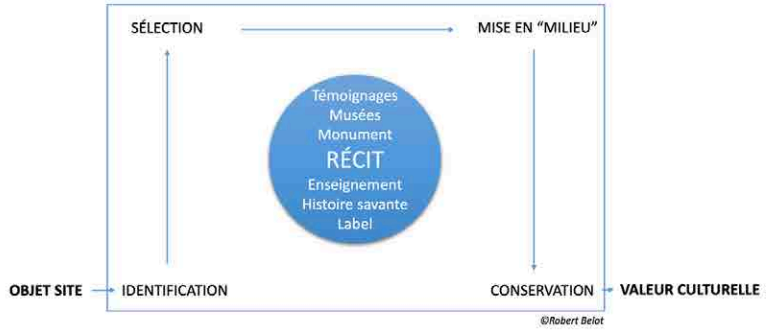


Figure 1. The process of "patrimonial transfiguration."

The detour via heritage means an opportunity for Daumas to open up to an issue greater than the one which has taken his attention to date, namely, the "internal logic" of technical creativity. In the preface to *L'Archéologie en France*, he recognizes that it had become "necessary" for him to "wonder how this system could be assimilated into a more general history where the influence on him of factors external to the technical complex would become evident" (Daumas 1980: 7).

There are, in fact, two reasons that Maurice Daumas hesitates to use the word "heritage." The first was that that term had not yet received its academic acceptance; therefore, Daumas prefers the term "archeology," whose scientific dimension seems more obvious and legitimate. The second reason comes from the ideological connotation spontaneously linked to an identification as "heritage"/"historical monument" in the 1970s. France's General Inventory of Monuments and Artistic Treasures (created by Malraux) at first hesitated to take the step; "we have noticed," remarked Daumas, "that it is a question, officially, of creating an inventory of artistic treasures; so, officially, those belonging to the industrial heritage have not been taken into account."

It is for this reason, Daumas thinks, that industrial archeology was not well regarded at the beginning. It could have been the collateral victim of a "strong ideological contestation based on a critical analysis of the action, deemed as *bourgeois and conservative*, of the Department of Historical Monuments, since its inception at the beginning of the July Monarchy" (Daumas 1980: 439). The idea that the institution would produce "a classifying of class" (Aguilar 1982: 76-85) finds takers still today. Yet, the approach of industrial archeology was going against this procedure which was supposed to be ideological. Such, we think, is precisely why the pioneers of the discipline wanted to set themselves apart from the "patrimonial ideology." Pierre Nora, too, preferred the concept of "places of memory" to that of "heritage." During the 1980s, it is the criticism of heritage excess (the notorious "all-heritage") and "monumental misuse" which brings a reaction from the academic world. Historians, sociologists and anthropologists are surprised at "this present time which is making history of itself" (Hartog 2003: 85): a syndrome of self-contemplation and self-celebration or, on the other hand, a symptom of a "missing identity" (Rioux 2006). That, however, is another story. At the outset, the struggle of Maurice Daumas and his colleagues sought, in fact, to get away from this majestic, overbearing and irenic vision of heritage guided by the "logic of the *unicum*" (Heinrich 2015: 20). But the approach was free of all navel-gazing and backward-looking

nostalgia and also free of any lack of identity. It is a purely his attitude as a historian which fuels Daumas when he discovers, in 1969, that the Halles de Baltard "were of interest to no one, neither bourgeois, nor proletarians and not even the leftists who only saw there a place suited to squatters and not the architectural framework for a certain period in the history of Paris" (Daumas 1980: 438). The lack of popular reaction to this victory of "real estate racketeering" was profoundly disappointing to him.

The birth of "scientific" heritage was not experienced nor thought of at first as "a recourse for times of crisis" (Hartog 2016: 57). Far from being a result of "a heritage explosion" (Nora 2011: 97) which would follow, it sought to develop a *knowledge* and bring forth an "undisciplined" *discipline*, on the margins of the other disciplines. This did nothing to remove the trendsetting and pioneering character of a major social phenomenon to come. Jacques Payen, Daumas' main partner, summarizes the issue well: "Industrial archeology broadens the notion of *cultural heritage* and introduces into it new objects for interest and contemplation and certainly, of course, for research. These new objects begin to make their way into the fabric of traditional historical monuments and industrial archeology also seeks, if still possible, to ensure their conservation and restoration" (Payen 1982: 158). In 1982, a young "disciple" of Daumas, Louis Bergeron, director of studies at the l'Ecole des hautes études en sciences sociales does not hesitate to use the "phrase industrial heritage" in the first serious historico-ethnological study which he supervises (Bergeron 1982).

Setting up networks and events

France, like Great Britain, is in a good position since it has a rich industrial legacy. There is a spirit of the times, an atmosphere, even if interest is much less "popular" than across the Channel. The primitive impulse does not come from a conventional university, and it acquires its "founding" source at the CNAM, an institution in France with a special status, through a man who also has followed an unusual journey.

Daumas is willing to organize this emerging field to ensure for it readability, legitimacy and resources. He relies on the documentary repertoire of the Centre for Documentation in the history of technology (CDHT), which opens in 1969 under the combined auspices of the CNRS, the École pratique des hautes études and the CNAM. He will be its director until his retirement. In October 1975, he establishes the Industrial Archeology Section. It is not a question of centralizing all the research

and initiatives in this field, but rather of setting up a resource centre to assist local initiatives and take part in international conferences which are beginning to develop around this theme from early 1972. In January 1975, spurred by the success of the first survey in 1972 on "the Development of the industrial geography of Paris and its suburbs in the 19th century" which appears in 1976, the CDHT receives financial support from the administration of the l'Architecture du secrétariat d'Etat à la Culture to conduct a research project on the development of architecture in France "from the *Manufactures royales* in the era of Colbert to the factories at the outset of the second industrial revolution." This report is put out in 1978 under the title: *Les bâtiments à usage industriel aux XVIIIe et XIXe siècles en France*. Maurice was able to assemble an efficient team around him: Claudine Fontanon, Gérard Jigaudon, Dominique Larroque et Madeleine Maillebouis. An extensive report of 436 pages with 188 photos.

Attentiveness to industrial heritage or to industrial culture can be seen in other places. In Lyon, for example, apart from his thesis on *Les ouvriers de la région lyonnaise (1848-1914)*, published in 1977, Yves Lequin shows interest in the historico-ethnological method with regard to a regional space and documents the industrialization process. He is vice president of the Creusot eco-museum. However, his work first stems from individual local initiatives. The ways of knowing and of dissemination are thus scattered and unable to raise awareness. "He cannot create a sense of cooperation and competition on a satisfactory scale without setting up an exchange of ideas and information," Daumas concludes. For that reason, in March 1976, he decides to create a newsletter: *L'Archéologie industrielle en France*, which will become a journal. Two years later the CILAC comes into being: Information and Liaison Committee for the Study of Heritage and Industrial Archeology. It is a veritable network intended to link those interested in the heritage phonemenon as it relates to industrial history. For his national survey and for the future of studies in industrial heritage these will be two decisive networking tools for men and knowledge.

Maurice Daumas needs this network because he wishes to tackle a subject of size: procuring a "general idea of the nature and the breakdown of the elements in French industrial heritage" (Daumas 1980: 8). One of the goals is to "preserve" what might disappear: it is thus necessary to act with "haste." A second goal (tied to the first) ias to "spark an awareness." It is not enough to note the tangible trace in the field: it is also necessary to take into account "the historical environment in which its activities were carried out" in order to document an important part of France's and

Europe's history: "I understood it as a kind of tableau of a certain picturing of our cultural and material history, an unwritten history whose richness is, so far, scarcely suspected in France" (Daumas 1980: 10).

Scan of a survey: the case of the Saint Étienne region

In this extensive survey, whose history is still to be written, we propose bringing to light the way in which Daumas took into account the Saint Étienne region[9] and that, for two reasons. First, it is a major hub for France's industrial history with a European influence: from the first decades of the 17th century, this region appeared as one of the greatest manufacturing areas of Europe and Saint Étienne itself as the prime industrial city of France in the 19th century. Second, it is in connection with the young university of Saint Étienne (created in 1969) that a team of historians and geographers emerge which will initiate ground-breaking studies on the history of industry and its incorporation as heritage and which will develop a view of the city and influence political actors; this team will provide support for Daumas.

A historic industrial region coping with denial of self and recovery

Geographies and urbanists have worked a great deal on the process of urban renewal. They have advanced the notion of "resilience" (Toubin *et al.* 2012), especially as it applies to those territories which have been *victims* of deindustrialization. The issue unfolded around the question of soil pollution in the (de)industrialized territories[10] but also through the issue of cultural transformation of the built heritage in the industrial era: how to transform a territory hit by escheatment in an innovative location and how to combine modernity and memory? Such is the experience undergone by Saint Étienne (Loire, France) and still in progress (Belot & Rojas 2018: 3-19).

