Journal of the History of the Neurosciences: Basic and Clinical Perspectives

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/njhn20

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To cite this article: Joelle M. Abi-Rached (2012): From Brain to Neuro: The Brain Research Association and the Making of British Neuroscience, 1965-1996, Journal of the History of the Neurosciences: Basic and Clinical Perspectives, 21:2, 189-213

To link to this article: http://dx.doi.org/10.1080/0964704X.2011.552413

Journal of the History of the Neurosciences, 21:189–213, 2012

ISSN: 0964-704X print / 1744-5213 online
DOI: 10.1080/0964704X.2011.552413

Psychology Press
Taylor & Francis Group

From Brain to Neuro: The Brain Research Association and the Making of British Neuroscience, 1965–1996

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This article explores the short history of "neuroscience" as a discipline in its own right as opposed to the much longer past of the brain sciences. It focuses on one historical moment, the formation of the first British "neuroscience" society, the Brain Research Association (BRA), renamed in 1996 to the British Neuroscience Association (BNA). It outlines the new thinking brought about by this new science of brain, mind, and behavior, it sketches the beginnings of the BRA and the institutionalization of neuroscience in the British context, and it further explores the ambiguous relation the association had towards some of the ethical, social, and political implications of this new area of research.

Keywords neuroscience, United Kingdom, Brain Research Association, British Neuroscience Association, Neurosciences Research Program, International Brain Research Organization

Introduction

While "neurology" as "the doctrine of nerves" was articulated in the seventeenth century by neuroanatomist Thomas Willis (Hughes, 2000; Molnar, 2004) and institutionalized in the eighteenth and nineteenth centuries (Harris, 1704; Walshe, 1960; Finger et al., 2010), "neuroscience" (or the neurosciences), as a new discipline of "mind, brain, and behavior," only emerged in the twentieth century after the term was coined in 1962 by Francis O. Schmitt,[1] a biophysicist based at MIT (Swazey, 1975; Schmitt, 1990; Cowan et al., 2000). Does this mean that "modern neuroscience" was created by one man and that its history

[1]While Schmitt has been acclaimed as the scientist who brought to the fore the new interdisciplinary field of neuroscience (Swazey, 1975; Bloom, 1997; Cowan et al, 2000; Agranoff, 2008; Adelman, 2010), the claim that he coined the term neuroscience has been contested by both Adelman (2010) and Agranoff (2008) who suggest the American neurophysiologist Ralph W. Gerard as its possible progenitor.

I would like to express my indebtedness to Steven Rose, John Lagnado, and Yvonne Allen (BNA's first executive secretary) for their kind help, generous thoughts, and invaluable recollections. Many thanks to Valentina Amorese for suggesting key texts on public engagement. I also thank two anonymous reviewers for constructive and insightful comments. Last but not least, I am grateful to Nikolas Rose and Ofer Engel for incisive comments on an earlier draft. The author wrote the article while Research Officer on the "Brain, Self and Society" project funded by the Economic and Social Research Council (ESRC; London, UK), grant number RES 051 27 0194. BIOS Centre, London School of Economics and Political Science, Houghton Street, London WC2A 2AE, UK.

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starts in 1962? Surely not. Explorations into the brain and brain functions have a long history. Indeed there are numerous accounts and textbooks that examine the long past of what is called today "modern neuroscience" (Clarke & Jacyna, 1987; Finger, 1994; Gross, 1999, 2009).

However, the aim of this article is not to write another history of the brain sciences or of "modern neuroscience" (as Gordon Shepherd has recently done)[2] but to examine the short institutional history of this new discipline that started to take shape in the 1960s. The article focuses on one particular historical moment, the birth of the first British "neuroscience society": the Brain Research Association (BRA) renamed in 1996 the British Neuroscience Association (BNA). It sketches the beginnings of the institutionalization of neuroscience in the British context and explores the ambiguous relation the BRA had towards some of the ethical and social implications of this new area of research. The article ends with a short discussion of a longstanding debate within the organization over the name of the BRA, a debate that is itself symptomatic of the laborious process of "disciplinization" (N. S. Rose, 1996).

