



## Bourbaki's Art of Memory

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# Bourbaki's Art of Memory

By *Liliane Beaulieu\**

## I. INTRODUCTION

SINCE THE MID-NINETEENTH CENTURY COMMEMORATIONS have proliferated, and lavish celebrations of the past mark the advent of the third millennium. Commemorations preoccupy contemporary researchers into memory, who have emphasized the past as recollected, represented, institutionalized. Yet societies do not commemorate if they no longer feel the presence of the past, or if they cannot define their future from the legacy of old lessons. How groups remember also depends on how they habitually record their present. Within the orchestral swell of our *fin-de-siècle* commemorations the Bourbaki group sings small, leaving its past as yet unexamined.<sup>1</sup>

"N(icolas) Bourbaki" is the pseudonym of a twentieth-century group of mathematicians, mainly French, who publish a work entitled *Eléments de mathématique* (*Elements of Mathematics*), an overview of several areas of mathematics that demonstrates the structures they have in common.<sup>2</sup> Although an expository work, the *Eléments de mathématique* nevertheless constitutes an original piece of craftsmanship. The writers innovated by choosing particular conceptual frames into which they cast whole mathematical theories; they also strove to give their presentation a clear but strict organic unity, and they achieved a particularly homogenous exposition by adopting the same approach throughout the treatise and by emphasizing the ties between different theories. In this way they present set theory, algebra, general topology, functions of a real variable, topological vector spaces, integration theory,

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<sup>1</sup> All of the Bourbaki manuscripts used for this article come from the personal papers of former members of the group whose names appear in each reference. Many of the quotations were as yet unpublished (in any language). All translations from the French are my own with the exception of the poems, which were translated by Jill Corner; kindly acknowledge when citing. The great number of quotations precludes proper referencing for each one of them; I trust the reader will nonetheless accept that they are genuine.

<sup>2</sup> Bourbaki deliberately uses the unusual singular rather than the common plural in the French word "*mathématique(s)*" in order to demonstrate a faith in the unity of mathematics. The French title *Eléments de mathématique* will be used here since only the volumes of the original French version will be discussed, rather than their later English translations.

Lie groups and Lie algebras, commutative algebra, spectral theories, and differential and analytic manifolds. The work also contains a number of historical notes collected as a separate volume with the title *Éléments d'histoire des mathématiques*. For mathematicians, Bourbaki represents “pure” mathematics par excellence and its work is the paradigm of a rather dry mathematical “style,” combining axiomatics with a meticulously abstract method of presentation. The Bourbaki group is a unique phenomenon in the recent history of mathematics: it has inspired legends and controversies, and it cultivated mystery even while achieving high visibility and its treatise was becoming a publishing success.

The team came together in the academic year 1934–1935 and continues to operate to this day (1999). The *Éléments de mathématique* were first published as a series of booklets, starting with a digest of results on set theory in 1939, reaching a publication peak in the 1950s, and persisting with a recently published chapter on commutative algebra. In 1948 the group established a seminar on cutting-edge mathematics, known as the Séminaire Bourbaki, which soon became the most notable mathematics seminar in the Western world, a position as yet unchallenged. Although the members of Bourbaki select the topics as well as the participants and edit the talks for publication, the activities of their public Paris seminar remain quite separate from the private writing of the *Éléments*. Indeed, this enterprise is a real and unusual collective effort: the team co-opts its members, keeps its membership secret, and does not acknowledge individual contributions.

The way Bourbaki has organized its behind-the-scene work sessions has varied over the years, but usually, especially since World War II, they had three to four general meetings a year at which members submitted contributions to the critical eye of their peers. Thus, each part of the *Éléments* went through many successive versions, being first written by individuals and then read, discussed, and reworked by the whole team before being handed over to a new writer who would more or less incorporate the group’s recommendations into the revised text, and so on, with up to ten or more revisions occurring in some cases. These ongoing amendments have blurred the record, making it difficult to find traces of particular authors in the final palimpsests.

No application is required to become a member of Bourbaki. Recruits are co-opted at the suggestion of a member and he (no women have been in the Bourbaki group) has to take an active part in the discussions; thus the recruits choose Bourbaki as much as the group chooses them. The draftees are either known mathematicians already advanced in their careers—some of whom are not French—or students of Bourbaki members (called “guinea pigs” in Bourbaki parlance), mostly young men from the Ecole Normale Supérieure on rue d’Ulm in Paris, one of the leading schools in France; the latter eventually constituted the majority.<sup>3</sup> At any point in time there are, on average, ten active members, and the membership forms a close-knit, inbred company with shared social and intellectual roots as well as mathematical tastes.<sup>4</sup>

<sup>3</sup> On internal cohesiveness in the elite of leading schools and its role in French intellectual life, see Pierre Bourdieu, *La Noblesse d’Etat: Grandes écoles et esprit de corps* (Paris: Editions de Minuit, 1989).

<sup>4</sup> The story of the Bourbaki group, based on archival material, is told in Liliane Beaulieu, *Bourbaki: History and Legend* (Springer-Verlag, forthcoming). The complete list of Bourbaki members between 1934 and 1960 is featured as an appendix to this book.

Every group finds pretexts for being festive, and Bourbaki is no exception. Weddings, births, anniversaries, graduations, and the completion of theses or of particularly difficult chapters of the *Eléments* have been hailed in Bourbaki's intimate celebrations, which usually consisted of nothing more than partaking, while at a meeting, of a fine meal washed down with good wines. The arrival of new recruits and their eventual integration with the group were mentioned in Bourbaki's internal newsletter, but not celebrated, just as members' retirements and other departures passed by without pomp or ceremony. Anniversaries—of Bourbaki's so-called foundational meeting (1935), of its first published fascicle (1939), or of the creation of the high-profile Séminaire Bourbaki (1948)—spurred neither public nor private recollection rituals. Unlike most other groups, the Bourbaki team and their followers have not indulged in public celebrations. A vow of secrecy—not a serious ritual—allegedly forbids them to disclose the names of members, but this is not the only reason for their public shyness. For Bourbaki is not just a private coterie: the collective author of the monumental *Eléments* and organizer of a famed seminar has received peer recognition in reviews and even a prize.

Until recently, the only public celebration of Bourbaki was when the French Académie des Sciences awarded its Cognacq-Jay Prize to four of the nine founding members (Henri Cartan, Jean Delsarte, Jean Dieudonné and André Weil) for Bourbaki's work in general. For this occasion, a brief and modest ceremony was organized on 28 February 1967 in Nancy, where Bourbaki had its headquarters for many years. In their acceptance speeches, Delsarte and Dieudonné recalled Bourbaki's past and extolled the group's perennial youthfulness. They compared the impressive quantity of Bourbaki's publications (at the time, some thirty fascicles of the *Eléments de mathématique* totalling about five thousand pages) with the five to six times larger quantity of ephemeral texts put out by the members as trial drafts for the treatise, thus testifying to Bourbaki's hard work. They also spoke about members' anonymity, the ferocity of group discussions, and some of the personal quirks of the founders. Despite the mandatory comic elements, the ceremony was sober in overall tone, evoking the group's past and signal achievements.<sup>5</sup> In those days, Bourbaki's supremacy was unchallenged: the team, and its mathematical choices, dominated the French mathematical scene and were influential in many other parts of the world. Yet individual members were celebrated more than the Bourbaki institution: most members received several prizes for their personal contributions to mathematics, and some even earned the Fields Medal, the most prestigious international prize for mathematics. In contrast, even on the occasion of the Académie prize, the group as such did not revel in celebratory rituals.

Another public accolade came in the fall of 1994 when the Ecole Normale Supérieure marked the bicentennial of its foundation. Bourbaki decided to let its name be associated with the commemoration of the institution that is closest to its collective heart, and where it now has its headquarters and secretariat. Like the bicentennials of the French Revolution and of the Ecole Polytechnique that preceded it (in

<sup>5</sup> The award was sponsored by the Samaritaine Foundation. The announcement of the award was published in the *Comptes Rendus de l'Académie des Sciences de Paris*, vol. 263, "Table académique," p. 146. Details on the circumstances of this event appear in Beaulieu, *Bourbaki* (cit. n. 4), chap. 6, where I also explain why the prize was given to only four of the founders.

1989 and 1994 respectively), the Ecole Normale Supérieure's celebrations were enriched by historical studies.<sup>6</sup> In commemorating its inception, the Ecole Normale was particularly celebrating its second—and fundamentally republican, lay, and leftist—century, which consecrated its students (the *normaliens*) as “tribunes of new ideas” (a phrase borrowed from Sainte-Beuve and repeated in many historical studies) who dominated French intellectual and political life.<sup>7</sup> The ideas of the *normaliens*, it was held, represented the various currents of opinion in France and the sociological makeup of their cohorts reflected the composition of the whole French population.<sup>8</sup> Mathematics at the Ecole, and Bourbaki's role in particular, found a place in the context of these historical analyses.<sup>9</sup>

Yet on visitors' days when the august establishment threw open its doors to a curious public, Bourbaki's presentation consisted merely of a discreet showcase displaying a few old photographs from Bourbaki congresses and samples of unpublished texts. Bourbaki's devoted secretary had taken charge of the exhibition and asked some former members to lend their personal Bourbaki-related photographs for the occasion. This silent commemoration, however, did not galvanize latter-day members nor even attract older adherents. Nor did the group find many followers to ceremonially celebrate the name of Bourbaki or to obtain any worthwhile result from the occasion. Contrary to usual practice at a commemoration, the Bourbaki group did not try to attract attention in order to gain recognition or inspire eventual apprentices. Nor did anyone strive to demonstrate how topical the Bourbaki enterprise might still be.

As an aside to the celebrations, a colloquium on “The French School of Mathematics” between 1940 and 1970 set out to give a critical account of Bourbaki's role during that period.<sup>10</sup> The arguments raised by the talks and round-table discussions brought back famous battles of the past; there, of course, the memories of some former Bourbaki members as well as of outsiders, both defenders and detractors, were jogged into reminiscences. Indeed, Bourbaki is now a part of the common memory of mathematicians, especially in France where the group dominated the mathematical scene for several decades. This colloquium was not a commemoration *per se*, yet it may be considered as commemorative in nature—though not in pur-

<sup>6</sup> On the occasion of the bicentennial of the Ecole Polytechnique, historical studies giving the pride of place to mathematics were collected in *La Formation polytechnicienne 1794–1994*, eds. Bruno Belhoste, Amy Dahan, and Alain Picon (Paris: Dunod, 1994). On the centennial celebrations of the Ecole Polytechnique see the study by Anousheh Karvar, “Le Centenaire de l'Ecole Polytechnique: Rites d'une élite nationale sur fond de crise,” *La Mise en mémoire de la science: Pour une ethnographie historique des rites commémoratifs*, ed. Pnina Abir-Am (Paris: Editions des Archives Contemporaines, 1998), pp. 191–206.

In addition to a reprint of the commemorative volume of the Ecole Normale Supérieure's first centennial, a series of articles collected under the title *Ecole Normale Supérieure: Le Livre du bicentenaire*, ed. Jean-François Sirinelli (Paris: Presses Universitaires de France, 1994) aims mainly to present a global history of the school's last one hundred years.

<sup>7</sup> “Republican,” here, refers to the ideal of a republic in general and especially to the ideals of the French Third Republic.

<sup>8</sup> Jean-François Sirinelli challenges this standard image of the Ecole Normale as a mirror of French society and opinion in “Les Elites culturelles,” *Pour une Histoire culturelle*, eds. Jean-Pierre Rioux and Jean-François Sirinelli (Paris: Seuil, 1997), pp. 275–96.

<sup>9</sup> In particular see the article by Martin Andler, “Les mathématiques à l'Ecole Normale Supérieure au XXe siècle: Une esquisse,” in Sirinelli, *ENS: Le Livre du bicentenaire* (cit. n. 6), pp. 351–404.