Saint Étienne was made known through a song. The song belongs to its heritage and has, one could say, itself become part of "heritage." It is about a native of the area, who went to Paris and is recalling his childhood city. Bernard Lavilliers wrote and sang "Saint Étienne" in lethal terms: he mentions "factory chimneys that screech of death", "overwhelming misery using his heart as an ashtray" and the "grime of useless heaps of coal." This

9. Unless otherwise noted, the sources and quotations regarding the development which follow come from the fonds Maurice Daumas and the archives of the survey which can be found at the CNAM in Paris. My sincere thanks for their support and insights: Marie-Sophie Corcy and Lise Cloitre.
10. See Morel Journel, Gay and Ferrieux (2018).

song was written in 1974. One senses a rebellion against the oppression of industry over a city and its citizens. Ironically, at the same time, the city is beginning a process of industrial abandonment. The third industrial revolution is in progress and preparing to destroy the world that was. The closure of the mines and factories is causing great social misery. Bernard Lavilliers saw the suffering of men who had been victims of industry. A few years after his song, these same men are also be victims of deindustrialization (unemployment, social downgrading, commercial decay, derelict buildings). The city has to reinvent itself or die. Real suffering, socially and in terms of identity, affects a city and its inhabitants but also its region.

Bernard Lavilliers was saying about the same as the writer Elysée Reclus (1830-1905): Saint Étienne is a city "whose monuments are its factories." Saint Étienne (department of the Loire, France) has, in fact, been one of the top places for French ventures in industry and technology since the 17th century: continental Europe's first steam-powered train (a consequence of the mining activity and the need for an opening-up); the first operation of a hydraulic turbine (invented by Benoit Fourneyron, a native of Saint Étienne and graduate of Saint Étienne's School of Mining); the first French bicycle was manufactured in Saint Étienne, the founding act of an industry; the invention of the "Ideal rifle with no hammer" in 1887, for Saint Étienne was the Manufacture Royale of arms... Saint Étienne is a land of invention and inventors and its identity became associated with the industrial history of Europe and the world. It was in Saint Étienne that the Federation of Labour Grants was founded in 1892.

Architecture is saturated with this industrial culture which was the subject, very early on, of promotion as heritage with the goal of building and of identifying. From 1861, industrialists from the region create the Musée de la fabrique which, in 1889, will become the Musée des Arts et de l'Industrie. Deindustrialization will be experienced as the negation of this culture. The break occurs between 1969 and 1973 when the Puits Curiot closes its doors. The symbol of this identity at the heart of the mining city has been achieved. But its destruction is avoided. For a solid core of historians and geographers which has just set up, at Saint Étienne's university, an Interdisciplinary Centre for study and research on regional structures (1974), decided to mobilize against what I would label a *denial of identity*. They want to push forward the « political leaders of the 1960s (who) were implicitly rejecting their city's history," as one of the protagonists recounts; It was, thus, necessary for this city to "invent its heritage" (Tomas 2004: 51). One situation favoured an awareness of the

necessity to protect what people are starting to call "industrial heritage." The Creusot eco-museum opens in 1973. Those few historians who worked on the subject took part in this first museum undertaking. It was at this moment that Maurice Daumas takes an interest in Saint Étienne, and it might be thought that his stepping in added further legitimacy to those in favour of preserving a certain sense of heritage.

In *L'archéologie industrielle en France*, Daumas puts an emphasis on the rich industrial history of the Saint Étienne region. As such, he makes refers extensively to the workshops set up at Chambon-Feugerolles in the mid 19th century by Benoît Fourneyron, the inventor of the hydraulic turbine (Daumas 1980: 198). It is he who drafts the standard form for his survey (Figures 2 and 3).

He also makes reference to the know-how developed at Pont-Salomon (Daumas 1980: 198) in the production of imitations since the 1840s. The Vallée du Gier does not escape the careful eye of the co-founder of ICOHTEC: he makes reference to the metallurgy industries born in Saint-Chamond and Rive-de-Gier (Daumas 1980: 264-271). The great cathedrals of Saint Étienne industry, namely, the Manufacture nationale d'armes (Daumas 1980: 250-256) and the Saint Étienne Manufacture française d'armes et de cycles (Daumas 1980: 308-309) find their place

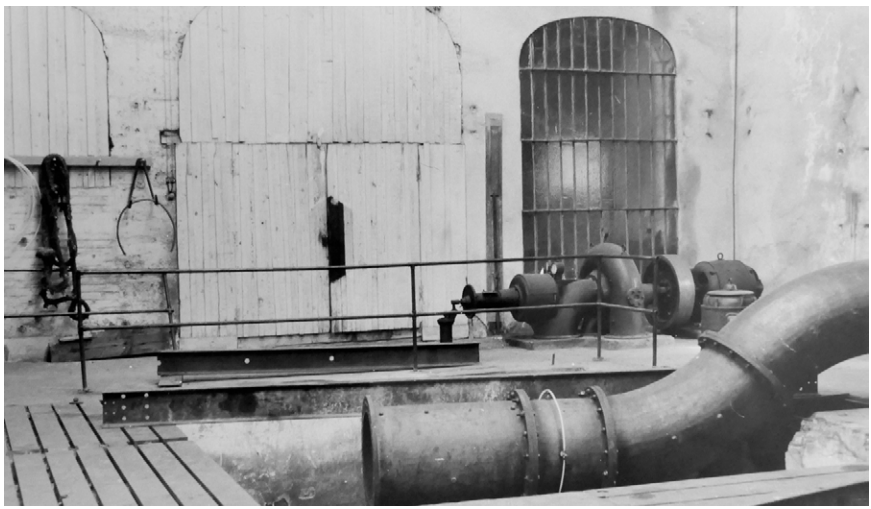
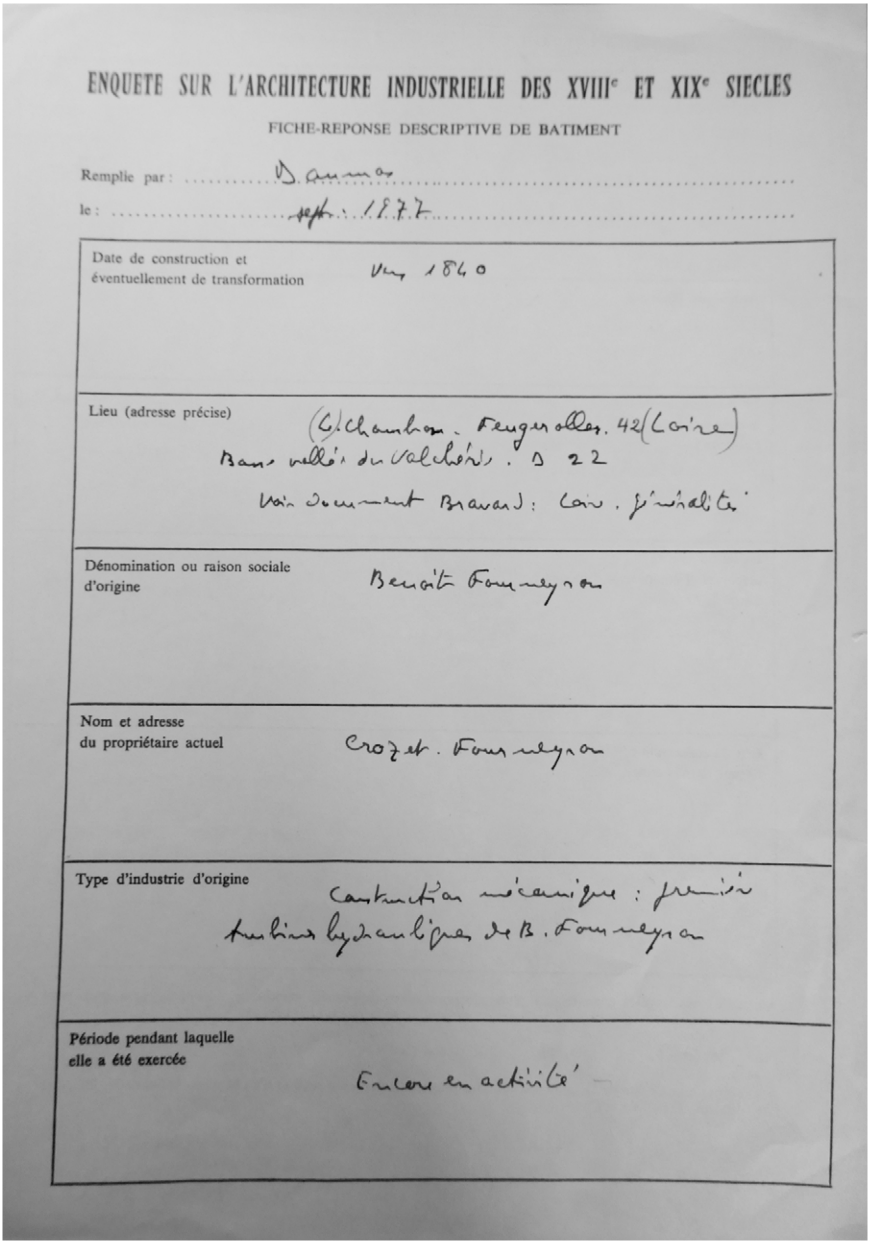


Photo 2. Photo taken in the mechanical plant built by Benoît Fourneyron at Chambon-Feugerolles. © CNAM (CDHT) Archives.