New Terms for a New Century?

The term "neuroscience" appears in 1963 in the title of a new publication, the *Neurosciences Research Program Bulletin*. This is the official publication of a new initiative called the Neurosciences Research Program (or NRP for short) founded in 1962 by Francis O. Schmitt, Head of Biology at MIT from 1942–1964 (Schmitt, 1990; Adelman, 2010). The earliest definition of the term "neuroscientist" again refers to the American neuroscience project. In an article published in 1964 in the MIT magazine *Technology Review*, Francis Schmitt writes: "a neuroscientist sees 'invisible colleges' as a means of meeting the information problem and gives a case history of one recently created, namely the Neuroscience [Research] Program (NRP), which was activated and made 'visible' in Boston" (Schmitt, 1964, pp. 13–15). Although this definition may seem peculiar, with the idea of the "invisible college" at its heart, this is how the term "neuroscientist" began to circulate. It characterized a category of scientists who had a new vision of how brain research ought to be conducted if important advances were to be made; indeed, the prevalent thought in the 1960s was that breakthroughs in the brain were "imminent" (Schmitt, 1967).

In an article entitled "Promising Trends in Neuroscience" and published in *Nature* in 1970, Schmitt outlined the characteristics of these new "sciences of brain and behavior" collectively termed "neurosciences." He further identified "multidisciplinarity" — or what he calls in his memoir a "synthesis" of approaches (Schmitt, 1990) — as their common denominator, citing a few budding multidisciplinary societies within this new framework, among them the United Kingdom's BRA (Schmitt, 1970, 1990). However, the multidisciplinary agenda did not encompass *any* discipline. These were (a) *molecular neurobiology* (embracing the molecular, subcellular, and cellular levels), (b) *neural science* (including neuroanatomy, neurophysiology, and neuropathology), and (c) *behavioral or psychological science* (Schmitt, 1967, p. 562). As Schmitt himself concedes, the four main levels of analysis (cellular, molecular, anatomical/neural, and physiological) operate primarily at a "molecular" level. That is, knowledge of the brain and of life itself was now thought to be amenable to cellular and molecular processes; they were to be defined in terms of neurons, molecules, ligands, receptors, neurotransmitters, ionic pumps, and so forth. Even the alleged fifth dimension, the "behavioral" level, was to be studied and investigated at one of

[2]See Shepherd, 2010.

these four molecular and cellular levels (Schmitt, 1967, 1970, 1990). Thus, Schmitt spoke of a "molecular psychology" that could "bridge" the gap between molecular processes and the phenomenological dimensions of behavior and psychology (Schmitt, 1967).

In an another article that sketches the institutional history brought about by several neuroscientific projects in the 1960s, we termed this new thinking and new way of examining the brain as a new object of study, a "neuromolecular gaze" (Abi-Rached & Rose, 2010). By "neuromolecular gaze," we mean a scientific perception or "style of thought" (Fleck, 1979), which, though diverse in its approaches, practices, and levels of analysis, was fundamentally (but not exclusively) molecular in its "act of seeing" (Foucault, 1963/1994), saying, knowing, anatomizing, and understanding humans and their brains. In addition, we argued that the molecular approach significantly shaped — but of course not exclusively determined — neuroscience and will shape its future intellectual development and social role. In fact, even neuroimaging today is witnessing an interesting shift in its perspective: from "gross" visualization be it on the macrolevel (as with gross anatomy) or microlevel (as with the microscopic and staining techniques at the turn of the twentieth century) to structural (as with the advent of Computed Tomography and Magnetic Resonance Imaging in the 1970s), to functional (as with the development of functional Magnetic Resonance Imaging in the late 1980s and the clinical use of Positron Emission Tomography since 1995), to neuromolecular (as with the emergence of new "molecular neuroimaging" techniques and the new field of "molecular imaging").[3]

Three Conditions of Possibility

There are at least three important intellectual and institutional developments that set the stage for the emergence of neuroscientific projects, be they in the United States (as exemplified by the NRP and later by the Society for Neuroscience [SfN]), the United Kingdom (as exemplified by the BRA and later by the BNA), or elsewhere.