<sup>10</sup> The colloquium was organized by Amy Dahan and Martin Andler, who are neither members nor followers of Bourbaki.

pose—inasmuch as it exhibited residual emotional ties between the Bourbaki group, which renewed French mathematics, and other mathematicians who defended various stakes in the mathematical science in France, one of the issues being the respective places of “applied” and “pure” mathematics. For many years after World War II, pure mathematics was triumphant and, in those days, pure mathematics in France meant Bourbakian mathematics; that is, the kind of mathematics that the *Eléments* exhibited and the Séminaire Bourbaki once fostered. In France, as elsewhere in the Western world, applied mathematics has for some time now won over pure mathematics to the point that the labels “pure” and “applied” with their opposition fading, have lost some of their purpose and meaning. Even the trend-setting Séminaire Bourbaki has followed suit by welcoming the presentation of algorithmic methods and other applications-related topics. At last, there is a relative truce between Bourbaki’s defendants and opponents.<sup>11</sup>

Although Bourbaki has earned a place in the picture of French and *normalien* intellectual life, the group is presently fading into oblivion as the witnesses of its inception and heyday depart. For some time now the name of Bourbaki—in reference to a group of mathematicians—has not meant much to most educated Frenchmen. Even mathematicians are no longer informed; some wonder whether the group still exists while others are ignorant of the fact that no single author of that name ever lived.<sup>12</sup> In the pantheon of mathematics no lemma, theorem, method, or system of axioms bears the name of Bourbaki, and the monumental *Eléments de mathématique* are kept on library reference shelves and are sometimes useful, sometimes deemed rather out of date. The team may be considering an alternative vocation but, until that new order arrives, its task—the organization of the seminar notwithstanding—is basically to complete an old project. In such a context, had the Bourbaki group tried to stimulate public debate about its role; had it sought in any way to make a case for itself, it might have risked being considered out of place. A commemoration requires a particular blend of circumstances and stakes in order to be staged and prove beneficial to the congregation that carries it through, while another mix of conditions might have adverse effects.<sup>13</sup>

Any commemoration inevitably comprises a polemical, even combative, aspect,

<sup>11</sup> Such a truce has been in place for some time at France’s famous Institut des Hautes Etudes Scientifiques, as David Aubin suggests in “Un Pacte singulier entre mathématiques et industrie: L’effacement chaotique de l’Institut des Hautes Etudes Scientifiques,” *La Recherche*, October 1998, 313:98–103. An indicator of how pure mathematics in France once corresponded to Bourbakian mathematics can be found in Jean Dieudonné, *Panorama des mathématiques pures: Le Choix bourbachique* (Paris: Gauthier-Villars, 1977). Martin Andler describes the supremacy of pure mathematics in France in “Les mathématiques à l’Ecole Normale Supérieure” (cit. n. 9). Elements for a history of the labels “pure” and “applied” mathematics in France and elsewhere are found in Amy Dahan, “Pur versus appliqué? Un point de vue d’historien sur une ‘guerre d’images,’” *Gazette des Mathématiciens*, (Société Mathématique de France), 1999, 80:31–46.

<sup>12</sup> However, the recent publication of articles on Bourbaki (see cit. n. 14) has rekindled the curiosity of mathematicians and historians of mathematics for whom Bourbaki is part of a collective past. It is also safe to conjecture that a new generation of mathematicians may have been enlightened about the singular group through the reminiscences of their teachers who, themselves, were students during the heyday of Bourbaki.

<sup>13</sup> In his case study of the great French Bellevue magnet and the singular subcommunity of scientists that clustered about the giant instrument, Terry Shinn has shown that, although demarcation and differentiation—usually gained from public commemorations—are often necessary to strengthen authority and recognition, they may interfere instead with the fulfillment of this goal, while discretion and omnipresence might succeed. See his “L’Effet pervers des commémorations en science,” in Abir-Am, *La Mise en mémoire* (cit. n. 6), pp. 225–47.

since its main functions are to honor past or present protagonists, inveigh against opponents, and edify newcomers. What does it become, this act of commemoration, if there is no one to claim the status of heir and if contemporary issues leave little room for Bourbaki in either hagiography or condemnation? A commemoration would also be somewhat superfluous for a restricted group that, although self-aware in many ways, has not spent much time mulling over what its own history ought to be. So far, the group has neither written down its history nor chosen an official biographer from its ranks; only fragments of the past are featured in interviews, autobiographies, obituaries of former members, and public speeches given on the occasion of mathematicians' professional jubilees.<sup>14</sup> That the group still exists and attends to more pressing tasks is another explanation for the absence of standard celebrations. At this juncture, however, Bourbaki might have more to lose than to gain by drawing attention to itself and the singularity of its withered agenda.

Instead of having public celebrations and commemorations, the Bourbaki clan has deployed various devices for forging its own memory as well as the memories of several generations of mathematicians. Such memory-making procedures make up what I loosely call Bourbaki's "art of memory." Frances Yates defines art of memory as a procedure that "seeks to memorise through a technique of impressing 'places' and 'images' on memory."<sup>15</sup> Thus, an art of memory gives a set of tricks by which the mind can be trained to retain ideas or words that will henceforth produce a memory. Central to the technique is the art of identifying places—of making up a memory map or "memory palace"—and of creating strong visual images to attach to these places. In the Bourbaki context, the art-of-memory analogy has definite limits, however, since the devices they forged did not have the rote and rigor of mnemonics, nor were they intended for memorizing data with accuracy or for improving an orator's memory (the functions of the classical art of memory). Instead, they were mostly used to describe the group's activities and to constitute a group memory. As important ingredients in the group's identification process, these image-making devices emphasized continuity and repetition; some even clustered into genuine celebrations of the past, but none has yet served as a standard commemorative ritual.

## II. GROUP CHRONICLE AND GROUP MEMORY

Group memory, after all, is no more than the transmittal to many people of the memory of one man or a few men, repeated many times over; and the act of transmittal, of communication and

<sup>14</sup> Speeches delivered at the jubilees of Henri Cartan or Laurent Schwartz, for instance, and the obituaries of Claude Chevalley, Jean Delsarte, Jean Dieudonné, and André Weil unveiled fragments of Bourbaki's history. Individual testimonies of former members are found in: Armand Borel, "Twenty-five Years with Nicolas Bourbaki," *Notices of the American Mathematical Society*, 1998, 45, n. 3:373–80; Marjorie Senechal, "The Continuing Silence of Bourbaki—An Interview with Pierre Cartier, June 18, 1997," *The Mathematical Intelligencer*, 1998, 20, n. 1:22–8; Laurent Schwartz, *Un Mathématicien aux prises avec le siècle* (Paris: Éditions Odile Jacob, 1997); André Weil, *The Apprenticeship of a Mathematician* (Boston-Basel: Birkhäuser, 1992), which is the English translation by Jennifer Gage of *Souvenirs d'apprentissage* (Boston-Basel: Birkhäuser, 1991), also Weil's extensive comments in his *Oeuvres scientifiques*, 3 vols. (New York-Heidelberg: Springer-Verlag, 1979/1980). The death of André Weil (1998) has provoked a great number of articles by colleagues and fellow Bourbakis; these appeared as a series in the *Notices of the American Mathematical Society* (April 1999, 46:4, 6, 7) and in the *Gazette des Mathématiciens*, "André Weil (1906–1998): Adieu à un ami," Spring 1999, supplement to 80:13–35. More are forthcoming.

<sup>15</sup> Frances A. Yates, *The Art of Memory* (London: Routledge and Kegan Paul, 1966), p. xi.

therefore of preservation of the memory, is not spontaneous and unconscious but deliberate, intended to serve a purpose known to the man who performs it.  
—Moses Finley<sup>16</sup>

In so massive an undertaking as the writing of Bourbaki's *Eléments de mathématique*, with its incessant revisions and corrections of mathematical texts, details could be easily forgotten, lost in the intricacies of drafts and discussions. Memorable events nevertheless happened, and Bourbaki found chroniclers in its ranks to report on these, as well as on routine activities. Starting with accounts written in the plain style of minutes of meetings, in time the chronicle developed into a tapestry of fabulous stories that became more outlandish as the team's self-image became more clear.

While the classical principles of art of memory recommend that places of memory be organized, fixed, shorn of details, and made familiar in order to be easily grasped, they also stress how the images that stimulate memory must strike the imagination, arouse emotions, and excite the senses: they should be strong and sharp, strikingly beautiful or ugly, dramatic or even grotesque, comical or obscene; preferably, they should involve human figures in action.

Of all possible representations, the Bourbakian repertoire opted for the humorous and the ribald, on occasion ascending to the heroic contrasted with the loutish. Extraordinary characters, both real and invented, were skillfully put on stage on Bourbaki's private chronicle. Anecdotes merged strong visual images with playful stories, wordplay, and poems, which became set aids to memory as well as to group identification. Least of all was Bourbaki's "autobiographical" chronicle meant to inform readers about what had actually happened during meetings; this sterner duty was accomplished by the rosters of tasks, detailed corrections of texts, and lists of decisions that circulated internally along with the humorous narrative report. Although Bourbaki's chronicle is not the only way in which members recorded what happened, it nevertheless constituted the group's main testimonial, overriding and unifying other memory-making devices.

The team held an initial series of biweekly meetings in Paris during the academic year 1934–1935. Each record of these gatherings bears on its heading the date of the meeting along with the provisional designation "Analysis Treatise" or "Committee on the Analysis Treatise."<sup>17</sup> Beginning with its extended assembly at Besse-en-Chandesse in the summer of 1935, Bourbaki labelled each summer gathering—called "congresses" in the fashion of the numerous French political party meetings of the time—with the name of the place where it was held. In those days, shorter meetings took place throughout the year as well and their outcomes were briefly mentioned in the chronicle they called "Journal de Bourbaki." This newsletter, which circulated among members between 1935 and 1937, communicated organizational information as well as reports and drafts for the treatise.

The venues of the early congresses remained the landmarks of Bourbaki's initial work: in time, Besse (in Auvergne) and Chançay (in Touraine) became places of pilgrimage that Bourbaki members later visited whenever chance brought them in the vicinity, driven by their longing for the landscapes of Auvergne and their thirst

<sup>16</sup> Moses I. Finley, *The Use and Abuse of History* (London: The Hogarth Press, 1986, first published 1971), p. 27.

<sup>17</sup> The content of these initial meetings is described at length in Liliane Beaulieu, "A Parisian Café and Ten Proto-Bourbaki Meetings," *The Mathematical Intelligencer*, 1993, 15, n. 1:27–35.



for the wines of Touraine. In 1940, when Jean Dieudonné took on the task of reviving Bourbaki's prewartime newsletter, the first issues of "La Tribu" (subtitled "an ecumenical, deadbeat and Bourbakic bulletin") identified congresses by the date and the place where they were held.<sup>18</sup> During those years, Clermont-Ferrand was the site of several meetings, as it was then in the unoccupied zone of France and some Bourbaki members lived or taught in the area. Congresses were rare and scarcely attended during the Occupation—most were labelled "rump" congresses—and they remained so until hostilities ceased throughout Europe. After 1945 Bourbaki once again met more often, usually three (sometimes four) times a year, in some secluded spot in rural France. The places chosen for meetings varied over time according to the group's whim or the availability of youth camps, monasteries, resorts, or hotels.<sup>19</sup>

Whereas in previous years the congresses were simply named after the places where they were held, in the 1950s and thereafter, as Bourbaki became more nomadic (within French continental territory and, later, elsewhere as well), "La Tribu" began sporting subtitles that illustrated a theme of the congress and were dictated at the whim of the reporter. Thus, we find the "Public Bench Congress," the "Extraordinary Congress of Old Fogies" (when anyone over thirty could be called a foggy), the "Congress of the Motorization of the Trotting Ass" (an expression used to describe the routine unfolding of a mathematical proof or process), the "Moon Congress" (in reference to Sputnik), the "Congress of Jointly Algebrised Universities" (in October 1968, following the student revolt of May and the proliferation of jointly managed academic institutions), and so on. When the number of meeting places had increased, these subtitles served to typify particular congresses in the minds of the attendees and readers of "La Tribu." They were complementary mnemonic signs and condensed interpretations of events that gave each congress an extra, memorable saliency.

After the title piece, "La Tribu" usually listed the members present (some branded "nearly absent" for their ineffectualness), the guinea pigs, the visitors, special or foreign guests, sometimes the "extras" (wives and other ladies, children, local characters, farm animals), and the props: cars, bicycles, prams, magazines, binoculars, cough drops, gargles, aspirins, poultices, a particular backdrop, along with sundry objects that complemented the standard Bourbakian paraphernalia—the blackboard and its duster (sometimes called "the flying saucer"), seat cushions (usually called "fanny pads"), the odd chaise longue, etc. Bourbaki even once "borrowed" French poet Jacques Prévert's racoon for its own imitation of his famous poem "The Inventory" as these lists, with their overabundance of ill-assorted objects, were highlighted by a hint of the absurd or surrealistic.

The wordy heading was then followed by a melodramatic narrative—usually one to three pages long—depicting or inventing the most ridiculous situations of the congress. As the writer of the bulletin gave free rein to his imagination, we find stories of members roaring like wild animals and prostrating themselves whenever a train entered the nearby station—especially when it was the South-Express, which they had allegedly greeted at their first meeting and thereafter. The Bourbakis are

<sup>18</sup> The subtitle reads "*Bulletin oecuménique apériodique et bourbachique*" in the original French. I translate the idiosyncratic "*bourbachique*" as "Bourbakic," a choice that gives the flavor of the jargon invented by the group.

<sup>19</sup> Bourbaki's meetings and work are analyzed thoroughly in Beaulieu, *Bourbaki* (cit. n. 4).

depicted playing chess, but more often boules, table soccer, volleyball, or Frisbee; embarking with gusto on mountain hikes, bicycle excursions, or swimming expeditions; having fun in bumper cars or setting out on butterfly hunts or mushroom picking; or just sunbathing, dozing off with text in hand, stuffing themselves, and getting royally drunk on local wines, Armagnac, champagne, or rum toddies, depending on the time of year and the means of the group. A congress, it was said, was content so long as "food was plentiful and the sun was shining." When resources were scarce, anything else might be sacrificed but not the *bon vivant* eating choice foods and drinking good wines, activities in line with French tradition and raised to a Bourbakian duty. Wine, it was proclaimed, was the much-needed fuel of Bourbaki's cogitation. Once under the influence—according to "La Tribu"—inebriated members sometimes worked themselves up to a virile French *cancan* or a lascivious belly dance.