ENQUETE SUR L'ARCHITECTURE INDUSTRIELLE DES XVIII^{e} ET XIX^{e} SIECLES

FICHE-REPONSE DESCRIPTIVE DE BATIMENT

Remplie par : D. Daumas

le : sept. 1977

Date de construction et éventuellement de transformation	Vers 1840
Lieu (adresse précise)	(Le) Chambon-Feugerolles. 42 (Loire) Bas vallée du Valchérie. D 22 Voir document Bravard : Loire. Généralités
Dénomination ou raison sociale d'origine	Benoît Fourneyron
Nom et adresse du propriétaire actuel	Crozet-Fourneyron
Type d'industrie d'origine	Construction mécanique : premières turbines hydrauliques de B. Fourneyron
Période pendant laquelle elle a été exercée	Encore en activité

Figure 3. Daumas' completed form on the factory at Chambon-Feugerolles which put into service Fourneyron's first hydraulic turbine. © CNAM (CDHT) Archives.

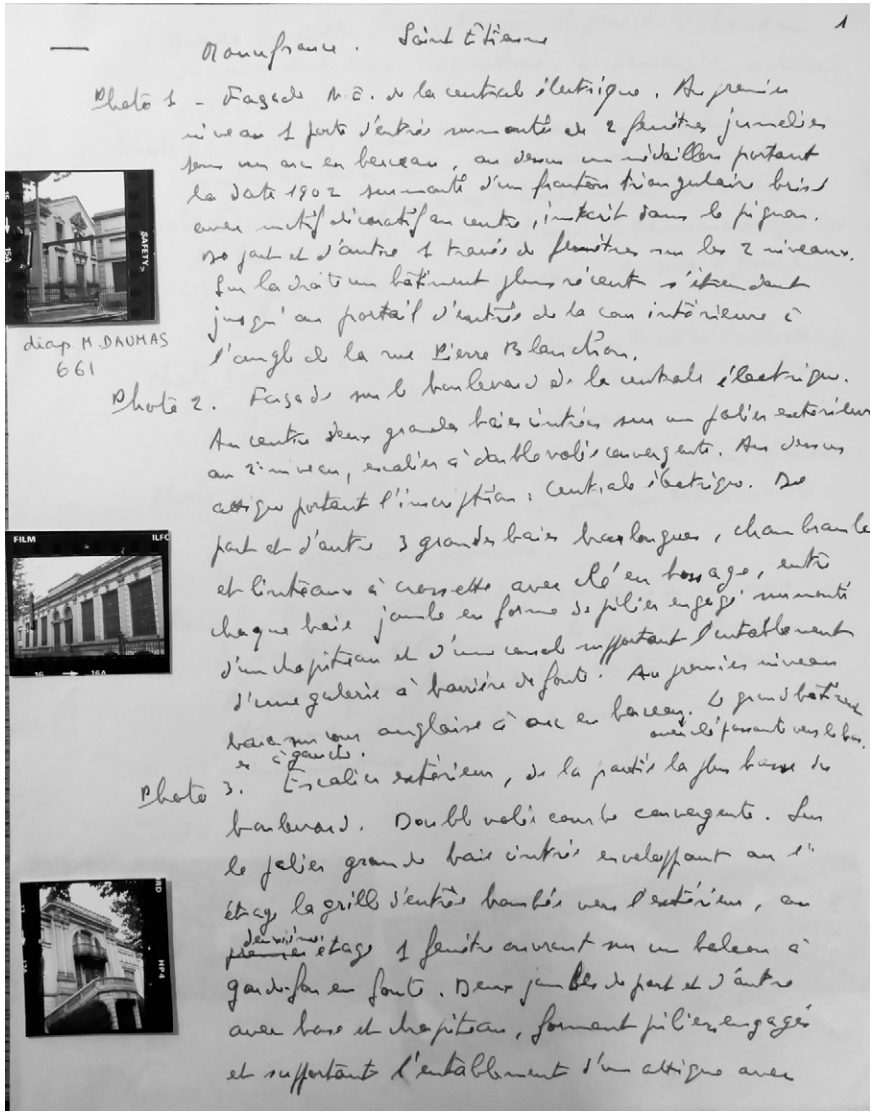


Figure 4. Note handwritten by Daumas, accompanied by photos taken by him in situ, describing the architecture of the main building of "Manufrance." CNAM (CDHT). © CNAM (CDHT) Archives.

Figure 5. Photo of the central building of the Manufacture nationale d'armes in Saint Étienne.
© CNAM (CDHT) Archives.

Figure 6. Photo of the gate of honour of the Manufacture nationale d'armes in Saint Étienne.
CNAM (CDHT) Archives.

in this founding work which played a role in the course of taking into consideration this "living" heritage which was a strong identifying mark of the City of Saint Étienne. His intention is to put this heritage back into a historical and comparative perspective. However, he also joins to it an esthetic and architectural analysis of its industry masterpieces. Likewise for "Manufrance" at a moment when the enterprise is being confronted with major problems which will play out, in 1979, in court-ordered liquidation. He takes very detailed notes to which he appends the photos he has taken *in situ* (Figure 4). One notes his complete mastery of architectural vocabulary. For him, archeology refers also to living buildings.

The Manufacture d'armes is still in operation when Daumas arrives in Saint Étienne. His description, now architectural (and no longer archeological), of this "prestigious" establishment built in 1868 shows his advanced understanding of architectural techniques, but also his sharp sensory appreciation. He is very good at pointing out the building's "shape to be squat and a bit overwhelming," with its gambrel roof gently sloping and flanked by a clock (Figure 5). Yet he prefers the recurring face of the workshop buildings, invisible from outside, to which he attributes a certain "elegance" not often found elsewhere.

The Couriot mine, in the city's heart, calls to him, for its activity has just ended. The surveyor takes numerous photos and retrieves older ones in order to rework the evaluation of this symbolic site (Figures 7 and 8). He also takes handwritten notes to impress upon himself this history. The railway network and car transport carriages have already disappeared. This site, fixed in stone as it were, leaves a large gap in the city. Will it be torn down? The shadow of "total destruction" hangs over this site.

He thinks it would be a catastrophe for the collective memory for coal producing countries. "But really, in a basin such as that in the Loire, preserving the memory of an industrial heritage which, for a century and a half, has carried all the importance as we know, should be considered of national interest." Maurice Daumas supports Saint Étienne's elite (very few in number) who are pleading for the safeguarding of the place and for its "conversion" to museum status as an interpretive centre for history, along the lines of the historic mining centre of Lewarde (Pas-de-Calais), which opened in 1973. He recommends that it will be necessary to initiate a stocktaking of the equipment and the archives, along with a campaign to collect witness statements, to involve the former miners and their families. The caption he writes in his book for the photo of the Couriot headquarters is a wake-up call: "In theory, it needs to become a historical

Figure 7. Series of negatives of the Couriot mine produced by Maurice Daumas when he came to Saint Étienne. Photo number 4 would be published in his book L'Archéologie industrielle en France. It shows the entrance to Couriot headquarters, on Franchet d'Espérey Avenue in Saint Étienne. CNAM (CDHT) Archives.

Figure 8. Photo of the Couriot mine dated 1924, published in his book L'Archéologie industrielle en France. Copyright: CNAM (CDHT) Archives.

centre for the Loire coal mining industry, if their goodwill doesn't run up against indifference on the part of public opinion and the authorities." He regrets that the miners, the site owners and the municipality seem content to "toss the ball back and forth," since the ball is in danger of staying in the middle of the net. In 1980, therefore, nothing occurred. Daumas reproduces what he is feeling: a generalized "indifference" on the part of Saint Étienne residents for their industrial heritage.

It should be noted that in the years from 1950 to 1970, the local authorities considered on the whole that the rapid obliteration of the signs of mining activity was one condition for revitalizing the local economy. The local elite only saw modernity and urban vitality as a "rejection of the legacy of the 19th century" (Tomas 2004: 38). The Firminy-Vert project, with the disruption caused by Le Corbusier, shows the scope of this rejection in these "coketown" periods. The major crisis which hits the city in 1973 has a paradoxical effect: it calls into question this culture of the destruction and rejection of history. It will take time for the process to reappropriate heritage so as to have its full effect. At the outset of the 1980s, no building is categorized, and only five, all of which predated to the French Revolution, are listed in the further inventory of historical monuments. The actors and citizens had long been victims of their city's persona "without history and without glory," as philosopher Jean Guitton will say.