The first conceptual development is what Nobel Prize Laureate Arvid Carlsson calls a "paradigm shift" in the way brain research was conducted and brain mechanisms were understood in the 1960s (Carlsson, 2005a). This period witnessed the victory of the pharmacologists' view of a chemical signalling of the central nervous system (the so-called "soups") over the neurophysiologists' view of an electrical signalling (the so-called "sparks") after a century and a half of dominance by neurophysiology (Valenstein, 2005; Carlsson, 2005b). According to Carlsson, the discovery of neurotransmitters and their role in brain function, starting with the discovery of acetylcholine in the 1920s by Otto Loewi and culminating with the discovery of dopamine in the 1950s, was "paradigmatic" because it triggered a shift in the trajectory of the brain sciences: from neurophysiology to neurochemistry. This shift led to a change not only in the understanding of brain mechanisms but also in the practice itself as with the birth of a new discipline, "neurochemistry" dedicated to the neurobiochemical underpinnings of the brain (for a history of neurochemistry, see Bachelard, 1988; McIlwain, 1991). As Carlsson puts it, the shift from "sparks to soups" had a great impact not only on our ideas about the brain but on "brain research as a whole" (Carlsson, 2005a, pp. 591–592).

[3]A society for molecular imaging (SMI) was founded in 2000. Attendance at SMI's annual meetings has grown significantly, from around 550 attendees in the first meeting in 2002 to 850 registrants in 2004 (Provenzale & Mukundan, 2005). The European Society for Molecular Imaging (ESMI) was created in 2006. *Molecular Imaging and Biology*, the official journal of the Academy of Molecular Imaging (AMI; founded in 1989), SMI, and ESMI, was launched in 2005. For more on the rise of the field of molecular imaging, see Jaffer and Weissleder (2005).

The second major development is the "molecular revolution" brought about by the new discipline of molecular biology, a revolution that entailed a rethinking of the knowledge of life and its processes at the "molecular" level (Olby, 1990; Wright, 1994; Kay, 1997; de Chadarevian & Kamminga, 1998; N. S. Rose, 2007). The molecular knowledge of life and its biological processes including its neurobiological aspects was made possible through the development and sophistication of powerful molecular techniques and technologies that grew not only out of biochemistry, such as with the use of the brain slice preparation (McIlwain, 1991; Collingridge, 1995),[4] but also — and perhaps more significantly — out of molecular biology, such as with the application of recombinant DNA technology and with the production of genetically modified organisms starting from the 1980s (Crick, 1999; Cowan et al., 2000). However the molecular turn was not merely technical or methodological. Rather, it entailed a shift in the perspective, the perception, and the "approach" as argued by William Thomas Astbury who is thought to have introduced — or "propagated" (Olby, 1990, p. 505) — the term "molecular biology" in a 1950 Harvey Lecture entitled "Adventures in Molecular Biology" (Astbury, 1961). As he writes, molecular biology "implies not so much a technique as an approach, an approach from the viewpoint of the so-called basic sciences with the leading idea of searching below the large-scale manifestations of classical biology for the corresponding molecular plan" (Astbury, 1961, p. 1124). Some have characterized this mutation in the discourse, language, approach, and "style of thought" brought about by the molecular revolution, a form of "molecularization" (Wright, 1994; Kay, 1997; de Chadarevian & Kamminga, 1998; N. S. Rose, 2007). One reason behind the success and rise into prominence of the neuromolecular approach might be its "precision," as Francis Crick puts it, in defining brain function and structure, a precision that opens the possibility for and the promise of intervention and manipulation at the cellular and molecular levels (Crick, 1999).