From such descriptions one might think the Bourbaki group rarely worked and always played. The deliberately laid-back attitude—a typically *normalien* pose—gave the impression of insouciant genius at its most youthful, spontaneous, and elegant: powerful genius, beloved of the gods, that despises hard graft and operates on effortless, even drunken, inspiration. Indeed, when the bulletin mentions time spent during a congress, it is to claim that Bourbaki is wasting its time or is finding it a drag, rarely that it is spending it wisely. Hence, the congress itself is often called "nilpotent" (which also refers to a mathematical property), members' heads are in a "state of total vacuum," and dubious regrets are expressed when "A gust of panic had spread through the Congress before it broke up . . . there would be nothing to read!" Any excuse was good enough to pretend that work is something to be put off and avoided at all costs: adverse weather conditions and ill health are repeatedly blamed for Bourbaki's inactivity. One meeting reportedly found itself in dire straits due to the participants' ill health as "the Fate of old age, infirmity and Armagnac was in the ascendant. Soon we had a concert of coughs, sneezes and handkerchiefs, a procession of warmly wrapped persons twisted with lumbago and sprains. Finding a reader with a clear voice became a problem."

Here, humor disguised rather than emphasized the distinction between the serious and the nonserious: the genuine work that went into composing the *Eléments de mathématique* was usually passed over in silence or mentioned with disdain. In contrast, the large number of lengthy drafts and detailed critical comments from the group's readings are undeniable evidence of a lot of toil. Bourbaki was, in fact, a hard worker, and the pressure scarcely ever let up. Even mealtimes were occasions for long, drawn-out discussions over mathematical subjects, among others. The humorous writing of the bulletin, then, systematically reversed the work-play ratio and, since fun is more apt to be memorable than routine intellectual activities, the prevailing impression of the congresses becomes one of entertainment and leisure.

Like most closed societies, Bourbaki created a lingo for all its levels of production, even for the most mundane aspects of its collective life. The name "Bourbaki" may denote a member of the group as well as the whole group; thus one finds expressions like "the Bourbaki so-and-so" used within the group (whereas a "Bourbakist" is an enthusiast of Bourbaki's ideas). An original adjective and a verb were also derived: "Bourbakic" (*bourbachique*) and "to bourbakize" (*bourbachiser*). Bourbaki even had its *Khanonical Bible* (sometimes written with this peculiar, emphatic *normalien* spelling); that is, the collection of already-published volumes of the

*Eléments*. Notifications to attend the congresses were called *Diktat* ever since the 1930s, when the German word often appeared in French newspapers as Germany protested against the *Diktat* of the Treaty of Versailles. “Diplodoci” (there were even “menageries of diplodoci”) were especially lengthy writing assignments; “sea monsters” were drafts that were long expected but had not materialized; and “carpets” were projects that their authors tenaciously defended. Many oft-used expressions, such as the untranslatable “*pôt*,” “*bonvoust*,” “*canuler*,” and “*tapiriser*,” come straight from the slang of their dear Ecole Normale Supérieure.<sup>20</sup> Even when the Bourbakis had not been students for a long time, they nevertheless remained *normaliens*, and references to the lingo of the Ecole Normale kindled within them a strong “old-boys” kinship while it immersed their ongoing work in the ever-juvenile world of overgrown *normaliens*. These verbal conventions, established through routine and time, acquire an evocative power and monitor set images within Bourbaki’s group memory.

Bourbaki also invented its own mathematical terminology by which external realities gave a down-to-earth flavor to technical terms. For their expositions on topological vector spaces and integration theory, the group invented terms such as “barrel” and “barrelled” space (from wine barrels), as well as “bornographic” space. Right modules and left modules were once renamed “starboardules” and “portsidules” in quasi-naval terminology, and the resonant “QUASIMODomorphisms” were once scrutinized during an Easter-break meeting. One finds “subversive mappings” in the theory of manifolds and “masterable spaces” (instead of measurable or metrizable spaces) in topology; a draft on sesquilinear forms proposes “sexylinear forms” and coins the novel “matrilinear” and “patrilinear” forms. These found their way into Bourbaki’s “terminology casket,” a list of imaginative terms suggested during a congress; some made it to final publication while most were kept strictly for ephemeral intramural use.

Bourbaki members often delighted in playing on the names of mathematicians, as in “hyperBORELic spaces” (after Emile Borel); elsewhere, some topologist suggested that congresses should henceforth be held in a luxurious “Hilton [referring to Peter Hilton] Hotel where one finds sphere bundles in every [Hermann] Weyl chamber.” Imitating a popular parody of Marxist convictions, an inspired participant proclaimed, “I am a Marxist with a Groucho leaning; I am a LAXist with a Peter tendency.” (Peter Lax is an American applied mathematician.) Judging the quality of its own witticisms (sometimes emphasized as Bourbaki’s “WITT,” after the name of yet another mathematician), one congress concluded that “Only the wordplay remained at the same level, but then it could hardly go any lower.” The Bourbakis relished their own jokes nonetheless and obviously drew much pleasure from the mental and cultural agility that the wordplay required and nurtured.

Among this exclusively male coterie there is always a good deal of blue humor. Not only would they often use the word “member” to refer to the *membrum virile* as well as to any Bourbaki, but the group’s comical memory arsenal is full of expressions in which mathematical terms are redeployed in suggestive ways. Different areas of mathematics and just about any situation could prompt the Bourbakis to

<sup>20</sup> Many of these, with some historical explanations, are found in Alain Peyrefitte, *Rue d’Ulm: Chronique de la vie normalienne* (Paris: Fayard, 1994 [revised and augmented edition of the ENS bicentennial]).

pass lewd comments. They complimented their colleague Henri Cartan, son of the famous mathematician Elie Cartan, on his own mathematical talent by saying that he “suckled differential geometry with his father’s milk” and they claimed that, after reading a suggestive movie magazine, Cartan tried to show the formula  $\text{Hom}(B, \text{Hom}(B, B)) = \text{Hom}(B \otimes B, B)$ , in which “B. B.” are the initials of famous French actress and 1950s sex symbol Brigitte Bardot and “Hom” (pronounced *’om* as in *homme*, the French word for man) designates, in mathematics, the homomorphisms—a special kind of mapping—of one set into another. In the same vein, one member once declared, “The spectral sequence is like the mini-skirt; it shows what is interesting while hiding the essential.” The relatively taboo nature of sex and its incongruous application to mathematics create the expected humor in these more or less risqué expressions. Belted out in the heat of argument or gleaned from an unravelling of events, the saucy phrases are meant to strike the imagination, especially when they later appear out of context as gems of the congresses and are retold among Bourbaki members. Their omnipresence nurtures the impression that the Bourbakis did not meet to slave, but chiefly to have a good sporting time among men.

Mathematicians, it is known, are somewhat given to humor and wordplay related to their trade. Journals such as the *American Mathematical Monthly* (organ of the serious Mathematical Association of America) and *The Mathematical Intelligencer*—both regularly read and contributed to by practising mathematicians—occasionally intersperse their articles with mathematical jokes, poems, or anecdotes. The Bourbakis distinguished themselves from this general practice, however, in that they systematically integrated humor as part of their internal *modus operandi*. The habit of intense intellectual game-playing in youth, and especially in their Ecole Normale days, lead the Bourbakis to regard humor as a superior habit of mind that they used as the main ingredient of their memory-making devices.

Serious matters and mundane occurrences constitute markers in Bourbaki’s time-keeping as well as favorite objects of derision. References to cultural or political news, in particular, provide additional, unusual temporal reference points in Bourbaki’s reports, especially when woven into sections dealing with strictly mathematical output. For many years Joseph Stalin was the butt of Bourbaki stock jokes. In 1936 the “Journal de Bourbaki” threatened the group with a Stalin-like five-year plan, claiming that “[Stalin] is very interested in Bourbaki and envisages applying a systematic five-year rationalization of scientific productivity according to the principles of historic materialism.” This was said in jest at a time when Stalin already ruled the USSR with an iron fist; the country was going through its second five-year plan and Stalin had ordered several purges. During World War II, Stalin took on the title of generalissimo of all the Soviet armies, and in 1945, after the victory of the Allies over the Axis, Bourbaki reported from its first “intercontinental meeting”:

Not to be outdone by other heads of state, the Congress decided at once, unanimously, to elect Bourbaki to the rank of generalissimo of the mathematical armies . . . and, in an order of the day addressed to all the faithful, solemnly announced that he will henceforth proceed only *from the generalissimo to the particular*.<sup>21</sup>

To “proceed only from the generalissimo to the particular” is a slight corruption of one of Bourbaki’s own rules of expository writing, “to proceed from the general to

<sup>21</sup> “La Tribu,” 1945, 8:1. From the papers of Jean Delsarte. My emphasis.

the particular,” as explained in the “Instructions to Readers” of the *Eléments* as of 1939.<sup>22</sup> As the whole group was meeting in 1945 for the first time in seven years, the phrase sounded like a battle cry.

Although Bourbaki is particularly interested in international news, French politics nevertheless finds many echoes in the group chronicle. When the French left won the elections that brought François Mitterand to the presidency in 1981, “La Tribu” hailed the event by pretending to rename left modules as “presidential-majority modules” and right modules as “departing-majority modules.” Although Bourbaki’s work, done behind closed doors, does not faithfully mirror current events in mathematics—a role that is better fulfilled by the public Séminaire Bourbaki—the outer mathematical world succeeds in obtruding into Bourbaki’s reports in various guises. When the Bourbakis were not making fun of category theory, nonstandard analysis, or catastrophe theory, they were attacking Benoit Mandelbrot’s fractals and, in line with the Bourbakian obsession with food, they considered, for instance, the “problem of confinement for fractal-like pancakes.” Bourbaki’s comments on current mathematical theories thus signal, indirectly, ongoing mathematical fashions.

Repeated allusions to the same subject over many years imprint the group’s memory relative to changes in its own goals and achievements. The intimate relation between algebra and analysis, in Bourbaki’s treatise, provide a reliable fall-back theme. Whereas at the first meeting in December 1934 Henri Cartan wanted “to eliminate algebra from the treatise,” it was reported in 1938 that “[Claude] Chevalley promises to push algebra until it’s flattened to the ground,” while the first part of the treatise was earning the subtitle “Fundamental Structures of Analysis.”<sup>23</sup> By 1940 it was said that “some fine minds are beginning to think that Bourbaki doesn’t want any algebra in its analysis treatise, which, all things considered, might not be a bad idea.” In the 1950s, while Bourbaki was working very hard on its algebra chapters, Dieudonné wondered “how can one say sensible things when one only does algebra” while another member queried “whether it is reasonable to go on much longer inserting analysis results in an algebra treatise” and someone declared “Analysis my arse, if we talk about it, it’s just to piss our readers off!” Humor notwithstanding, these lines show a change in the nature of Bourbaki’s opus: while the group had originally intended to write an analysis treatise, by 1940 the algebraic content of the work had expanded beyond the members’ expectations and they knew, by then, what puzzles for their expository writing lurked within algebra. In the 1950s Bourbaki had already published many volumes of its *Eléments* and continued to work on a treatise that presupposed a lot of algebraic material; consequently, the volume on algebra was becoming so weighty that the question arose of whether they should set a limit on it or leave it open to further additions, according to the needs of the overall presentation. In the 1970s, when analysis had taken quite a turn within Bourbaki’s enterprise, nonstandard analysis inspired the revealing notice that “timid attempts at

<sup>22</sup> N. Bourbaki, *Eléments de mathématique*, book I, *Théorie des ensembles: Fascicule de Resultats* (Paris: Hermann, 1939), p.v. (“N. Bourbaki” is the pseudonymic author [with no given first name] of the *Eléments de mathématique*, whereas articles, written by individual members and usually not discussed by the group, were published under the full name “Nicolas Bourbaki.” The full name also designates the legal association: Association des collaborateurs de Nicolas Bourbaki.)

<sup>23</sup> I discussed the changes from an analysis treatise to an algebra-based treatise in the 1930s in “Dispelling a Myth: Questions and Answers about Bourbaki’s Early Work,” in *The Intersection between History and Mathematics*, eds. Joseph Dauben and Chikara Sasaki (Basel: Birkhäuser, 1994), pp. 241–52.

nonstandard analysis were cut short . . . and it was noted that for Bourbaki, even the other analysis is not standard." In the 1980s, it was suggested—in jest—that the subtitle of the first part of the *Eléments*, "Fundamental Structures of Analysis," be replaced by "Fundamental Analysis of Structures" which, in the minds of some, had become a more fitting description of the nature and content of Bourbaki's oft-revised books. Returning to the same theme, the role and importance of algebra and analysis in the *Eléments* not only marks distinct periods in the work of Bourbaki, but also produces a strong effect of continuity above and beyond ruptures and variations.<sup>24</sup>

These various devices are not essential to Bourbaki's timekeeping, since meeting reports usually bear dates and enough details to retrace a chain of events. They contribute to a group memory mostly because they produce the kind of humor with which the Bourbakis identify. Yet one must bear in mind that, at any point in time, the group was working on many different topics, some of which were reworked over and again for more than two decades, and that the different chapters of the *Eléments de mathématique* and their respective revisions and updates were not published in order of volumes, but rather in order of readiness. Robert Merton has shown how scientists systematically forget past solutions to a problem and will either reinvent them from scratch or run into the same pitfalls as their predecessors.<sup>25</sup> Bourbaki is no exception to this mode of functioning, and coordinating Bourbaki's activities with current events adds signs of the times to the chronicle scripts that can, at some later date, revive some of the details in individual members' reminiscences.