The building of a network by a team of researchers at the University of Saint Étienne

The university in Saint Étienne played an important role in the reassessment of this industrial legacy. It succeeded in "modifying the perceptions that the social actors had of their city" (Tomas 2004: 43). The momentum was sustained, mainly, by historian Jean Merley and geographer François Tomas (founder of the Centre d'études foréziennes in 1967, who will head the University of Saint Étienne). It is the claim of this latter that Saint Étienne has literally "invented its heritage." These men bring vocations into being among young students, who will have a marvelous university career, such as Claude Crétin (1990) or Jean-Paul Bravard, as well as others.

In 1974, when Bernard Lavilliers wrote his song, an interdisciplinary research focus takes shape within the university dealing with a descriptive inventory of the mining installations and its archival storage: a photographic inventory, a survey of mining records, a maintenance collection all intended to supplement the written sources. The sociologists, historians

and geographers examine the manner in which the social groupings and the local societies become aware of the remains of their past and how the transfer of these, or their non-transfer, proceeds.

At the same time, around the Maison de la Culture (le Corbusier site) in the mining town of Firminy (near Saint Étienne), an intense associative activity is in progress whose target is the maintenance of this industrial heritage, the local political level will, little by little, get involved in this trend and the State will encourage this movement of awareness regarding this heritage. Thus, in 1994, a convention is signed between the city and the Ministry of Culture. In 1999, the awarding of the title City of Art and History has the effect of an exorcism. The city accepts its industrial and urban past as part of its identity and as one driver of territorial reinvigoration.

This process of identity repossession took place over quite some space of time (30 years); it occurred on several levels (local, national, European); it required the mobilizing of a great variety of stakeholders (academic world, political class, associations, cultural institutions) (Figure 9).

It is mainly on Jean Merley that Daumas depends to get historical information. Historian Monique Luirard (whose field is more political history; Luirard 1980) appears in Daumas' correspondence, but one fails to see what kind of help she could have provided him. In 1970, Merley (together with François Tomas[11]) had already created a *Centre of Regional History* (which will become in 2001 *l'Institut des Etudes Régionales et des Patrimoines*) and is publishing a *Journal* when Daumas meets him. Merley defended a thesis in 1972 at the Centre for Economic and Social History of the Lyon region, the Centre Pierre Léon, which became a literary landmark: *L'industrie en Haute-Loire de la fin de la Monarchie de Juillet aux débuts de la Troisième République*. It will be published and given a preface by Pierre Léon himself. This centre encourages young students to work on the industrial history of the region. In this way, Jean Merley gives guidance to the young Gérard Thermeau regarding a master's dissertation, then a thesis (defended in 1996) on *Saint Étienne et son agglomération: à l'aube de la révolution industrielle* (Thermeau 2002).

It is Daumas, on the recommendation of Éliane Vaillard, director of the Departmental Archives for the Loire, who writes to Merley, sending him a study on her "industrial archeology research projects" (Figure 10). Merley, then a university lecturer, responds on March 11, 1976 thanking him for having sought him out.

11. See the obituary of François Tomas in *Géocarrefour* (2003).

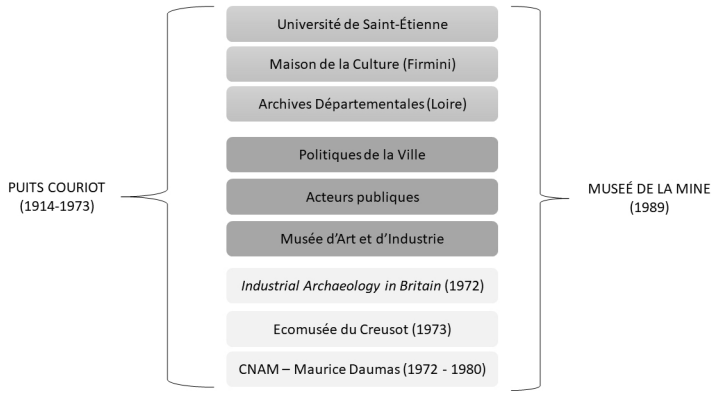


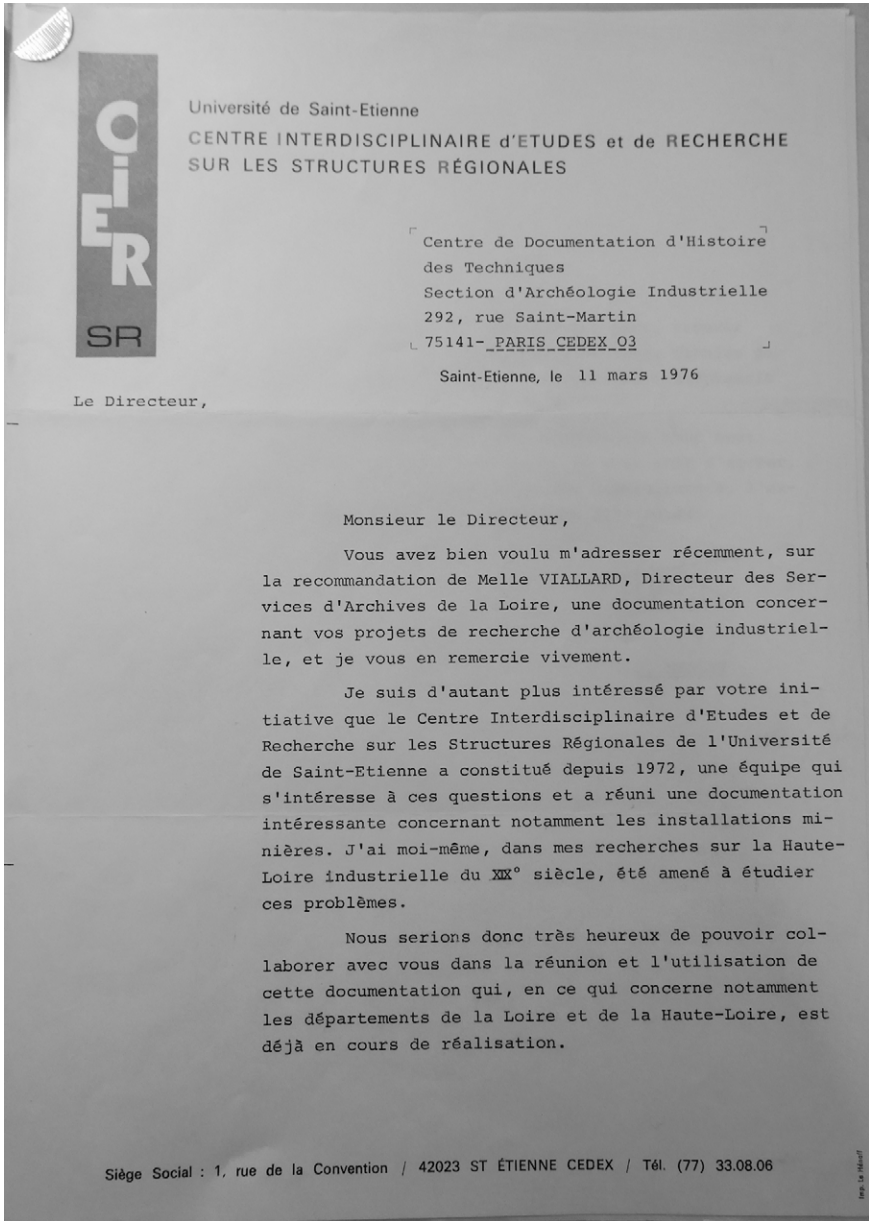
Figure 9. Temporality, levels and players in the process of heritage reappropriation of the Couriot Mine at Saint Étienne. © Robert Belot

He understood the advantages of working with the CNAM.

> I am all the more interested that by your initiative the Interdisciplinary Centre for Studies and Research on Regional Structures at Saint Étienne University has brought together a team concerned with these issues and has compiled useful documentation especially about mining installations. In my own research on 19th century industry in the Haute-Loire, I have been led to take up the study of these problems. We would, as a result, be very pleased to be able to work together with you in the meeting and in the use of this documentation, something already in process, as far as concerns the departments of Loire and Haute-Loire. Please find attached, for the establishing of your file of correspondents, the names of Saint Étienne researchers already interested in the issue.