The third condition of possibility of the neurosciences is the process of institution building around these new sciences of brain, mind, and behavior. One could start with the publication of the journal *Brain* in 1878 in England that focused on neurological and neuropsychiatric research; two of its founders, Sir James Crichton-Browne and Sir John Charles Bucknill, were medical superintendents of asylums and the other two, Sir David Ferrier and Dr. John Hughlings-Jackson, were neurologists interested in the localization of brain functions. Others have suggested that a project of a "unified neuroscience" in the United States came about with the creation in 1967 of the first department of "neurobiology" at Harvard Medical School under the leadership of Steve Kuffler (Cowan et al., 2000). Still others see the beginnings of neuroscience, at least in the British context, in the "Thorpe–Zangwill Club," a small interdisciplinary group formed in 1953 by two Cambridge scientists, Oliver L. Zangwill, an experimental psychologist, and William Homan Thorpe, a zoologist and ethologist.[5] For Francis O. Schmitt, the origins of "neuroscience" go back to the years of "molecular biophysics" at MIT that culminated with the 1961 colloquium on the topic of "Macromolecular Specificity and Biological Memory" (Schmitt, 1962, 1990).

And, of course, there are other social, cultural, and technological developments that made these shifts possible. But whatever the "origin" of what came to be called neuroscience, British would-be-neuroscientists were not unfamiliar with the NRP as is attested by their participation in the "Intensive Summer Programs" (ISP) organized by

[4]Thanks to John Stephenson for the reference.

[5]This is how Cambridge University starts its own history of neuroscience: http://www.neuroscience.cam.ac.uk/about/history/ (Accessed June 2010).

the NRP in the 1960s and that brought together the leading experts in brain research (Quarton et al., 1967; Schmitt, 1990).[6] It could also be argued that two additional developments set the stage for a British neuroscience project. The first is the long British tradition in neurophysiology as reflected in the seminal works of Sir Alan Hodgkin or Sir Andrew Huxley. The second is the growing interest in neurochemistry in Britain since the 1950s. The International Society for Neurochemistry founded in 1967 grew out of the first "International Neurochemical Symposia" in Oxford in 1954. And the creation of the *Journal of Neurochemistry* in 1956 had two British scientists on its editorial board (Bachelard, 1988). In addition, the first "modern textbooks" on brain biochemistry were published by British scientists in 1955: *Neurochemistry* coedited by Qastel (with Elliott and Page) is one of them, McIlwain's *Biochemistry and the Central Nervous System* is another (for more on the institutionalization of neurochemistry, see Bachelard, 1988; McIlwain, 1991, 2006).

From the London Black Horse Group to the BRA (1965–1968)

Besides sporadic sketches of the beginnings of the BRA, particularly in the preface of *The Conscious Brain* (SPR Rose, [1973]1976), the "brief history" commissioned by the BNA, written by Herman Bachelard (2004), is, to date, the only available historical reference. In that "brief history," Bachelard (2004) rightly denies the claim made both in the archives (Brain Research Association, 1968–1992) and in Derek Richter's memoir (D. Richter, 1989) that the BRA was set up in 1968 on the initiative of Richter and Donald MacKay, the UK representatives on the Central Council of the International Brain Research Organization (IBRO).[7] As Bachelard points out, the impetus for such an association actually came from a coteries of scientists, known as the "London Black Horse Group." The group, created around 1965, would regularly meet in London Fitzrovia, at the Black Horse Public House to discuss in an informal setting brain-related topics that they believed crossed disciplines, for example, memory or consciousness (S. P. R. Rose, 2010a; Lagnado, 2010).