Although there are no rules for adopting the minutes of Bourbaki's meetings, the stories in the chronicle nonetheless acquire legitimacy within the group because of their circulation and their use of abundant humor, Bourbaki's second-favorite mind game after mathematics. The accounts of meetings imitate the verbal form; they were written to be read and reread, and to provoke readers to laughter. Yet humor also sets limits on the memories that it jogs, as some of the jokes are so pointed and so closely tied to the particular circumstances of a congress that they are not understandable to those who were not present, or even to those who have not looked at old issues of the newsletter in some time. Because the accounts of meetings—and especially their narratives—help them recall the ever-good old days, some members keep only the narrative part of "La Tribu" in their personal papers. This is partly due to a practical measure by which, in order to save on costs, Bourbaki once decided to stop sending the full reports to its retired or former members, who henceforth began receiving only the narrative section. Thus, the humorous accounts become mementos that the Bourbakis keep, and read on occasion. The chronicle earns the equivocal status of true caricature of the group's activities: no matter how grotesque or extravagant the descriptions are, their vivid and facetious tone creates an illusion of reality, at least in the eyes of the Bourbakis. Yet humor masks, as well as marks, the anecdotes it chronicles: jokes revise the events they encapsulate and hilarious stories overtake what was lived, as they reorganize and mitigate real-world

<sup>24</sup> The quotations in this paragraph are found in, respectively, "Meeting of the 10/xii/1934," p. 2, from the papers of René de Possel; "Dieulefit," 1938, "Note," from the papers of Henri Cartan, "La Tribu," 1940, 4:2, from the papers of René de Possel; "La Tribu," 1955, 35:1, from the papers of Henri Cartan; "La Tribu," 1959, 47:2, from the papers of Claude Chevalley; "La Tribu," 1978, 102:1, from the papers of Claude Chevalley; "La Tribu," 1984, 120:1, from the papers of Samuel Eilenberg.

<sup>25</sup> Robert K. Merton, "Singletons and Multiples in Scientific Discovery: A Chapter in the Sociology of Science," *Proceedings of the American Philosophical Society*, 105, 5:471–87.

experiences. Bourbaki's group memory is not the collection of each and every member's own personal remembrances but, rather, a mediated set of recollections fixed by a chronicle that uses, over and over again, the same humor-based, memory-making devices.

### III. FOUNDERS AND FORERUNNERS

The competitive society celebrates its heroes,  
the hierarchy celebrates its patriarchs,  
and the sect its martyrs. —Mary Douglas<sup>26</sup>

Literary allusions seldom appear in Bourbaki's mathematical publications, but the group has often used such references within its chronicle. Several Bourbaki members were keen on literature, and some even enjoyed making up verses inspired by their reading.<sup>27</sup> Among the poems written by Bourbakis, some follow the rules of classical French versification without any other literary allusion, while others are not only composed according to accepted rules but also imitate the sounds and even the content of known poems; such verses I call "pastiche." A pastiche thus contains two levels of literary allusion: a formal level at which set rules are followed, and another level at which meanings collide between the source poem and its imitation. For their pastiches, the Bourbakis are particularly fond of La Fontaine, Racine, the Symbolists, and Mallarmé among poets of the past; Valéry and Prévert among contemporary writers. They have been making up pastiches since their *lycée* years, and this sort of literary virtuosity is very common among students at the Ecole Normale Supérieure; it is not surprising, therefore, that they turn to versifying to hail Bourbaki's accomplishments and evoke pictures from the past. The rhythm of verses composed in classical forms—sonnets or alexandrines (the quintessential French meter, according to some)—make the pastiches easy to memorize and recite, the more so as the imitated poems are already part of the Bourbakis' shared culture and are known by them all.

In her study of how Victorian scientists used literary sources, Gillian Beer remarked that:

Poetry offered particular formal resources to think with. Poetry works by cross-setting a considerable number of systems in simultaneity (natural speech word order, metric units, line units, grammatical units, cursive syntax—all play across each other). By means of metre in particular, and sometimes by rhyme, *the poet sets up multiple relations between ideas in a style closer to the form of theorems than that of prose.*<sup>28</sup>

In Bourbaki's circumstantial poetry, the grandiloquent tone and evocations of well-known poems create surprising, memorable simultaneities. Poetic forms sometimes lend their allusive power to self-critical expressions of difficulties in the collective work, but they also provide a formal idiom that suits Bourbaki's most extravagant hagiographic incantations.

<sup>26</sup> Mary Douglas, *How Institutions Think* (New York: Syracuse University Press, 1986), p. 80.

<sup>27</sup> Weil, for one, published two of his own poems in *Apprenticeship of a Mathematician* (cit. n. 14), p. 124. These had apparently not been circulated among Bourbaki members.

<sup>28</sup> Gillian Beer, *Open Fields: Science in Cultural Encounter* (Oxford: Clarendon Press/Oxford University Press, 1996), p. 210. My emphasis.

The first poem to be included in "La Tribu" evoked the founding and initial goals of the early group: the proto-Bourbakis, who had set out to revolutionize and recast the bases of university mathematics teaching in France by replacing Edouard Goursat's treatise on analysis (hitherto the standard text) with an up-to-date work, conceived and written collectively.<sup>29</sup> It also lauded one of Bourbaki's most noted successes, the first chapters on topology.

The Filter

O powerful, O formal, O Thou bright Bourbaki,  
Wilt Thou not tear for us in an impulse of rage  
The long-winded Goursat, mirror of Analysis,  
Belated defender of a past that is long gone?

The sequence of former days thought itself infinity,  
Useless, used without comprehension by  
The clumsy freshman, impressed by Valiron  
In his gloomy course, essence of tedium.

Ignorant of the secrets of Topology  
To space inflicted, and of Thee Who studieth it,  
He flounders in the error where his language is caught.

He views in stupefaction, as if drunk on a philtre,  
Closure, a mantle he has never grasped,  
Worn, in a compact space, immobile, by the FILTER.<sup>30</sup>

Pierre Samuel composed this pastiche of Stéphane Mallarmé's "The Swan" or "Sonnet in *i* Major" and gave it a title borrowed from the notion of filter, which Henri Cartan had invented during a Bourbaki congress in 1937 and which had been quickly used in the Bourbaki volume on general topology.<sup>31</sup> The words "space," "closure" (actually called *adhérence* in the original French, according to the name given to that notion by Bourbaki founder René de Possel), and "compact" all belong to the mathematical domain of topology. The unfortunate Valiron is a professor, first name Georges, who followed in the steps of Goursat at the Sorbonne and taught the

<sup>29</sup> The group's original goals, the standing of its members among other French mathematicians, and the content of the early meetings are studied in detail in Beaulieu, "A Parisian Café" (cit. n. 17) and in Beaulieu, *Bourbaki* (cit. n. 4), chap. 1.

<sup>30</sup> "La Tribu," 1945, 8:3. From the papers of Jean Delsarte; translation by Jill Corner. The original French text is in Liliane Beaulieu, "Jeux d'esprit et jeux de mémoire chez N. Bourbaki," in Abir-Am, *La Mise en mémoire* (cit. n. 6), p. 110. The full text appears in English translation here for the first time. In his *Apprenticeship of a Mathematician* (cit. n. 14). Weil quotes the last tercet only and briefly describes the Paris congress of 1945, on p. 190.

<sup>31</sup> In English translation, Mallarmé's sonnet "The Swan" reads as follows: "The virginal, vigorous and beautiful today, / Will it tear for us with a blow of its drunken wing / This hard forgotten lake haunted under the frost / By the transparent glacier of flights that have not flown! / A swan of former days remembers it is he who / Magnificent but without hope frees himself / Because he did not sing of the country in which to live / When the tedium of sterile winter shone. / Phantom whose pure brightness assigns it this domain, / It stiffens in the cold dream of disdain / That clothes the useless exile of the Swan. / His whole neck will shake off the white agony / Inflicted by space on the bird that denies it, / But not the horror of the soil in which feathers are caught." In *French Poetry from Baudelaire to the Present*, ed. Elaine Marks (New York: Dell Publishing Co., 1962), p. 95.

Cartan published two articles on filters under his own name: "Théorie des filtres" and "Filtres et ultrafiltres," *Comptes Rendus de l'Académie des Sciences de Paris*, 1937, 205:595-8 and 777-9, respectively. The concept of ultrafilter is a generalization of filter, suggested by Claude Chevalley, who renounced his intellectual rights over it.



students from the Ecole Normale Supérieure for many years; the basic course in analysis (which we would now call advanced calculus) that he gave in the 1940s was deemed traditional enough to deserve the same barbed criticisms that Bourbaki had once addressed to his master's work.

Composed by a newcomer to the group in 1945, a decade after the founding congress of Besse-en-Chandesse, this pastiche poem is commemorative in purpose: it linked the origins of Bourbaki to the present by conjuring up the spectre of enemies over which Bourbaki could triumph. It was also basically celebratory as it hailed the heroes of the past (namely, the founders of Bourbaki) and their battles, the expected success of their treatise, and the virtues of their new mathematics, which topology and the notion of filter represent. The poem's grandiloquent tone exhibits the customary Bourbaki playfulness, while its cleverness might have contributed, to a modest extent, to its author's social integration into the community: his mathematical talent and knowledge notwithstanding, Samuel was to become, for many years, Bourbaki's chronicler as the writer of "La Tribu's" narratives.

The summer of 1945 was a time for rejoicing since, at last, the end of the war enabled the team to start again. The group reunited for the first time since its interrupted meeting of September 1938, at the time of the Munich Pact. Weil had flown to Paris from Brazil, where he was teaching at the time, and when his friends Cartan and Delsarte learned of his arrival, they convened the rest of the group for an impromptu, though very well attended, meeting. Still mixing facts and fiction, the account of that meeting adds:

Our readers know how, after lengthy negotiations, the United Nations finally recognized Bourbaki and placed at his disposal a four-engine bomber to allow him to hold his first intercontinental Congress. Loaded with Weil and *coffee*, the plane crossed the ocean without mishap and deposited its valuable cargo in Paris on June 20th; forewarned, members were arriving in the capital, and began to get together by the 22nd. The only absentee was Ehresmann, who claimed to have papers to mark; to show its disapprobation, the Congress *forbade him fire and water for the following winter*.<sup>32</sup>

A vague allusion to meager or nonexistent rations of fire and water in winter refer to past and even present miseries, while coffee—still a rare commodity in France in the immediate postwar period—became the centerpiece of the report, and several members later remembered that meeting as the "Coffee Congress."<sup>33</sup>

All told, the chronicler as well as the poet remained silent about other realities, such as war and occupation, the lives of the Bourbakis who had known internment or exile or who had joined the resistance, been "Germanized," or remained neutral. This apparent obliviousness was—unwittingly, perhaps—along the lines of the official political commemorations taking place in France in 1945, which systematically shut off memories of the grim and shameful daily struggles of a vanquished people whose main victory had been survival.<sup>34</sup> Omitted also are Bourbaki's earlier stumbling pronouncements, the projects abandoned, the opportunities missed, and

<sup>32</sup> "La Tribu," 1945, 38:1. From the papers of Jean Delsarte. My emphasis.

<sup>33</sup> From my interviews with Henri Cartan (Paris, June 1986 and July 1992), Claude Chevalley (Paris, July 1983), Jean Dieudonné (Paris, July 1987), Pierre Samuel (Paris, July 1992) and André Weil (Princeton, N.J., May 1985).

<sup>34</sup> Gérard Namer analyzes the commemorations of 1945 in *Batailles pour la mémoire: La Commémoration en France de 1945 à nos jours* (Paris: Papyrus, 1983); see in particular p. 6 and pp. 13–141.

the departure of some disappointed or uninterested members. Overtaken by the prospect of a restored collective life, the poem and the narrative lines of the chronicle celebrate rather than retell Bourbaki's prewar years, expressing the hopes of the reunited team as it looked forward to a promising future as well as back on a glorified past. "The Filter" highlights the sweetest moments from Bourbaki's past while reinterpreting others; it depicts an heroic devotion to the Bourbaki cause, whereas in reality that supposed ardor had sometimes dwindled, and doubts had been openly expressed.<sup>35</sup> With some distance, the poem could thus evoke an embellished revolutionary past, still present in the guise of surviving heroes and enemies over which to triumph. A continuity of shared assumptions bridged any gap between former goals and the tasks at hand which the older members were then passing on to a new "generation". This was readily becoming the group's official past, the one that Bourbaki members could celebrate spontaneously and in unblemished unanimity; this chosen past, in which they all recognized themselves, was stamped on the memory they were building.