Merley makes available documents and links to those (rare) researchers working on this topic. He regularly sends him the *Bulletin du Centre d'histoire régionale*, which Daumas puts to good use. March 14, 1977, he writes to him:

> I received what you sent me and send my thanks. One of the columns in this journal notes the master's dissertations in modern and contemporary history which have been defended at the University of Saint-Étienne since 1970. Three of these could be of interest for consultation in our research: that of Monique Lafond, *Arms and gunsmiths in Saint Étienne from 1815 to 1885*; those of Danielle Ollagnon, *A Family of ironmasters: the Jacksons* and that of Bernard Zellmeyer, *The Beginnings of railyway companies in France: railways in the department of the Loire from 1820 to 1860*.



CIER SR

Université de Saint-Etienne
CENTRE INTERDISCIPLINAIRE d'ETUDES et de RECHERCHE
SUR LES STRUCTURES RÉGIONALES

Centre de Documentation d'Histoire
des Techniques
Section d'Archéologie Industrielle
292, rue Saint-Martin
75141- PARIS CEDEX 03

Saint-Etienne, le 11 mars 1976

Le Directeur,

Monsieur le Directeur,

Vous avez bien voulu m'adresser récemment, sur la recommandation de Melle VIALLARD, Directeur des Services d'Archives de la Loire, une documentation concernant vos projets de recherche d'archéologie industrielle, et je vous en remercie vivement.

Je suis d'autant plus intéressé par votre initiative que le Centre Interdisciplinaire d'Etudes et de Recherche sur les Structures Régionales de l'Université de Saint-Etienne a constitué depuis 1972, une équipe qui s'intéresse à ces questions et a réuni une documentation intéressante concernant notamment les installations minières. J'ai moi-même, dans mes recherches sur la Haute-Loire industrielle du XX° siècle, été amené à étudier ces problèmes.

Nous serions donc très heureux de pouvoir collaborer avec vous dans la réunion et l'utilisation de cette documentation qui, en ce qui concerne notamment les départements de la Loire et de la Haute-Loire, est déjà en cours de réalisation.

Siège Social : 1, rue de la Convention / 42023 ST ÉTIENNE CEDEX / Tél. (77) 33.08.06

Figure 10. First letter from Jean Merley to Maurice Daumas, Saint Étienne, March 11, 1976, announcing his willingness to join his project. CNAM (CDHT) Archives.

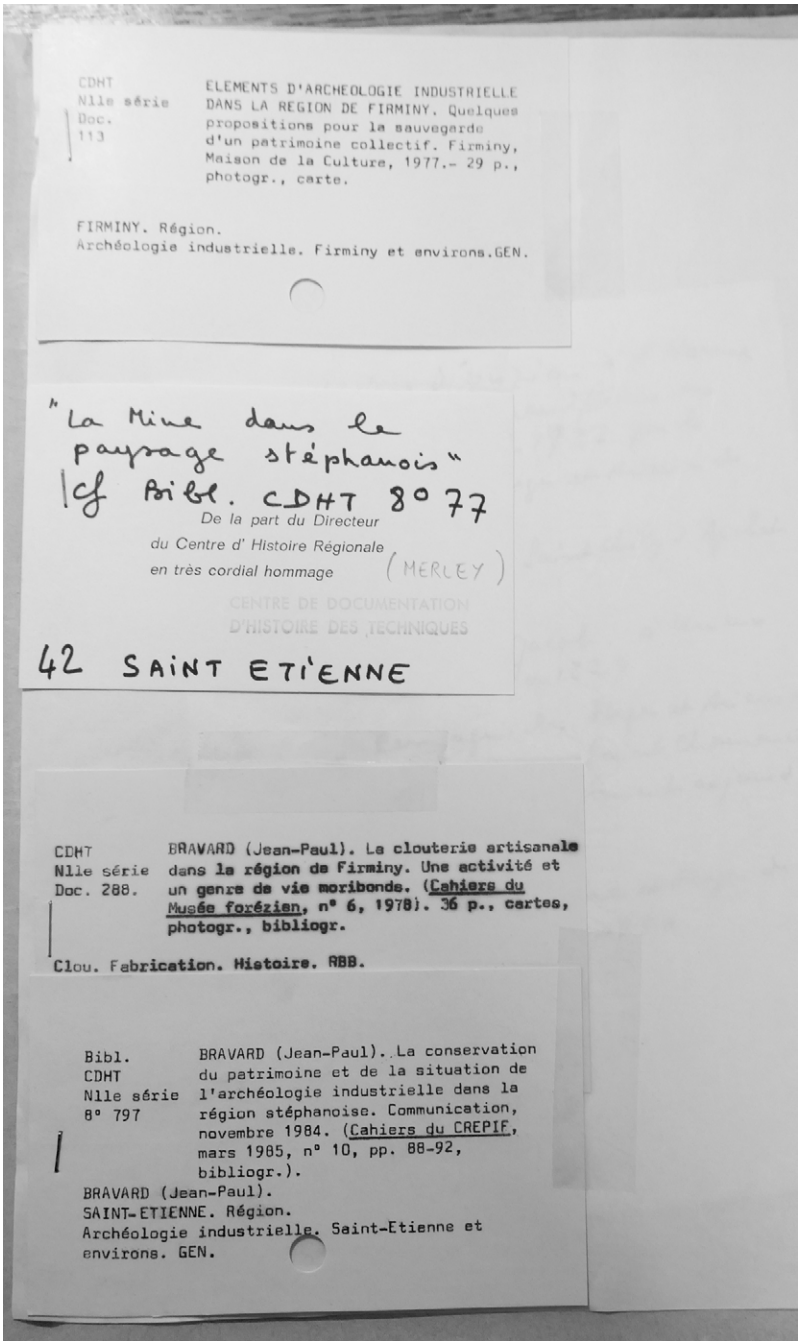


Figure 11. Cards produced by the Centre for Documentation in the history of technology (CNAM) from the documents provided by Jean Merley. CNAM (CDHT) Archives.

Merley organizes symposiums, like the one dedicated to the mine engineer Louis-Antoine Beaunier (Garçon 2004), founder of the National Mine School of Saint Étienne, author in 1817 of a study on the *Exterior and underground profile of the mining territory in Saint Étienne and Rive de Gier*. He puts out articles in the *Journal of the centre for regional history* in 1978. Merley sends the *Journal* to Daumas who sends his thanks on September 13, 1979:

> We are very grateful for your sending of the *Journal of the centre for regional history* containing the Beaunier symposium. I had personally met both Gallois and Beaunier while doing research for my thesis about the use of locomotives in France in the first half of the 19th century, and I realized the major role played by Beaunier. I was also very interested in the Zellmeyer article. We would very much appreciate getting the Journal on a regular basis.

The CDHT recycles this information and records it on manual look-up sheets (Figure 11).

An upsurge of symposiums, often initiated by Daumas, crystallizes the interest of researchers on this new and emerging field of study. Out of the Committee for Historical and Scientific Activities (CTHS) and its annual conferences, Daumas begins these assemblies. In 1979 occurs the first symposium on industrial archeology organized on the occasion of the 104th conference of Learned societies (CTHS). It is preceded by the founding symposium organized by the Creusot Eco-museum (September 19-22, 1976). Others will follow.

It also happens that Daumas gives guidance to students intrigued with the issue and interested in such for thesis purposes. Thus it was that Jean-Paul Bravard, a student intern at Firminy's Maison de la Culture, asks the CNAM professor for guidance in determining a subject for his thesis. Daumas writes him on October 25, 1977:

> About what you said to me regarding your intentions for research, after reflecting, I believe that the problem of moving from the topping lift to the drop hammer is a subject both too narrow exceedingly complex. Too narrow because, technologically speaking, the transition has not proven problematic and deals only with the nature of the work done at the various ironworks. Too complex because it might be significant had it been spread to all the industrial regions during the 19th century. It is not certain that the documentation will enable this transition to be captured for if the use of the drop hammer has been pointed out, the persistence of the topping lift has left no signs in the literature and the sources which can be accessed.

He then guides him toward another topic.

> Perhaps in this same spirit you might consider studying the development of metallurgical equipment in the Saint Étienne region. (...) Other than the technological development per se, it should take into account the economic motivations, the supply and demand of products, the consequences surrounding the development of the workforce and the imperatives in developing built structures for the businesses.

Daumas, however, knows well how sensitive academics are. He is careful to ask the student to speak with Professor Merley "who might become a good thesis supervisor." Yet after two interesting studies in industrial history (Bravard 1981: 75), Jean-Paul Bravard shifts toward "geo-archeology"; a future Professor at Lyon 2, he will become a global specialist.