The idea of a "brain discussion group," sometimes also called the London Neurobiology Discussion Group, was in fact initiated by four scientists: Steven Rose, John Lagnado, John Dobbing, and Robert Balázs. Steven Rose, a biochemist trained at Cambridge and at the Institute of Psychiatry (IoP) in London, had joined the newly established Medical Research Council (MRC) Unit for "metabolic reactions" at Imperial College led by Nobel Laureate Ernst Chain for a postdoctoral fellowship position. Rose seemed to have been motivated by three main factors. First, he realized that Britain lacked institutes dedicated to brain research compared to other countries such as Germany and Russia but notably the United States where multidisciplinary discussion groups within the framework of the "Neurosciences Research Program" (NRP) had just been launched (for more on the NRP, see Swazey, 1975; Schmitt, 1990; Adelman, 2010). Second, he believed

[6]For example, 4 of the 136 participants at the 1966 ISP were British. These were Brian Meldrum from the MRC Neuropsychiatric Research Unit led by Derek Richter, Steven Rose who was then at the Department of Biochemistry at Imperial College, John Thorson a postdoctoral fellow at the Department of Zoology at Oxford University, and Ronald Wittam, Professor of General Physiology at the Laboratory of General Physiology at the University of Leicester (Quarton et al., 1967). The majority of non-American scientists were German (11) followed by British scientists.

[7]Although we did not problematize this claim in "The Birth of the Neuromolecular Gaze" (Abi-Rached & Rose, 2010), it became clear to us, particularly after many conversations with Steven Rose, that the history of the BRA ought to be more carefully laid out. This was one of the motivations behind this article.

that in the absence of an integrative approach to "the most complex structure in the universe," no substantial progress could be made (S. P. R. Rose, 1973/1976, 2005). In fact, Rose had moved to the IoP precisely because of the lack of cross-disciplinary approaches to the study of the brain and the nervous system at Cambridge (S. P. R. Rose 2010a). Brain research in the United Kingdom was scattered in different departments: "there were different disciplines but *no one was talking about the brain.* People were talking about neurophysiology or they were talking about neurochemistry, psychology or neuro-anatomy but the question as it were to bring . . . the disparate people together . . . to talk about the brain was not very coherent in people's mind at that stage" (S. P. R. Rose 2010a, emphasis added). And third, he believed, like many scientists in the 1960s, that biochemistry, particularly the "new biochemistry" shaped by developments in molecular biology (Kohler, 1975), could be a useful, albeit not necessary, key to elucidate brain functions, including specific cognitive functions such as memory, as demonstrated, for example, by the experiments of the Swedish biochemist Holger Hydén (1973a, 1973b; S. P. R. Rose, 1993, 1999).

Bringing together scientists who shared similar interests in brain research and above all who were ready to tackle their work from a "broad-minded perspective" was an idea that "floated in the air" (Lagnado, 2010) until Rose contacted Lagnado, Dobbing, and Balázs to discuss the idea of a "brain discussion group." John Lagnado, also a biochemist working on the brain at Bedford College, University of London, had done some postdoctoral work at the MRC Neuropsychiatric Unit established by Derek Richter in 1957 (D. Richter, 1989). John Dobbing was what would be called today a "developmental neurobiologist" at the Institute of Child Health in London. And, Robert Balázs, who had come to England in 1956 after the defeat of the Hungarian uprising (D. Richter, 1995), was a biochemist and a student of Bruno Straub, a Hungarian scientist who discovered the muscle protein actin in the 1940s and whose mentor was the biochemist pioneer and Nobel Laureate Albert Szent-Györgyi. Balázs had moved to the same neuropsychiatric unit as Lagnado in a post initially funded by the Rockefeller Foundation (D. Richter, 1995).[8]

These motivated scientists were later joined by several others among them two key people who were older than the rest of the group, Chris R. Evans and Pat Wall (Patrick David Wall). Chris Evans, a physicist who worked at the National Physical Laboratory, became instrumental in propagating the idea of the Black Horse meetings to areas outside London. As for Pat Wall, he was already a distinguished neurophysiologist who had decided to return to Britain in 1967 from the United States where he led a research group at MIT after the CIA presumably threatened to cut the governmental funds of his laboratory because of his refusal to divulge the "political attitudes" of some of his students (Andrew, 2002). Fortunately, a professorship was available for him at the University College London (UCL) in the anatomy department led by neuroanatomist J. Z. Young. Pat Wall had received a small grant from an American foundation to "enhance neuroscience in Britain" and since the London Black Horse Group was self-funded, the money was used to establish a more formal structure (S. P. R. Rose, 2010a). Other noteworthy members of the group were John O'Keefe, John Wolstencroft, Harry Bradford, John Cavanagh, Barry Cross, Harold Hillman, and Herman Bachelard.