Another pastiche sonnet emphasizes, instead, a continuity between Bourbaki, its achievements, and a history of mathematics harkening back to ancient times. Here the poetic model itself moves along a generational line, as it borrows from one of Mallarmé's disciples, Paul Valéry.

#### Bourbaki

(by Anna of Noailles and Paul Valéry, discovered by L. Sartre)

On thy high forehead lit by a lightning flash  
We read that Euclid was thy brother, Thales thy cousin.  
Thy gods, in Crete and the Isle of Aegina,  
Fail not to give thy vine abundant grape.

We see the backbone of the haughty unbeliever  
Bleaching defeated on the reconquered fields  
Of the divine Absolute whose Algebra Thou defendest,  
And thy estate, Bourbaki, is a holding truly won.

Thou knowest all the riddles of Space and Time,  
And yet I tremble on seeing that Thou canst,  
Unaware of a winged presence hovering near,

Without a blink or a tremor in thy compass,  
Glimpse in the same skies scanned by Zeno of Elea  
An arrow that flies and yet that does not fly.<sup>36</sup>

The sonnet begins with a genealogy: Bourbaki descended from the ancient Greeks, the giants of pure mathematics on whose shoulders was erected the edifice of "THE"

<sup>35</sup> These are discussed in Beaulieu, *Bourbaki* (cit. n. 4), chaps. 1 and 2.

<sup>36</sup> "La Tribu," 1953, 30:2. From the papers of Pierre Samuel; translation by Jill Corner. The original French poem features in Beaulieu, "Jeux d'esprit" (cit. n. 30), p. 112. The text appears in English here for the first time. The last strophe contains a pastiche of the following stanzas from Valéry's *Cimetière marin*: "Zeno! Cruel Zeno! Zeno of Elea! / Have you pierced me with the winged arrow / That vibrates, flies and does not fly! / Sound engenders me and the arrow kills me! / Ah! the sun . . . what a tortoise's shadow for the soul, / Achilles motionless with his giant stride!" In Marks, *French Poetry* (cit. n. 31), p. 159. The poem is said to have been written "by" (that is, in the style of) Paul Valéry and Anna, Countess of Noailles, who themselves often incorporated references to ancient Greece in their work; the countess claimed to have Cretan ancestors and the second quatrain adopts her style. Louis Sartre is a French mathematician who was not a member of Bourbaki.

mathematic, of which algebra constitutes one of the cornerstones. More specifically, the poem compares Bourbaki's expository work and Euclid's great compendium, itself possibly a collective endeavour. "Euclid", then, and "Thales" stand for Bourbaki's remotest historical antecedents and, for mathematicians, the nearest to gods are the great mathematicians of the past—the more remote they are, the greater. Bourbaki liked to believe that its own story stretched over centuries, going back to the beginnings of Western culture and to the initiators of mathematics, the Greeks, with whom—in the group's own mind—Bourbaki shared not only an ambitious vision but also the very essence of mathematics, pure and eternal.<sup>37</sup>

More subtle, and apparent only to initiates, is the allusion to the Cretan origins of one Nicolaïdes-Bourbaki, diplomat by profession and legitimate member of the family of General Charles Denis Sauter Bourbaki—whose family name the group had "borrowed"—who tracked down the team in 1948, thinking the author might be a distant cousin. On that occasion "La Tribu" had insisted that Bourbaki's Cretan background had nothing to do with any suggestion of paradoxes or untruthfulness—as in the case of Epimenides, the Cretan liar—it was made clear that "our Master's ancestors did not include an Epimenides or any other Cretan type-scrambler."<sup>38</sup> Imitating a passage from Valéry's *Cimetière marin*, the last two strophes of the poem proclaim Bourbaki's indifference to the paradoxes of set theory and, with irony, they celebrate Bourbaki's relative triumph over famous paradoxes: in choosing the concept of structure defined on a hierarchy of types of sets, Bourbaki had eluded set-theoretic paradoxes and the risks of contradiction they brought. Bourbaki's attitude towards the paradoxes also demonstrates confidence in the noncontradiction of set theory and of other mathematical theories that depend on it, as well as hope in the possibility of overcoming any eventual contradiction.<sup>39</sup>

When, in 1953, Bourbaki rallied the spirits of noncontroversial, long-dead mathematicians to furnish its genealogy, it was experiencing a serious break with its own immediate past. A controversy over category theory had begun within Bourbaki, and the unity of the *Eléments*, as well as the future of the project, were somewhat in jeopardy. It was not clear to the Bourbakis then how the concept of structure (based on the notion of set) and that of category could coexist in the treatise, which was supposed to lay down solid, coherent foundations and display a strong, unitary approach. Favoring structures over categories seemed to overlook much of recently developed mathematics, whereas choosing categories implied rethinking the whole edifice of the *Eléments*; mixing the two approaches challenged the unity of the math-

<sup>37</sup> A standard picture of the history of mathematics places its origins in Hellenistic Greece, a view which Bourbaki does not support blindly in the historical essays of the *Eléments de mathématique* but nevertheless endorses in the general introduction to the *Eléments*. The Hellenocentric view of the origins of Western science and mathematics has often been challenged; see *Isis*, 1992, 83:547–607 (special section) for an update of the controversy and its historiography.

Leo Corry discusses Bourbaki's claim to eternal mathematical truth in "The Origins of Eternal Truth in Modern Mathematics: Hilbert to Bourbaki and Beyond," *Science in Context*, 1997, 10, n. 2:253–96.

<sup>38</sup> "La Tribu," 1949, 17:1, and "La Tribu," 1950, 22:2–3; both from the papers of Henri Cartan. The group and its publisher, Enrique Freymann (director of Hermann in Paris) even entertained the diplomat and his family on Easter Monday while they were at congress at the Royaumont Abbey. Weil tells the story of the diplomat and gives a brief account of the hapless general's genealogy in *Apprenticeship of a Mathematician* (cit. n. 14), p. 107.

<sup>39</sup> See N. Bourbaki, *Eléments de mathématique* (cit. n. 22), book I, *Théorie des ensembles*, chaps. I–II (1954), introduction, pp. 7–9.

ematics thus presented. Bourbaki finally opted for structures, but was forced to abandon some of its ambitious comprehensiveness and even much of the unity it had once hoped for. While seeking an optimal solution in 1953 to this budding controversy—which continued for well over a decade—the group summoned the voices of its patriarchs as if to recast its present and recent past into the frame of a myth of origins, one in which time immemorial meets a Bourbaki-construed tradition.

Bourbaki's casting of its founders and forerunners thus had consequences for the present: it gave a particular portrait of the group, its standing in the field of mathematics, and its place in history. "The Filter" celebrated the heroes of Bourbaki's early years while the Greek poem hailed the patriarchs of a triumphant team. Initially the proto-Bourbakis had hoped their treatise on analysis would allow them to control "for twenty-five years" the teaching of differential and integral calculus at the undergraduate level; by 1945, Bourbaki already saw itself as a competitive society. Later, in the 1950s and 1960s, the group reached far beyond its initial goals: the *Eléments de mathématique* acquired an international reputation and Bourbakis stormed the French university system and the leading Parisian schools at which Henri Cartan, Laurent Schwartz, Roger Godement, and Jean-Pierre Serre, among others, held key positions. At the same time, the work of Bourbaki members Armand Borel, Alexandre Grothendieck, Pierre Samuel, and Jean-Pierre Serre was impressing mathematicians worldwide and receiving official recognition. In addition, the founding members, for their part, were still publishing notable work and spreading their ideas across the world. The Séminaire Bourbaki had become the most famous in France and in the rest of the mathematical world, and it dictated mathematical fashions. In 1953 Bourbaki had started to control the field of mathematics and, like any hierarchy, it celebrated its patriarchs. Thus, the lofty images in the poems not only "propagated the illusion of a common memory" within the Bourbaki group but also symbolized the leading position that Bourbaki hoped to hold—and did hold for some time—in mathematics, as well as the high profile it wished to stamp on history.<sup>40</sup>

#### IV. RAGS AND RELICS

A jest's prosperity lies in the ear  
Of him that hears it, never in the tongue  
Of him that makes it. —William Shakespeare<sup>41</sup>

Not content with forming an original team, the Bourbakis also played at being naughty boys—even when well on in their careers—thumbing their noses at the mathematics establishment or indeed at everyone who was not Bourbakist. Their pranks took their cue from the folklore of the Ecole Normale, where ragging was an everyday event, even more a part of *normalien* customs than at other leading French schools.<sup>42</sup> A good rag (*canular* in French) is as public as possible; its aim is to mock a particular authority figure, be that a politician, writer, scientist, the students of another elite school, or even the general population; the success of the

<sup>40</sup> The quote is an expression borrowed from James E. Young, "Ecrire le monument: Site, mémoire, critique," *Annales ESC*, May-June 1993, n. 3:736.

<sup>41</sup> William Shakespeare, *Love's Labor's Lost*, act V, scene 2.

<sup>42</sup> On the subject of rags, and especially political rags, in *écoles préparatoires* and at the Ecole Normale Supérieure between the two world wars, see Jean-François Sirinelli, *Génération intellectuelle: Khâgneux et normaliens dans l'entre-deux-guerres* (Paris: Fayard, 1988).

exercise is measured by the length of time the hoax goes undisclosed. More than any other form of joking, a rag expresses scorn towards power or authority that the perpetrators lack or do not yet possess, and it procures an acute sense of superiority over the victim. As Bourbaki's domination spread through the mathematical field, so the targets of Bourbaki's hoaxes proliferated.

Bourbaki's first public gesture was a rag, the long-term effects of which were perhaps even more significant than its initial impact. Once formed, the group had decided that the best way to announce its existence was to publish an article on mathematics. At the end of the summer of 1935, after their first general meeting, the members agreed to publish a text under a pen name, to appear as a note in the prestigious *Comptes Rendus des Séances Hebdomadaires de l'Académie des Sciences*.<sup>43</sup> André Weil wrote the article, and approached the academician Elie Cartan—whose son Henri was in the group—to ask him if he would present it signed, pseudonymously, “Nicolas Bourbaki.” As the academy required each article to be accompanied by a biographical note on the author, Weil wrote the following lines to Elie Cartan:

Dear Sir:

I enclose for the C. R. a note that M. Bourbaki has asked me to send you. As you know, he is a former lecturer at the Royal University of Besse in Poldavia whom I met some years ago in a café in Clichy, where he spends most of the day and much of the evening. Having lost not only his job but almost all of his money during the troubles that have wiped the unfortunate country of Poldavia off the map of Europe, he now earns his living in this café by giving lessons in *belote*, a card game at which he is a master. Although he claims to be no longer concerned with mathematics, he has nevertheless been willing to discuss a few important questions with me, and even to let me look at some of his papers. I was able to persuade him, just as a start, to publish the enclosed note, which contains a very useful result for modern integration theory. . . .

Please accept the thanks of both Mr. Bourbaki and myself. I remain, as always, yours truly with respect and affection. [signed] André Weil<sup>44</sup>

The “Royal University of Besse in Poldavia” was pure fantasy on Weil's part, but it was at Besse-en-Chandesse that the congress of summer 1935 was held. Poldavia was the imaginary martyred country invented in 1929 by Alain Mellet and his colleagues at *L'Action Française*—the organ of a right-wing movement—to puzzle radical deputies—leftist politicians whose political support was mainly rural at the time—and to denounce their gullibility and negligence by making fun of it. Clichy, where the old mathematician is said to have given lessons in playing-card games, is a proletarian suburb of Paris; it was common to find there Eastern European émigrés mixed with Armenians, Gypsies, and poor French workers in shanty *bistrots* where *belote* contests were the going fare.

The character of the foreign mathematician took its first inspiration from an old *normalien* hoax to which some of the future founders of Bourbaki (namely, Cartan, Dieudonné, and de Possel) had been subjected in 1923 as part of their freshmen initiation at the Ecole. Their class had been summoned to attend a talk delivered by

<sup>43</sup> At the time, one could get a note published in the *Comptes Rendus* quite easily and quickly by sending it to an academician. If the academician deemed it worthy of publication, he would read it to his peers and soon after, the note would be published. This procedure dated back to the founding of the *Comptes Rendus* by the physicist François Arago.

<sup>44</sup> The full original French text is in Beaulieu, “Jeux d'esprit” (cit. n. 30), p. 92. The quotation appears here in English for the first time. From the papers of Claude Chevalley.

one Professor Olmgren—really an older *normalien* in bearded disguise—who spoke on mathematics with a nondescript foreign accent, starting with real mathematics and ending in sheer nonsense in which theorems were named after different French generals (including a “theorem of Bourbaki”). The talk had been delivered in a tone that mocked the captain who, at the time, dispensed military training to unruly *normaliens*, who took pride in despising the military. While he was in India in the early thirties, before the Bourbaki venture was launched, Weil still relished the joke and suggested to his Indian colleague and friend, the mathematician Damodar Dharmanand Kosambi, that he refer to the then nonexistent work of a dead (and imaginary) Russian mathematician named “D. Bourbaki” in an otherwise serious mathematical article; the hoaxing reference was intended to confound one of Kosambi’s pretentious rivals.<sup>45</sup> Thus, Bourbaki’s first rag built upon a whole series of others, which it prolonged and recalled.