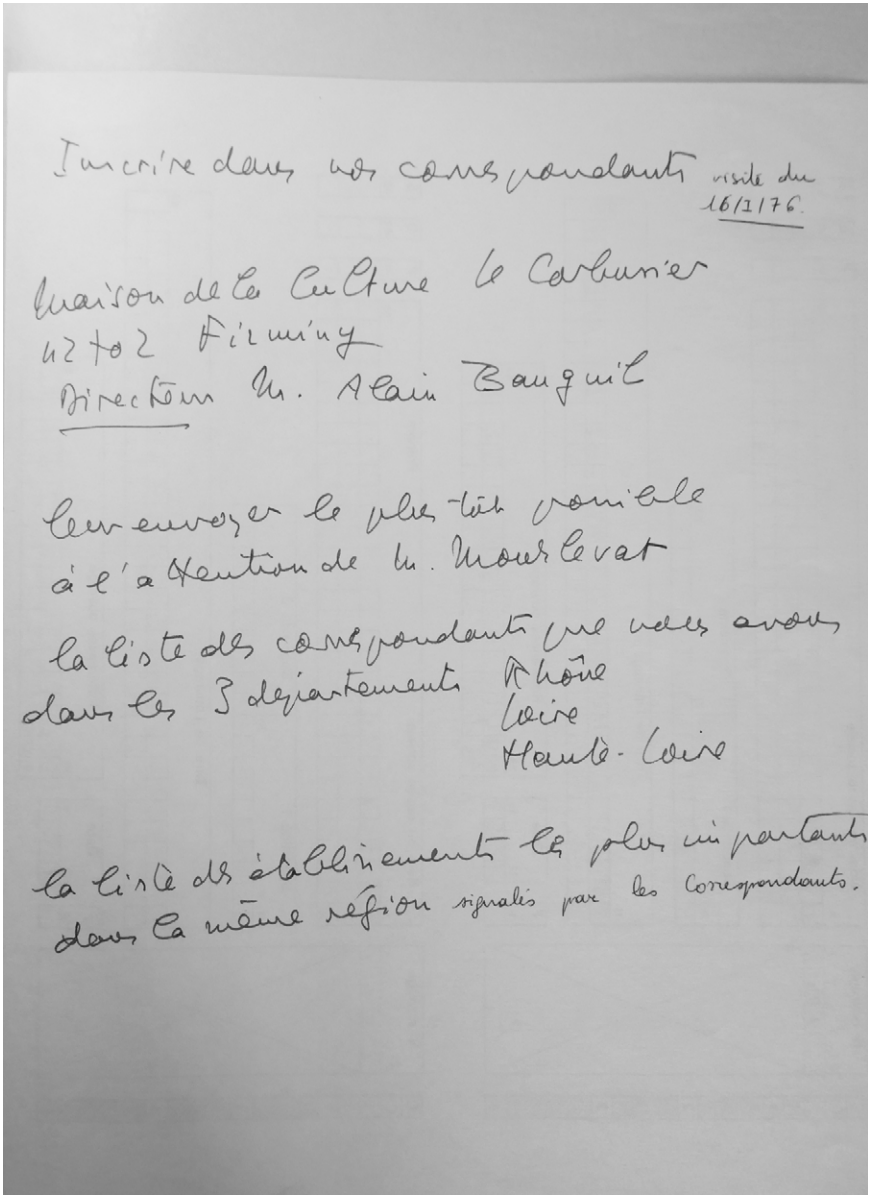
A collective dynamic for the sharing of information

Maurice Daumas' strategy is based on the setting up of a network of "informants," local correspondents ("several hundred"). The Saint Étienne network is very responsive and makes it possible to discern the way in which the researcher is proceeding.

Two main institutions (besides the university) take part in the survey.

First, the Art and Industry Museum. Its director, Barnard Ceysson (1967-1998) became involved in a pro-active process of renewing the link between art and industry but, at the same time in a restructuring of his museum. In 1973, he understood the advisability of exploiting the closure of the Couriot mine in order to develop a museographical approach. Between himself and Daumas is shared a real and productive bond of trust. Even before coming on the scene, Daumas asks him for support in his plan. In a letter on July 19, 1977, he writes to Ceysson: "We are seeking, more specifically, buildings or period installations where industrial activity was carried on by firms which still exist, for example, manufacturing or those which have disappeared and left their place to other businesses." Ceysson will be an efficient guide for Daumas on his coming (the week of September 19, 1977), as one can note in this letter of October 25, 1977:

> I have, of course, a wonderful memory of our chats which proved so useful to me during my stay in Saint Étienne. In particular, the city tour you had me do enabled me to save a great deal of time thereafter in finding those enterprises which were of interest to me. That evening, I was able to meet with Mr Merley who acquaintance I was very happy to make and with whom I hope to stay in contact.


J'inscrire dans nos correspondants visite du 16/1/76.

Maison de la Culture le Corbusier
42 to 2 Firminy
Directeur M. Alain Bauquier

Leur envoyer le plus tôt possible
à l'attention de M. Mourlevat

la liste des correspondants que nous avons
dans les 3 départements Rhône
Loire
Haute-Loire

la liste des établissements les plus importants
dans la même région signalés par les correspondants.

Figure 12. Summary (written by Daumas) of the visit paid to him in Paris by the co-director of the Maison de la Culture in Firminy, in January 1976. © CNAM (CDHT) Archives.

However, museological culture does not prepare the curators for the methods of industrial archeology. Bernard Ceysson is impressed with Daumas and at a slight disadvantage, as one can conclude in this letter from August 5, 1977:

> We are very observant of the industrial architecture on our region, at least of that which remains of the large groupings of the 19th century and we would like to save that memory. Unfortunately, our means are lacking and we know nothing about the methods, the rules of industrial archeology. The arrival of a researcher would, no doubt, provide us with a good deal of teaching and perhaps she could help call forth initiatives for protection from the elected or administrative officials of our region.

This letter shows us very well that the political players seem very far from having their interest piqued toward such an approach.

The second institution, ironically, is the Maison de la Culture in Firminy. It happens that its co-director, actor Alain Banguil, has an interest at this time in industrial history (Chambert 2006: 124). For that reason he had gone to the CNAM to get information for a day of studies. As a result of this visit, Daumas writes to Banguil on January 23, 1976:

> Following your visit of January 16, 1976 to the CDHT and your discussion with Mr Payen, it is my pleasure to send you this list of old industrial buildings which we have identified thus far in the departments of the Loire, the Haute-Loire and the Rhône, along with a list of people who have accepted to be our correspondents.

For each visit, Daumas writes a short summary, as for January 16, 1976 (Figure 12).

In exchange, as his documentation at times consists only of letterheads, prints from old books, maps and blueprints (Figures 13 and 14), Daumas asks him to check whether the establishments he has mentioned are still in existence (Charlieu, Rive de Gier, Roanne, Saint-Chamond, Saint Étienne). This means that Daumas' survey is bringing about profitable interaction between the central and the local, in an exchange process.

Daumas gives his support to the study days organized by Firminy's Maison de la Culture. He writes as follows to Georges Garby, administrative co-director of the Maison (June 11, 1976):

> I read with great interest the text you penned in February with Mr Rignault and Mr Bravard, and I sincerely hope you will be able to complete this programme. (...) We were sorry not to have been present at the study days you set up in February.

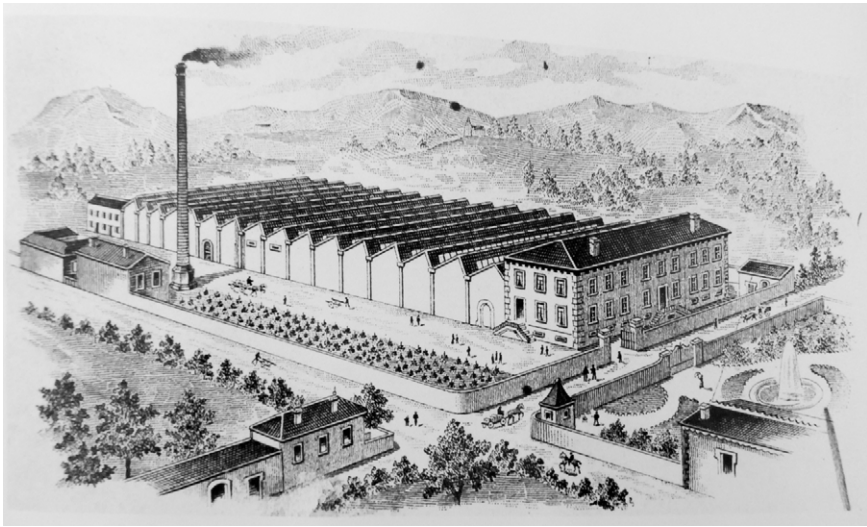


Figure 13. Letterhead (1912) from the manufacture of braids and laces in Saint-Chamond photographed by the CDHT. This photo would not be published in the Archéologie industrielle en France. © CNAM (CDHT) Archives.