The first general meeting took place in a lecture hall at UCL in 1965 (S. P. R. Rose, 2010b). However, as the setting was not conducive to informal discussions, the Black Horse Pub was suggested instead since it had a convenient meeting area over the ground floor. In fact, pubs were not unusual meeting places for learned individuals. Even the founders of the Royal Society initially held their discussions in a "tavern" near Gresham College

[8]For more on the crucial role the Rockefeller Foundation played in shaping and bringing to the fore molecular biology, see Kay (1997).

where they attended public lectures by distinguished professors (Lyons, 1944). From this beginning, the monthly meetings in Rathbone Place were instituted. Informality was the ethos of the gatherings and consequently no minutes were taken until the association was formally established in 1968.

It is important to note that these brain scientists did not call themselves "neuroscientists" at that point in time. They were surely aware of being part of a new scientific community that was in the process of "disciplinization" but many of the initial members were trained as physiologists, biochemists, anatomists, neurologists, and experimental psychologists. And, although some of them also considered themselves "neurochemists," neurochemistry was still in its infancy as it only became institutionalized in the late 1950s and early 1960s (Bachelard, 1988; McIlwain, 1991; Lunt & Eisenthal, 2007). In fact, the term "neuroscientist" first appears in the minutes related to a meeting held in 1978. And, even in the 1980s, the idea of an independent discipline called "neuroscience" was still not widely accepted or self-evident. In 1985, S. Logan, the BRA Treasurer, writes in a memo, "I think many neuroscientists regard themselves as anatomists, biochemists, pharmacologists, physiologists, in the first instance and neuroscientists secondly. Thus as yet I do not see 'Neuroscience' as an academic discipline at the undergraduate level" (Brain Research Association, 1977–1984).

This should come as no surprise. After all, these were the transformative years of neuroscience into a discipline of its own right. Most of the first textbooks with "neuroscience" or "neurosciences" in the title appeared in the mid-1960s and were all related to the NRP (Neurosciences Research Program, 1966; Quarton et al., 1967; Schmitt & Quarton, 1970) with the exception of an edited volume by J. P. Schadé and Toshihiko Tokizane entitled *Correlative Neurosciences* (1966). On the other hand, many books, particularly in the 1970s and 1980s, were published simultaneously in the United States and United Kingdom but primarily by American scientists. An exception is *Minireviews of the Neurosciences: From "Life Sciences"* (Volumes 13, 14, and 15) published in 1975 and coedited by Bernard B. Brodie (a renowned British biochemist) and Rubin Bressler (an American physician). The first book published in England by a British scientist is a book written by Sir John Walton and published in 1983 under the title *Introduction to Clinical Neuroscience.* And yet, the title was seen as "misleading"; as a reviewer remarked the book was not about the basic sciences relevant to neurology (which one infers was the definition of neuroscience in the 1980s) but about the neuropathological processes involved in specific lesions in the nervous system (Simpson, 1984). In other words, the book sounded more "neurological" than "neuroscientific." Interestingly, as of the 1970s onwards, and more significantly since the 1990s (the "Decade of the Brain"), the use of the term neuroscience in its singular rather than plural form becomes more common and more popular reflecting perhaps the now established belief in a "unified" neuroscience that could be "taught at the undergraduate level," to borrow Logan's words.