Weil’s article—but not his letter—soon appeared in the august columns of the Académie, under the title “On a Theorem of Carathéodory and Measure in Topological Spaces” and signed Nicolas Bourbaki.<sup>46</sup> This text, which contained nothing but genuine mathematics, was the first hoax played by Bourbaki, as a group, at the expense of outsiders, who in this instance were certain members of the Paris Académie des Sciences and, indirectly, the readers of the *Comptes Rendus* at large. In the interwar period it was fashionable among rising stars in letters or sciences to decry the stifling authoritarianism of the academicians who reigned supreme over French literature and science. The Académie des Sciences of the Institut de France, then, symbolized a power that these “young Turks” did not yet hold in their hands. These academicians, however, no matter how smug and staid they might have appeared, were nonetheless mostly old *normaliens* themselves, and Weil’s signature alone—Weil was already well known in Parisian mathematical circles—must have made them smell a rat, even without the ludicrous reference to *belote* lessons in Clichy. It seems unlikely, therefore, that men like Gaston Julia (then recently elected to the geometry section of the Académie des Sciences), Jacques Hadamard, Emile Borel, and Elie Cartan—all of whom supported the members of the nascent Bourbaki group and had doubtless already heard of the group’s existence, even before they knew its name—were really fooled by Bourbaki-Weil, however sleepy they might have felt after the copious lunch during which this letter was read, according to Weil’s own account.<sup>47</sup> Moreover, Elie Cartan probably told his fellow diners part of the situation. At least, they were tolerant enough of these goings-on to allow another article by “Bourbaki”—this time from the pen of Dieudonné—to appear in the *Comptes Rendus* in 1938, even before the Bourbaki team had published any part of its treatise.<sup>48</sup> Bourbaki staged, and later retold, the *bons coups* of its revolutionary days, when the highest-ranking French mathematicians were its main targets.

The creation of Bourbaki and the idea of an outlandish pseudonym induced a

<sup>45</sup> See Pierre Dugac, “Notes de la rédaction,” *Cahiers du Séminaire D’histoire des Mathématiques de l’Institut Henri-Poincaré*, 1986, 7:222, footnote 3; Weil alludes to this story in *Apprenticeship of a Mathematician* (cit. n. 14), p. 101. The full story of the pseudonym is told and analyzed in Beaulieu, *Bourbaki* (cit. n. 4), chap. 4.

<sup>46</sup> *Comptes Rendus*, 201:1309–11.

<sup>47</sup> Weil, *Apprenticeship of a Mathematician* (cit. n. 14), p. 106.

<sup>48</sup> “Sur les Espaces de Banach,” *Comptes Rendus*, 1938, 206:1701–04. The first fascicle of the *Éléments de mathématique* was published in 1939.

group of mathematicians at Princeton University to carry out their own hoax. Among them were postdoctoral fellows Ralph P. Boas and John Tukey, and the English mathematician Frank Smithies, who were visiting Princeton in 1937–1938. Together they revived an old Göttingen joke by developing a number of mathematical methods for lion hunting. They published their inventions, allegedly devised by one H(ector) Pétard—alias H(oist) W(ith) O(w)n) Petard—who was writing under the pseudonym of E. S. Pondiczery.<sup>49</sup> Pétard's existence was asserted by the publication of a spirited article on lion hunting ("A Contribution to the Mathematical Theory of Big-Game Hunting") in the *American Mathematical Monthly*.<sup>50</sup> That group wrote the notes of a course given at Princeton by one of the professors, but had no long-term mathematical project in common. They had learned about Bourbaki from Weil himself, who had visited Princeton the same year, and their play with pseudonymity evidently mimicked the original Bourbaki hoax. The lion-hunt theme later inspired a series of articles written by various authors between 1965 and 1985.<sup>51</sup>

In line with the Pétard joke, there followed yet another Bourbaki-related jape. When Boas visited Smithies in Cambridge during the Easter break of 1939, they met André Weil, his wife Eveline, Claude Chabauty (then a recent Bourbaki recruit), and Louis Bouckaert (from Louvain). In the course of conversation it was lightheartedly suggested that a marriage be arranged between Hector Pétard and Betti Bourbaki, daughter of Nicolas. The company wrote up a wedding announcement to be printed in the conventional French fashion. Weil even had calling cards printed in the name of Bourbaki.<sup>52</sup> The Princeton-Cambridge gang, together with other mathematicians who were in on the Bourbaki-Pétard joke, received the wedding invitation that read in part as follows:

NICOLAS BOURBAKI, Canonical Member of the Royal Academy of Poldavia, Grand Master of the Order of Compacts, Conservator of Uniform Spaces, Lord Protector of Filters, and his spouse, née BIUNIVOQUE, have the honour to invite you to the wedding of their daughter BETTI to HECTOR PÉTARD, Associate Administrator of the Order of Induced Structures, Chartered Member of the Institute of Class-Field Archaeologists, Secretary of the Lion's Penny Charity Fund . . .<sup>53</sup>

The style is conventional of good society, and the invitation constitutes a parody as it mocks the customs of that society. Allusions are made to the Princetonian hoax, and the text presents many examples of the sort of mathematical wordplay in which Bourbaki—and especially Weil—delighted. Similar terms are found again in a 1948 issue of "La Tribu" in which all of Bourbaki's invented titles are enumerated.

<sup>49</sup> According to Smithies, these initials were made up from Shakespeare's line "For 'tis the sport to have the engineer, hoist with his own petard . . ." *Hamlet*, act III, scene IV.

<sup>50</sup> *American Mathematical Monthly*, 1938, 45:446–7.

<sup>51</sup> The articles are reproduced in *Lion-Hunting & Other Mathematical Pursuits: A Collection of Mathematics, Verse, and Stories by Ralph P. Boas*, eds. G. L. Alexanderson and D. H. Mugler, vol. 15 of Dolciani Mathematical Expositions (Washington: The Mathematical Association of America, 1992).

<sup>52</sup> According to Frank Smithies, "Reminiscences of Ralph Boas," and Ralph P. Boas, Jr., "Remarks: Memorial for Ralph P. Boas, 9 October 1992" in Alexanderson and Mugler, *Lion-Hunting* (cit. n. 51), pp. 25–31 and pp. 32–5 respectively. André Weil tells his version in *Apprenticeship of a Mathematician* (cit. n. 14), p. 139.

<sup>53</sup> Smithies, "Reminiscences of Ralph Boas," p. 28. The complete original French text of the wedding invitation is reproduced in Beaulieu, "Jeux d'esprit" (cit. n. 30), p. 95.

We, Nicolas Bourbaki, Lord Protector of Filters, President of the Order of Induced Structures, honorary member of the Order of "Class-Filed Archaeology"—given the extreme pain caused us by seeing, among the European faithful, the most obvious signs of quarrels, schisms, discord, litigation and disagreement—enjoin our wise and beloved faithful in America to restore peace, order and good government among their more easterly brethren.<sup>54</sup>

Here, the Bourbaki group reveals its difficulties on a screen of humor. The "American faithful" were mainly André Weil and Claude Chevalley, who were at the time in the United States but were nevertheless asked for their opinions on some particular question.

Once more, in 1968, "La Tribu" recalled the lion-hunting technique and applied it to the group's current work. Repetition and overstatement are essential to memory-making. "The algebraists have invented a new method for lion-hunting: in the virgin forest there are free lions; we take their inductive limit and thus obtain a flat lion which can be used as a bedside rug."<sup>55</sup>

Within the group the wedding announcement, Bourbaki's calling card, and Weil's letter all ended up being souvenirs. In the 1950s some members who had joined after the war even asked for a second printing, so that they, too, could take part in the hoax of purported Bourbaki's rebellious days. Weil's letter was retyped and deposited with the archives of their publisher Hermann and with the Bourbaki secretary; copies of it were sent to members along with copies of letters that had been addressed by mathematicians—some of whom were in on the joke and others who weren't—to "Monsieur Bourbaki." In those days, Bourbaki's calling card was still sometimes sent along with complimentary copies of fascicles of the *Eléments* (see Figure 1). The joke was still extant and Weil's letter, the wedding invitation, and the business card became relics of times past, known to new Bourbakis only through the riotous stories and comic reminiscences of their elders.

Meanwhile, the hoax leaked outside the Bourbaki group and its tightly knit society of friends and official foes. An application for individual membership, twice sent by Bourbaki (Weil again) in 1947 to the secretary of the distinguished American Mathematical Society (AMS), is one of the better-known jokes that kept the Bourbaki myth alive among mathematicians in the Americas. The applications, made public within the council of the society, triggered indignant letters from American colleagues and Bourbaki finally met with a refusal: the AMS secretary suggested that an application for an institutional membership might meet with more success, but Bourbaki held on to its identity as an individual and never joined the society. In the United States, where in principle there are few hierarchies, some scholars were outraged that their high-minded national organizations were being derided by foreign mathematicians who seemed to delight in puerile behavior.<sup>56</sup>

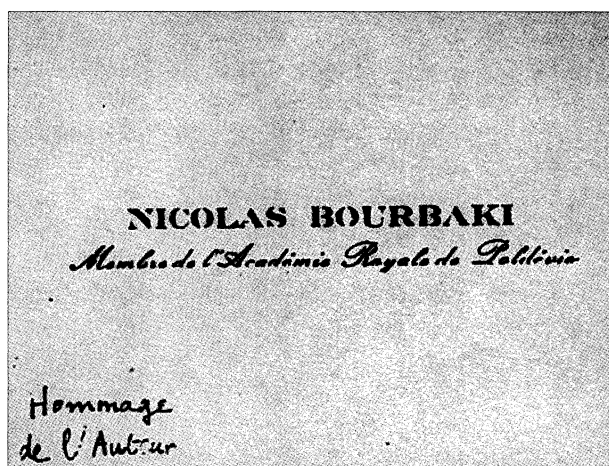
Yet the hoax had not run its course; throughout the 1950s and 1960s—as Bourbaki's fame and production reached their acme—imitations, extensions, and recollections of the original rag abounded, some finding their way into mathematical organizations or even the newspapers. In 1968, French mathematician Jacques

<sup>54</sup> "La Tribu," 1948, 15:19. From the papers of Henri Cartan.

<sup>55</sup> "La Tribu," 1968, 73:1. From the papers of Claude Chevalley. By then, the *American Mathematical Monthly* had published yet another article on lion hunting.

<sup>56</sup> The incident is discussed at length in Beaulieu, *Bourbaki* (cit. n. 4), chap. 5.





*Figure 1. One of Bourbaki's relics: Nicolas Bourbaki's calling card. The card was first printed in Cambridge in the summer of 1939 by André Weil. It was later used by the editor and by Bourbaki's secretary when sending complimentary copies of the volumes of the Elements. This sample was found among mementos that Marshall H. Stone brought back from his trip to France in 1951. Courtesy of Brown University Library.*

Roubaud—who was not a member of Bourbaki, but who belonged to the Bourbaki-inspired literary circle Oulipo—printed a formal death announcement of Bourbaki, which he distributed during a session of the Séminaire Bourbaki. This parody of the old wedding invitation reads in part as follows:

The Cantor, Hilbert, Noether families;  
 The Cartan, Chevalley, Dieudonné, Weil families;  
 The Bruhat, Dixmier, Godement, Samuel, Schwartz families;  
 The Cartier, Grothendieck, Malgrange, Serre families;  
 The Demazure, Douady, Giraud, Verdier families;  
 The Right Filtering families and the Strict Epimorphisms;  
 Miss Adèle and Miss Idèle,  
 regret to inform you of the death of Mr.

NICOLAS BOURBAKI

their father, brother, son, grandson, great-grandson, and second cousin  
 respectively, [who] passed away in a state of grace on November 11, 1918 [sic 1968]  
 (Armistice Day) at his home in Nancago. . . .<sup>57</sup>

To a recent mathematical genealogy—German mathematicians Georg Cantor, David Hilbert, and Emmy Noether—the author added a lineage containing representatives of each generation of Bourbakis, from the founding fathers to the latest newcomers.<sup>58</sup> Like the wedding announcement—which doubtlessly inspired it—the death announcement is an imitation of Bourbaki folklore. It even features Bourbaki's cherished “Nancago,” a name invented by Weil and Delsarte from the combination of NANCy—where Delsarte had lived, taught, and administered Bourbaki's

<sup>57</sup> From the papers of Henri Cartan. A photograph of the full French version of this (false) death announcement is included in Beaulieu, “Jeux d'esprit” (cit. n. 30), p. 117.