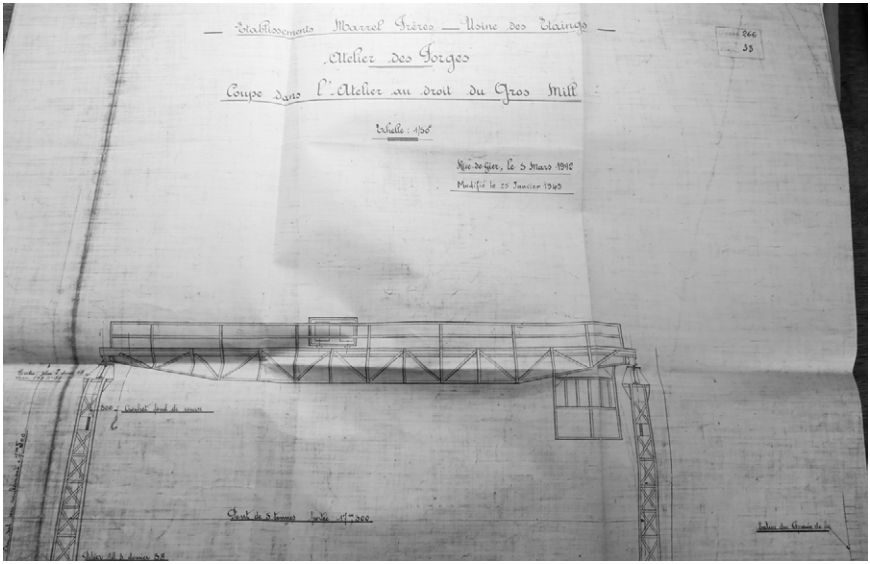


Figure 14. Layout of the forging shop, the factory des Etaings (Marrel Frères' establishment), Rive de Gier, 1949. © CNAM (CDHT) Archives.

Daumas plays a very positive role as a go-between. He encourages his local spokesmen and pushes them to take part in the symposiums. Then he proposes to Garby that he participate in the conference organized by the Creusot eco-museum (September 19-22, 1976), but the co-director of the Maison de la Culture declines since he has to organize an "internship in architecture." In the same way, he invites the young Jean-Paul Bravard, a student intern at Firminy's Maison de la Culture, to the CTHS conference in Bordeaux in 1979.

During his trip to Saint Étienne, Maurice Daumas has the good fortune to meet Alain Bauguil and Jean-Paul Bravard. The interest was mutual as his letter of October 25, 1977 notes: "I trust that the contacts you have been able to make by accompanying me in the various undertakings which were of interest to me will have beneficial consequences. For myself, your presence and that of Mr Bravard greatly simplified my research and my endeavours." The young Bravard will be Daumas' preferred spokesman in the photography of the machinery. On October 25, 1977, he writes to him: "Thanks to you, this day held great profit for me. I have only one regret: the photos I took of the topping lifts with the waterwheel at the Moulin du Pont didn't turn out; my flash must not have been working. If you have the opportunity to get some of these, I'll be glad to get copies."

Their exchanges are very technical and point out the exacting nature of Daumas and his great knowledge of the technical history of the industrial process. Details do not escape him, as this letter to Bravard shows from January 16, 1978:

> One detail you mention from page 4 also took my attention: a 1916 'château fort' type of transformer, today inside Creusot-Loire. In various places, in basic mining collections, people have sought to convey a certain style to the transformer buildings. At this moment I am attempting to bring together some documents about them. I also would like to ask you if you have a photo of the one you cited and if so, could you send me a copy?

The survey archives at CNAM show how meticulously Daumas works. To all his correspondents, Daumas sends a form template:

> If you think you can point out to us industrial buildings from the 18th and 19th centuries which still exist in your region and can carry on a detailed correspondence with us, we would request that you complete the response form. Should you know a person you feel might especially wish to be informed, we would be grateful for your giving us their name and address...

He makes a plea to businesses as well. The Manufacture nationale d'armes, through Mr Varennes, sends him plans in 1977: "The prints from the slides which you were kind enough to make for me have just reached me." The coal mines in the Bassin du Centre et du Midi (through Éric Massy-Delhotel): "For each of these mineshafts, we would like to know the date of its opening, the period of construction of its headframe, its extraction buildings and the machine buildings which still exist, and also the end date for extraction activity" (Figure 15). The inadequate responses demonstrate the lack of knowledge on the part of businesses regarding their own heritage.

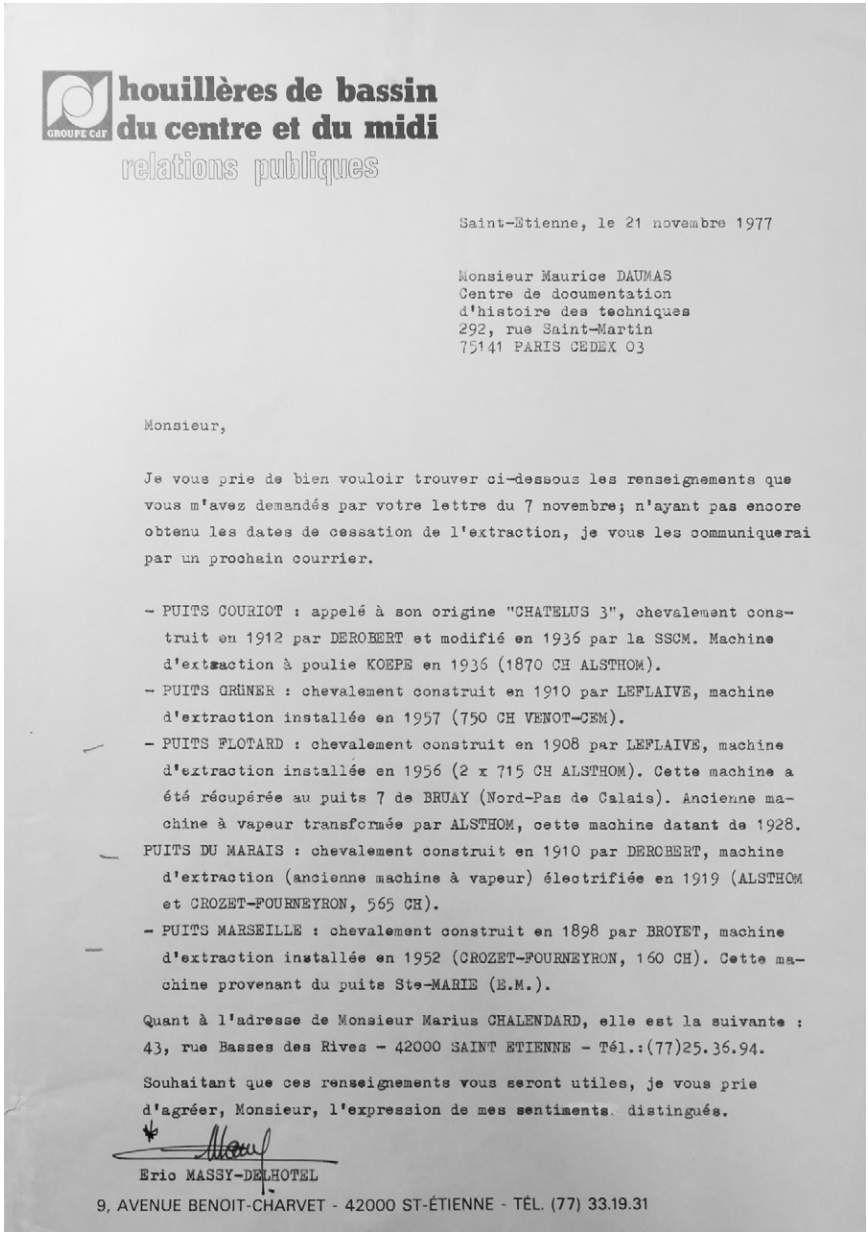
The municipalities show, in general, little reaction, for they seem not to understand what is at stake in this inventory. Such can be seen in a letter to Daumas from the mayor of Saint-Chamond on Februay 24, 1976): "In response to your newsletter of February 23, I regret to inform you that the municipal administration does not have the information and documentation you wish. I think it would be better for you to send a questionnaire directly to the businesses...." Daumas would have liked to know more on the braids and laces, the dyers and the primers, the heavy metallurgy works of Saint-Chamond. On the other hand, Rive-de-Giers cooperates: city hall completes the forms.

In the case of Saint Étienne, one notices that the network identified and strengthened by Maurice Daumas plays the role of a catalyst in the process of retrieving its heritage. The political actors step in in the second phase but make it possible to include this process in the city's sustainable projects.

The intuitions of these forerunners resonate with the current interest, emerging outside of Saint Étienne, in the issue of industrial heritage. Georges Garby, co-director of the Maison de la Culture in Firminy, informs Daumas about the initiatives which show a regional dynamic, independent of the CNAM survey. On June 19, 1976 (*while Daumas' newsletter was from March 1976*), he writes this to Daumas:

> I have to tell you that by accident I learned, of the setting up, last month in Lyon, of a meeting intended to lead to the creation, at a regional level, of a working group on industrial archeology. I attended and received a heartfelt welcome from Mr Lequin, in charge of the Centre for economic and social history at Lyon II University. In addition, we were twice invited by Miss Vialard, director of the department archives, to work sessions on that theme. The last occurred on June 17.

The CNAM survey answers an unrealized need and resonates with a widespread local movement seeking structure. It can only bolster this



houillères de bassin
du centre et du midi
relations publiques

Saint-Etienne, le 21 novembre 1977

Monsieur Maurice DAUMAS
Centre de documentation
d'histoire des techniques
292, rue Saint-Martin
75141 PARIS CEDEX 03

Monsieur,

Je vous prie de bien vouloir trouver ci-dessous les renseignements que vous m'avez demandés par votre lettre du 7 novembre; n'ayant pas encore obtenu les dates de cessation de l'extraction, je vous les communiquerai par un prochain courrier.

- PUITS COURIOT : appelé à son origine "CHATELUS 3", chevalement construit en 1912 par DEROBERT et modifié en 1936 par la SSCM. Machine d'extraction à poulie KOEPE en 1936 (1870 CH ALSTHOM).
- PUITS GRüNER : chevalement construit en 1910 par LEFLAIVE, machine d'extraction installée en 1957 (750 CH VENOT-CEM).
- PUITS FLOTARD : chevalement construit en 1908 par LEFLAIVE, machine d'extraction installée en 1956 (2 x 715 CH ALSTHOM). Cette machine a été récupérée au puits 7 de BRUAY (Nord-Pas de Calais). Ancienne machine à vapeur transformée par ALSTHOM, cette machine datant de 1928.
- PUITS DU MARAIS : chevalement construit en 1910 par DEROBERT, machine d'extraction (ancienne machine à vapeur) électrifiée en 1919 (ALSTHOM et CROZET-FOURNEYRON, 565 CH).
- PUITS MARSEILLE : chevalement construit en 1898 par BROYET, machine d'extraction installée en 1952 (CROZET-FOURNEYRON, 160 CH). Cette machine provenant du puits Ste-MARIE (E.M.).

Quant à l'adresse de Monsieur Marius CHALENDARD, elle est la suivante : 43, rue Basses des Rives - 42000 SAINT ETIENNE - Tél.:(77)25.36.94.

Souhaitant que ces renseignements vous seront utiles, je vous prie d'agréer, Monsieur, l'expression de mes sentiments distingués.

Eric MASSY-DELHOTEL

9, AVENUE BENOIT-CHARVET - 42000 ST-ÉTIENNE - TÉL. (77) 33.19.31

Figure 15. Bassin du Centre et du Midi, from November 21, 1977, transmitting information to Maurice Daumas on the Couriot Mine. CNAM (CDHT) Archives.

movement. On September 2, 1977, Merley informs Daumas that the CNRS administrator delegate for the 7th district has shared with him that the Committee for the multiyear research programme in the humanities from the Rhône Alpes region had chosen the project which he had presented dealing with the industrial installations of the Loire Mining Basin. The CNRS representative asked Merley to approach Daumas who is presented as coordinator "on a national level for inventories in matters of industrial archeology." The project has to be carried out over 4 years. It involves, in its first phase, a systematic survey and description of the surface installations remaining from the mining operations in the Saint Étienne Coal Basin, along with the compilation of records on some of the operations which had ceased. In a second phase, the survey should spread out to the steel installations in the Saint Étienne region, along with the former small run-of-river factories built in the valleys of Furan, Ondaine and Gier. This survey will be based on the studies already underway since 1971 at the University of Saint Étienne, and it will involve the Saint Étienne school of architecture and the administration of the Loire Coal mines.

For his local representatives, Daumas acts as trainer and source of inspiration. The CNAM survey sows ideas of valorization in the minds of some of his counterparts. Miss S. Morelon, in charge of the Parc naturel du Pilat, asks for Daumas' support (January 9, 1976):

> The regional Parc naturel du Pilat was, throughout the 18th and 19th centuries, especially rich in industrial workshops built along its watercourses. There are still a few remaining. There was a proposal that history students from the University of Saint Étienne do a study on this issue, but such was not possible. Thus, we find especially interesting the inventory you are suggesting setting up on the industrial buildings of the 18th and 19th centuries, and we are ready to lend our assistance in this area. All the more so because we would like to schedule, in our future undertakings, a House of silk and, perhaps too, a House of industry or of history.

In November 1978, birth is given to a project to create a Saint Étienne regional Centre for tradition and technology. Partners: Firminy's Maison de la culture, Saint Étienne's city hall, Chamber of Commerce and Industry, museum of art and industry, Ministry of Industry (J. De Noblet), regional administration for Cultural Affairs. One envisions a long-term project: "A centre for steel and its applications." "The centre is meant to be a reflection of the present (current conditions, cutting-edge research) and to display the uses of the metal: forging, extrusion, casting…" A short-term project is envisaged "showcasing" an exhibition: "The display and promotion of Saint Étienne technology," with "social and cultural content."

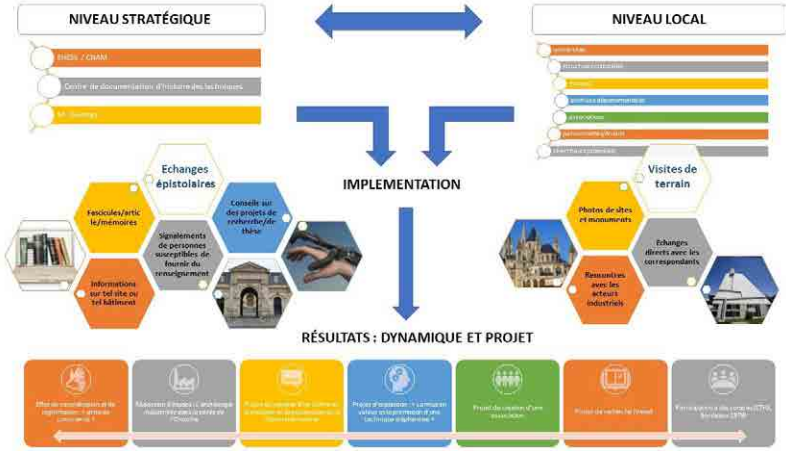


Figure 16. Holistic approach to the dynamic in recovering heritage in Saint Étienne. © Robert Belot

The archeological survey carried out by Maurice Daumas demonstrates the growing interest in protecting and displaying the industrial civilization which seemed destined to disappear in the 1970s. His contacts with the initiatives in Saint Étienne provided satisfaction and encouragement, but also a documentary resource of great importance. A fortunate discussion was triggered between local and global. For, while his project was the first attempt to go beyond the monographs of sites and establishments (surveys of branches of industry and businesses, systematic inventories of topography, thematic approaches), the regional studies had their own place.

Conclusion

The Saint Étienne survey of Maurice Daumas was useful, not only because it enabled him to identify heritages needing protection that were representative of a unique history; it was also an encouragement for the researchers and all those working to bring recognition to the history of a city which was an industrial capital and a place of memory for a social movement, but which had also long lived in denial of its own history. At the moment when the industrial activities of this region crumbled, when a major social crisis hit an entire population causing its identity to waver, the discovery of the cultural value of this scorned heritage allows for a kind of hope. The CNAM survey had the effect of legitimizing the commitment of an elite for the purpose of reaffirming identity and history.

And this elite influenced the choice of political stakeholders through its own involvement, its productions, its reputation and its connections with the political sphere. A man like François Tomas, a symbol of this struggle, became the deputy mayor of Saint Étienne in charge of urbanism and, at the same time, director of the School of architecture. The survey was a source of strength for a process, sparked imitations and brought about other projects. It accelerated a "raising of awareness."

However, from becoming aware to the beginning of the concrete implementation of projects of rehabilitation or enhancement, it takes time. In 1989, the work begins, and the mine museum opens in 1991. The act of heritagization is underway. One can see in this case that mobilizing the expertise of academics played a fundamental role in the transformation to cultural value of that which had no further utilitarian value. Today, the "magnificent headframe" (according to Daumas) of the Couriot mine, located on the route of the first Saint Étienne railway line at Andrézieux, is the most symbolic monument of that city. Illuminated at night, it has become that city's bright spot and was almost done away in the wave of deindustrialization. From industrial abandonment to becoming part of heritage, from the closing of the site to the opening of the museum, it took 18 years.

The Saint Étienne example is symbolic of those lands which became victims of deindustrialization and which set out on the road to resilience thanks to their re-entry on the roll of industrial heritage in the urban space and in the collective imagination (Belot and Lamard 2011b), and even when, as often occurs, those buildings which survive "constitute less of an industrial heritage than a heritage for the industrial city" (Gay 2012: 30). It shows that the first objective of this survey in industrial archeology (according to Daumas "the research and study of the sites where these sorts of activity occurred, along with the material record, the artefacts which remain") was exceeded and that it was a companion in the process of changing the perception of Saint Étienne residents regarding their city, its history and its identity.

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