<sup>58</sup> With one exception: J. Giraud had been a Bourbaki guinea pig and a guest but he was not, to my knowledge, a member of Bourbaki.

business—and ChiCAGO—where Weil was posted for a long time—for Bourbaki's imaginary, yet official university affiliation. In fact, the group had not stopped working at all: the false death announcement was a metaphor, just another hoax perpetrated by someone who had become critical of the group and its dominant role in French mathematics. Reading this anti-relic, as it were, some of the Bourbakis, it is said, tried to deny its murderous suggestion, claiming that the text of the announcement was neither witty nor well written. The counterhoax nevertheless shows that, in the 1960s, Bourbaki was already stepping on the other side of the looking glass.<sup>59</sup>

Still extant, the group continued to provoke interest and controversy until the late 1970s, as long as it functioned like a tyrannical religious leader, hurling anathemas and imposing *nihil obstat*s. Among the mobs of non-Bourbakis the hoax of the pseudonym gave birth to others; countless anecdotes told how some people were taken in by the ambiguity between the famous and unique “N(icolás) Bourbaki” and the cohorts of his devoted, anonymous collaborators. For their part the presumed members, when questioned, claimed to be bound to silence by a heavy vow, as if they belonged to some secret society, or else they said “Bourbaki does not like people talking about him.” In the 1970s stories about Bourbaki were still going the rounds, and they were highly successful, especially with junior mathematicians and students. If the *enfant terrible*, in its earliest years, did not entirely dupe the old academicians, it still mystified generations of apprentice mathematicians with a running gag. Like so many fabulous adventure stories, Bourbaki's rags were peddled like good news and exaggerated by the whole mathematical village. Even when Bourbaki was no longer at the height of its glory, the tales of its earliest battles, presumed victories (supposedly still fresh), and arcane activities found an audience that was eager to be initiated into the guru's teaching. While some did not appreciate this sport, others submitted to it as to a series of tests, the secret meaning of which they would gradually grasp. Collecting scraps of anecdotes, they could imagine themselves approaching the Holy of Holies, the mathematics star who, although he was not inviting them to the banquet, nevertheless allowed them a few leftovers.

The original rag had been successful, especially as an apparent triumph about which to crow, and its long-term effects have quite superseded the initial intention and reaction. Since the pen name cloaked the authors' identity, many mathematicians were puzzled by this equivocal being, whom rumor described as either an organization or “a many-headed mathematician,” and they were often unaware of the identities of Bourbaki's collaborators. The Bourbaki hoaxes belittled those who were taken in by them, and equally subjugated those who asked for more. Each new joke reinforced, for some, a belief in the power of some elusive mathematician(s) and an acceptance of their views. For others, those in the know, it kindled a sense of belonging to the chosen few, the leaders of a pack of mathematicians who could abuse others. Even when intended as critical retaliation, Bourbaki-related jokes underscored the rigid hierarchy that prevails among mathematicians, where a deep

<sup>59</sup> In the third volume of his autobiographical trilogy, Jacques Roubaud only alludes to the circumstances of his hoax whereas he recalls, with detailed and perspicacious reflection, how he became a mathematician and a follower of Bourbaki in the heyday of the group; see Jacques Roubaud, *Mathématique: Récit* (Paris: Seuil, Fiction & Cie, 1997); the allusion to the hoax is on p. 148. David Aubin discusses aspects of the rise and fall of Bourbaki in “The Withering Immortality of Nicolas Bourbaki: A Cultural Connector at the Confluence of Mathematics, Structuralism, and the Oulipo in France,” *Science in Context*, Summer 1997, 10, n. 2:297–342.

division separates the best from the mediocre, those who know from those who do not. Indeed, the prosperity of Bourbakian jests lay in the ears of those who heard them, identified with them, and submitted to them. Thus was forged one of the grandiose figures in what may be called the “collective memory” of twentieth-century mathematicians.

### V. TERTIUM QUID

The staging of practical jokes also depended on the supposed agency of the elusive Nicolas Bourbaki. On the memory side of identification, the “core meaning of any individual or group identity, namely a sense of sameness over time and space, is sustained by remembering; and what is remembered is defined by the assumed identity.”<sup>60</sup> A core sameness lies at the intersection of the various images that are deployed by the Bourbaki group to depict itself as a whole; the Bourbakian art of memory supported and strengthened this sameness.

From the start, the group or its self-appointed tricksters used the postulated existence of an eccentric mathematician. Maverick and antihero, the persona of the forlorn mathematician indicates how Bourbaki, in its earlier days, depicted itself as a pariah, both to its members and to outsiders. As a group, Bourbaki thus remained apparently—though not actually—rebellious and marginal, even though its members were themselves far from being so. The collective cultivated the posture of a sect, even as it achieved celebrity and widespread influence within the field of mathematics. The strategy was not exclusive to Bourbaki, however; other groups in France, such as the Durkheimians in sociology and later the *Annales* group of historians, among others, had depicted themselves as marginal or even as pariahs in the combative rhetoric of their early days and thereafter.<sup>61</sup>

Within the Bourbaki precinct the entity named “Bourbaki” took on other shapes and meanings as well. A striking representation of the group, its structure, and its functions emerged in the first issue of Bourbaki’s internal newsletter, then called “Journal de Bourbaki.” The sentence that frames the function of the “Journal” reads, “To establish by all effective means an intimate connection, a true, vital and concrete communion among the various members of the *body* of Bourbaki.” The components of such a body are further detailed in rubrics: limbs, brain, nerves, and stomach all make up that body. This organicist metaphor borrows its imagery from an old judicial allegory which, since Roman times, has often been used to express the double nature of corporations: they are, at once, both one and many, a body politic. (The notion of body politic itself culls from theological thought about the “mystical body” of the church or of Christ.)<sup>62</sup> Bourbaki often expressed the double nature of the team when explaining how “A flash of inspiration, sprung simultaneously from the thought process, at once single and multiple, of the committee creates the Bourbakic functions.” In the private Bourbakian lore, however, the organicist image, as well as

<sup>60</sup> John R. Gillis, “Memory and Identity: The History of a Relationship,” introduction to *Commemorations: The Politics of National Identity*, ed. J. R. Gillis (Princeton, N.J.: Princeton University Press, 1994, reprint in 1996), p. 3.

<sup>61</sup> A more complete sociological comparison between different groups of French intellectuals is in Beaulieu, *Bourbaki* (cit. n. 4), chap. 5.

<sup>62</sup> Ernst H. Kantorowicz carefully traces the history of the notions of body politic and mystical body in *The King’s Two Bodies: A Study in Mediaeval Political Theology* (Princeton, N.J.: Princeton University Press, 1957).

the character of the pariah mathematician, were eventually superseded by the evocation of a "Master" who ruled over his chosen disciples.

Sometimes a spirit, sometimes a hero or demigod, the Master had both human traits and divine attributes. Early accounts insisted on how this powerful being sometimes incarnated "Himself": to announce the time and place of a meeting, Delsarte wrote that "Bourbaki will manifest Himself in concrete space and time on Monday, 16 December, at noon at Capoulade's, the regular venue for His frolics." The formidable personage proved to be a harsh taskmaster who could as easily punish as reward: as of a good shadow one declared "the Spirit of our Master watches over us"; as of an evil force someone talked about "Bourbaki's demons." "He" interfered in the team's work; "His" wit or "His" whims provoked controversy within the group. Reports on meetings say things like, "The Master is very irritated by integration [theory] but satisfied with functional spaces." In contrast, "His" absence stymied the meetings: "Seriousness, discipline and argumentativeness dwindled dreadfully, and the spirit of the Master breathed only fitfully." The rebels of yesteryear accepted a staged tyranny when "Bourbaki, seeking in vain to keep His balance under a democratic regime, swooned with pleasure under the thrashing [administered by Dieudonné]." After having tortured his disciples, the figurehead triumphed over all obstacles. "Bourbaki appeasing (or opposing) the Elements" was a favorite phrase, and the wordplay, of course, quite intentional; someone once suggested (in jest) that a painting on that theme be commissioned from Picasso. Over time, the ineffaceable Bourbaki acquired the characteristics of a Zeus with a white beard and divine attributes, hurling thunderbolts and anathema.

In turn the Master was clad in military or evangelical garb. The first issue of "La Tribu" in 1940 readily hailed an almighty Bourbaki by mixing military and religious metaphors:

To all our brothers in Bourbaki, greetings and blessings. It is six months now since Bourbaki unleashed His wrath, leaving His chosen people groaning in adversity, scattered to the four corners of the Universe. Some, with their noses in the dust yet unaware Whose hand has struck them down, are still bewildered, seeking in the rumblings of air and earth some dubious augury of a speedy end to all their woes and wasting their strength in menial tasks; others, isolated and deprived of all truly Bourbakic succor, have in their desperation gone so far as to take their offerings to false gods, in honor of whom they spit flame at the sky day and night. Despondency reigns everywhere: no more is hymned the glory of Bourbaki, and the enemies of true Mathematic rejoice in their hearts. . . . Amen.<sup>63</sup>

It was the time of the "Phoney War" in France (1940) and Dieudonné—who had decided to start the newsletter again—adopted the same evangelizing tone that Delsarte had used liberally when addressing his colleagues in prewar years. While we sense an effort to present Bourbaki's goals as sacred missions, by the same token, terrible enemies are evoked for Bourbaki to vanquish, while good wishes are addressed to Bourbaki heroes and martyrs. The context of imminent war provided a real-life metaphor for more symbolic or alleged confrontations.

With the exception of a few narratives that used military metaphors instead, the

<sup>63</sup> "La Tribu," 15 March 1940, 1:1. From the papers of Henri Cartan. The original French text appears in Beaulieu, "Jeux d'esprit" (cit. n. 30), pp. 98–9.

ecclesiastical tone prevails in “La Tribu” roughly between 1940 and 1960, when the Bourbaki chroniclers spoke of the Master as though he were a spiritual leader.<sup>64</sup> Such expressions came out of the French Catholic heritage (although several members were Protestants or Jews, many of them nonpracticing), and ecclesiastical notes laced with humor were common in postwar France where clerical as well as anticlerical feelings were strong. The religious overtones may also have indicated the convictions of the members, inasmuch as they felt driven by a sometimes blind faith in the Bourbaki enterprise and were convinced of its value and success. The religious imagery might have expressed, as well as mocked, their dedication to and belief in their goal-driven activity. An evangelical or military tone also connotes strictness or conformity to authority: the Bourbakis certainly wished others to accept Bourbakian ideas, as presented in the *Eléments*, like so many religious dogmas or military orders; even the work’s introduction warned readers that the author had adopted a rather dogmatic attitude in mathematics.<sup>65</sup> Bourbaki’s use of religious or military imagery, however, eventually disappeared from the chronicle, even before Bourbaki ceased to be influential in the field of mathematics.

No matter what tone the chronicle favored, it usually depicted Bourbaki as being dominated by a fictitious but strong figurehead. In contrast, the group perpetuated and defended a realm in which there was no sovereign distinct from the collective: the team, alone, had sovereignty. Unlike most intellectual clans in France, Bourbaki, the body corporate, had no head.<sup>66</sup> Superiority in mathematical knowledge or a strong personality might have given some members ascendancy over others, but it did not bestow the title of ruler on anyone. *De jure*, Bourbaki became a legal association in 1952 (hence a legal entity) in the sense defined by French law, yet even the statutes of the Association of the Collaborators of Nicolas Bourbaki, which detailed the mandates and responsibilities of the officers (president, secretary, et al.) did not impose an official leader on the group. These functions amounted to no more than having signature authority or the responsibility to report on financial activities; they did not confer on any individual the power to make decisions alone nor did they enhance anyone’s personal dominance or charisma.

Within the group, creating a fictitious character had some psychological basis beyond the mere folklore of group kinship. When working for the collective, members often made mathematical choices that they would not have made for their own publications; they also wrote in a different style. What was done for Bourbaki, then, was rather different in nature from what one wrote on one’s own behalf. In interviews, members readily expressed the feeling that, when working for Bourbaki, they were individually driven by the internal logic of the enterprise.<sup>67</sup> This is only one

<sup>64</sup> For military metaphors, see, for instance, the details on the meeting of 1945.

<sup>65</sup> In Bourbaki, *Eléments de mathématique* (cit. n. 22), book I, *Théorie des ensembles: Fascicule de Résultats*, “Mode d’emploi de ce traité,” p. vii.

<sup>66</sup> One of the first to analyze this trait of the French university and of most fields of knowledge in France is Terry N. Clark, who summarized much of his work in “Le patron et son cercle: Clef de l’université française,” *Revue française de sociologie*, 1971, XII:19–39. A counterfactual aside may be in order here: had André Weil remained in France and obtained the prominent position that he sought at the Collège de France, it is likely that Bourbaki would have had a designated leader, like any other group of French intellectuals.

<sup>67</sup> From my interviews with Henri Cartan (Paris, July 1986), Pierre Cartier (Montreal, October 1992), Claude Chevalley (Paris, July 1983), Roger Godement (Paris, November 1986), and Jean-Pierre Serre (Paris, July 1986).

step from saying, conveniently and truthfully, that some "spirit" guided them, inspired them, or dictated "His" will to them. The metaphor, then, worked hand-in-hand with a psychological, social, and political reality.

The Bourbaki egalitarian elite had a mock figurehead, which was nevertheless a *tertium quid*. For outsiders, the name and personage of Bourbaki created an aura of mystery around the group; it fascinated many and attracted their curiosity, yet it somewhat protected the team from intrusions. Although the Bourbakian social pact denied individuals any credit for their contributions, it also relieved them of any personal responsibility for the choices made by the collective.<sup>68</sup> Many a member did commit himself to a position in the eyes of his Bourbaki peers by defending one mathematical view over another, and by striving to convince others of his opinion. Yet, as seen from within the Bourbaki confines, the *tertium quid* stood as a scapegoat that carried the burden of mathematical mistakes or fruitless projects. As seen from without, it personified the collective that, as a corporate body, shouldered all the responsibilities of authorship for which individual constituents—the creators—refused to be accountable. *A contrario*, since Bourbaki had but a mock figurehead, the collective bore no responsibility outside mathematics and the strict writing of the *Éléments*. Members exercised individual moral judgement in the public arena, some making public statements on social or political issues (Henri Cartan and Laurent Schwartz on human rights; Claude Chevalley, Roger Godement, and Alexander Grothendieck against the military and nuclear armament), others taking part in mathematics curriculum reforms. The group itself, however, strove to remain amoral, apolitical, and disengaged, depicting its activities as being mostly leisure and fun.<sup>69</sup>

The mythic figure enabled the Bourbaki group to see itself as if through a third person's eyes, and this personage served as a group-memory screen and afforded protection against public involvement on the *agora*. For similar reasons, we may conjecture that disclosing the names of the members might have created a kind of "dismemberment" or dissolution of Bourbaki's corporate body: it might have been equivalent, in some way, to exposure of the members and death of the figurehead. No longer protected by anonymity, individual members would have become accountable for their Bourbakian activities on the same terms as they were for their personal research in mathematics. Bourbaki's masterpiece of mathematical exposition, signed with a pen name, thus concealed not only the identity of its creators but also the terms of Bourbaki's social pact and the integrity of its corporation.

According to Pierre Nora, "The less a memory is relived from within, the more it needs external props and tangible references."<sup>70</sup> Through the systematic use of a nominal figure, Bourbaki produced such artificial props and references. It created a memory screen that shielded individual members from private emotional reflections on the group, its activities, or its internal relationships. Although the group has now (1999) resolved to disclose its oldest documents to the eyes of serious historians,

<sup>68</sup> The conditions and forms of the Bourbaki social pact, an essential element of the group's social makeup, are given in Beaulieu, "Jeux d'esprit" (cit. n. 30), p. 98–109 and further analyzed in Beaulieu, *Bourbaki* (cit. n. 4), chaps. 1 and 4.

<sup>69</sup> In his studies of American scientists, Paul Forman analyzed the self-image, humor and amorality of physicists. See his "Independence, not Transcendence, for the Historian of Science," *Isis*, 1991, 82, n. 311:75 and footnote 13.

<sup>70</sup> Pierre Nora, "Entre Mémoire et histoire," in *Les Lieux de mémoire*, vol. I, *La République* (Paris: Gallimard, 1984), p. xxvi.

some present-day members seem reluctant to associate themselves with the pronouncements or expressions of personal feelings of other (present or former) members. When former member Pierre Cartier published his reminiscences of André Weil—in which he mentions interpersonal relations within the Bourbaki alliance—he reportedly met the stern rebuttal of some colleagues who deemed the author's expressed feelings too personal and, thus, irrelevant for their profession.<sup>71</sup> To this day, it seems, the unshared or subjective past must be kept behind closed doors or otherwise dissociated from the Bourbaki enterprise, as well as from the French mathematical institutions to which it is, in some way, connected.

The pseudonym that protected anonymity also fostered interchangeability of contributors, a necessary condition for the succession in membership to evolve as naturally as in dynasties. The heirs had been tested on merit, and no outside influence could contest their having been thus designated by the group. Assuming the magic of a phoenix that rises from its own ashes, Bourbaki pretended to transcend mortality by renewal: the team perpetually rejuvenated itself by co-opting new, often younger members and by eventually retiring its older contributors.<sup>72</sup> The Bourbakis liked the idea of passing on the torch, and they chose their successors carefully. In this way they could keep their project going, and hope the team would not only reach its publication goals but continue to play an important role within mathematics. Certainly, no one seriously thought the venture or the group immortal, but the mechanism of succession by co-option preserved the group's identity despite changes in goals and personnel. Adverse circumstances delayed deadlines and writing efforts, or changes of objective postponed the completion of the enterprise to an undetermined date. All these factors nevertheless contributed to the perpetuity of Bourbaki, whose venture remains incomplete and open-ended to this day. Thus, the Bourbaki collective cast itself in a memorial limbo, lingering between an undefined past and a neverending future.

## VI. CONCLUSION

Placing memory in contemporary historiography, Patrick Hutton has shown how the recent literature on commemorations stresses the recollective aspect of memory and deals almost exclusively with memory *qua* representation while ignoring the presence, within memory, of repetition and "habits of mind."<sup>73</sup> In this paper, I have shown instead how Bourbaki's art of memory emphasizes repetition rather than recollection and commemoration.

Bourbaki's chronicle delivers the present-past in a whimsical fashion, and the discursive strategies it deploys create a vast fable with its own repetitions and predict-

<sup>71</sup> From a testimony of Pierre Cartier (May 1999). See his abridged "André Weil (1906–1998)" (cit. n. 14). The unabridged text is published as a preprint of the Philosophy and Mathematics Seminar of the Ecole Normale Supérieure, of which Cartier is an organizer; it is also available on the seminar's Web site. It is perhaps no mere coincidence that the group came to the decision to open its archive soon after the death of its chief trickster and leading founder, André Weil who, for a long time, had been the strictest about secrecy.

<sup>72</sup> It has often been said that Bourbaki members had to retire from the group at age fifty. This so-called rule had many exceptions; its initiation and enforcement are analyzed in Beaulieu, *Bourbaki* (cit. n. 4), chap. 5.

<sup>73</sup> Patrick H. Hutton, *History as an Art of Memory* (Hanover, N.H., and London: University Press of New England, 1993), p. 161.

able events. It records the present as a medley of melodramatic subplots and a profusion of wisecracks. No clear sequence of the events that had really been going on emerges from Bourbaki's humorous narratives. The narratives convey an intense impression, however, couched as they are in a style that verges on the grotesque, to the point that some of the Bourbaki congresses read like scenes from sixteenth-century French satirist François Rabelais's epics of the giants Gargantua and Pantagruel, in which food, drink, and all pleasures of the flesh are hailed whereas serious intellectual pursuits or moral commitments are scorned. Bourbaki's chronicle creates a lively interaction between past, present, and future: it is through humor and as humor that Bourbaki lays down the terms by which it wishes to be portrayed and remembered. Humor produces richly memorable images in Bourbaki's depiction of its own history—a story initially told and retold to the group through a mixture of comedy, memories, forgetfulness, and oblivion. Members share as well what they have forgotten of their common past; for, as there are always memories of pleasant or intense moments, straightening out the odd memories creates a past redolent of sweet evocations. Collective traits and feats are thus engraved the group's memory and stock the imagination of later recruits. If Bourbaki's record is a guardian of the social ties between the members, in turn, that party memory only works so long as it can count on a strong sense of belonging. Bourbakian humor both creates and presupposes a communality of thought among group members, while it serves as a ritual language for remembrance.

Bourbaki's art of memory served its identity: an integral part of the group's *normalien* heritage, it emphasized its ties to that institution. The egalitarianism of the Bourbakis, characteristic of old *normaliens*, in itself made the group rather different from the rest of the French scientific establishment where interpersonal relationships used to be rigid, formal, and highly hierarchical. The subversive power of humor played a considerable part in enabling the unfettered Bourbaki "spirit" to soar above the preestablished structures of the scientific field—and, even more, to represent itself as performing such an escape: Bourbaki's option in favor of secrecy, wit, and playfulness combined to identify a group that deliberately fought against the stranglehold of the scientific field to which, despite itself, it still belonged and which in many ways it reinforced.<sup>74</sup> Thus Bourbaki relieved itself of pressures from any authority—moral, political, or intellectual—and dictated the forms its own freedom would take.

This freedom has hitherto distanced the group from public commemorations, yet the relative segregation in which today's Bourbakis continue to immure themselves can only partly be justified by old habits, together with an elitist dislike of celebrations. At a time when public commemorations abound, we may wonder why a group so influential in twentieth-century mathematics has yet to have its own "party." Instead, the Bourbakis write down their own private, celebratory hymns in which a larger-than-life Bourbaki paints the picture of a shared fraternal past, reckoned in terms of brave founders to celebrate, imaginary enemies to vanquish, and ancient forerunners to worship. Bourbaki's pastiche poems have supported the collective appropriation of a group memory and identity; because of their formal structure and familiar sounds, famous poems have assisted Bourbaki's memory in much the same

<sup>74</sup> Pierre Bourdieu defines the notion of scientific field in "La Spécificité du champ scientifique et les conditions sociales du progrès de la raison," *Sociologie et Sociétés*, 7, 1:91–118.



way as do known places in the classical art of memory. They enabled the group to recall and celebrate its so-called revolutionary days; here, Bourbaki hailed living heroes. They also turned Bourbaki into a monument, conferring on him Greek descent and painting an unequivocal portrait of his vocation; there, Bourbaki ensured for itself a place of honor in the history of mathematics. At times of internal break-away or of perceived discontinuity in its work, Bourbaki has presented itself as it wished to be remembered rather than as struggling. Founding moments and actors have taken on mythical proportions whereas a shaky, yet hegemonic team celebrated selected, noncontroversial patriarchs. Myths thus turned history into destiny and time into infinity.

Everyone's memory is complemented by the memories of others, to the extent that even a distant or unwitnessed past may become a part of one whole, communal memory. Bourbaki's hoaxes belonged first to a group memory, producing, in fact, the mementos of an elite team that handed down its visions of the past to the later generations of members it had co-opted. Through a persistent use of rumors, anecdotes, and pranks, the group also has contributed amply to the oral lore of the mathematical village. Repetitious rags, instigated by group members or copied by outsiders have, for many years, determined Bourbaki's self-built image and story, and constitute a kernel of collective memory in twentieth-century mathematics. For nearly four decades the proliferation of Bourbaki-related japes and anecdotes has kept the team in the limelight and emphasized the power that this mandarin group held over other mathematicians.

Through the rehearsals of fiction Bourbaki was rendered unchanged and immortal while the collective itself thrived on plurality and succession. Frequent appearances of the Bourbaki personage, easily recognized by outsiders and willfully invoked in the Bourbaki internal chronicle, both indicated and fostered a form of unanimity within a tradition. In the accounts of their congresses as well as in their contacts with outsiders, the Bourbakis have regularly played on the multivalence between an elusive mathematician called Bourbaki, the team itself, author of the treatise, and the individual members, the creators whose identities were not revealed outside the Bourbaki precinct. The fictitious figure of Bourbaki has allowed the group to present itself, its discourses, and its practices as so many absolutes, while frequent appearances of the *tertium quid* in the accounts of meetings have constituted a memory screen on which fixed images were projected, over and over again. That personage also has erected an action screen, shielding the Bourbakian body politic from the many solicitations related to public moral, social, and political matters. In that context Bourbaki's art of memory has left as little room for group recollection as for individual reflection.

Present-day Bourbakis know little about the past of their group. With the exception of stock jokes and select anecdotes retold by their predecessors, members confess to being quite ignorant of what went on when former members were writing their parts of the *Eléments de mathématique*.<sup>75</sup> Gone are the discussions over mathematical issues—with the exception of those retold by the protagonists as epics; vanished are the questions and solutions, the crises and breakthroughs of the past. A

<sup>75</sup> This information I gleaned mainly from my interviews with Pierre Cartier, a recent former member (Paris, December 1986; Montreal, October 1992) and Jean-Christophe Yoccoz, a present member (Montreal, May 1997).

record is there, however, and, until recently, the Association of the Collaborators of Nicolas Bourbaki jealously guarded its collection of issues of "La Tribu," of draft texts, and of numerous lengthy, technical comments. While, until now, Bourbaki forbade nonmembers access to its archive, the members themselves felt little need to consult the accounts of the distant past, with the exception of former members Armand Borel and André Weil, who used the archive when they wrote down their recollections. What they identified with seems to be the past glory of the Bourbaki enterprise and, above all, the parallel success of the ongoing public Séminaire Bourbaki. What remains in this group's private memory, then, are fuzzy images, anecdotes with all their variants, worn-out jokes, scant relics, and vague grand narrations, all fading and shrinking into a small core: a tough kernel that the sharpest, even self-critical insights have not yet dented.

Their group memory has not yet faced up to the past and present-day members do not particularly seek the confirmation of their fleeing present, nor do they wish to associate themselves, as a team, to the work of historians. Moreover, although they may not yet perceive their task as being done, the Bourbakis are not setting a new writing agenda nor envisaging how an enterprise such as the old Bourbaki oeuvre could survive the plurality of concerns of the latter-day multivalent mathematical sciences. They do not peruse old lessons to map their future, thus they leave their past unexamined. Responding again to the demands of this timeline, the Bourbakis might attend to their group past once they see their group future as close-ended. For them, however, the time of group recollection and public commemoration has yet to come; perhaps it has even passed.