Interdisciplinary courses on brain biochemistry and neurobiology were established as of the 1960s, although the first degrees in "neuroscience" would mostly appear at the dawn of, but especially during, the 1990s. In 1961, the IoP began offering an intensive one-week practical course in neurochemistry at the Department of Biochemistry under the then Head, Henry McIlwain.[9] The course was so popular that it was consistently oversubscribed. That same course became the "MSc course in neuroscience" in 1990. The University of Edinburgh introduced its first "Hon BSc in Neuroscience" for undergraduates

[9]I thank John Stephenson at the IoP for providing me with this information and for directing me to the history of the MSc in neuroscience at the IoP available at http://www.iop.kcl.ac.uk/sites/neuroscience/?id=52 (Accessed June 2010).

in 1986 under the influence of John S. Kelly, one of the early members of the BRA and chairman of the BRA committee from 1986–1989.[10] At Cambridge University, a neuroscience course for undergraduates was established in 1988.[11] Both Oxford and Edinburgh universities established their first MSc in neuroscience in 1995 but it should be noted that no undergraduate degree in neuroscience was ever offered at Oxford.[12] Perhaps more significantly, UCL under the leadership of Geoffrey Burnstock established in 1979 the first British center dedicated to this nascent discipline, the "Centre for Neuroscience" (Brain Research Association, 1968–1987). And the Departments of Biochemistry and Pharmacology at the IoP merged into a "Department of Neuroscience" in 1989 with the first MSc introduced a year later. Yet, the bulk of the institutionalization would happen — perhaps unsurprisingly — during the Decade of the Brain.

Since its inception in 1961, the IBRO had instructed all of its members to set up national brain research associations and this is why one of the UK representatives on the IBRO council, Derek Richter, tells us that he proposed to establish one in Britain.[13] The first reaction of the Black Horse Group was, unsurprisingly perhaps, resistance simply because they saw this initiative as an attempt to hijack their own agenda. They believed there was no need to create a new association since it already existed; it was precisely the one they were trying to forge. Nevertheless, Richter was persistent and the discussion between him and the London group culminated in a big and heated meeting at UCL in 1968. But, before proceeding further, let us say a few words about Richter.

Initially trained as a chemist and later as a medical doctor, Richter is regarded as one of the "founding fathers" of modern neurochemistry along with Henry McIlwain, Judah Quastel, and others (Bachelard, 1988; Balazs, 1996; Gaull, 1996).[14] But Richter's numerous contributions and achievements extended far beyond the confines of the laboratory. As mentioned earlier, he established a Neuropsychiatric Research Unit in Cardiff in the late 1950s (the unit moved to Carshalton in 1960), which was probably one of the first British laboratories that promoted multidisciplinary approaches to neurobiology and neuropsychiatry (D. Richter, 1989). But, he also set up a "Mental Health Research Fund" that played an important role in funding mental health research in the United Kingdom (Balazs, 1996). Moreover, Richter substantially contributed to the institutionalization of the new hybrid disciplines such as neurochemistry and the neurosciences. When he served as the secretary of the IBRO from 1972 to 1979, not only did he initiate the publication of *IBRO News* — considered the most widely distributed bulletin in the brain sciences (Balazs, 1996)—but he also helped launch, in 1976, *Neuroscience*, one of the very first journals dedicated to the neurosciences (Marshall et al., 1996).

In his memoir, *Life in Research*, privately published in 1989, Richter writes that as a UK representative of the IBRO he thought that Britain should follow the American model by establishing a national association dedicated to brain research (D. Richter, 1989). It is worth noting that the only American neuroscience association or group of brain

[10]Many thanks to Jane Haley and Richard Ribchester at the University of Edinburgh.

[11]A short history of the program in neuroscience at Cambridge can be found at http://www.neuroscience.cam.ac.uk/about/history/ (Accessed June 2010).

[12]Thanks to Deborah Clarke at the University of Oxford for providing me with this information. For Edinburgh, see http://www.dns.ed.ac.uk/rrrweb/MScNeuroAboutCNSMSc.htm (Accessed June 2010).

[13]Of course, this does not mean that the IBRO was behind the foundation of all brain research institutes and organizations in Europe and elsewhere.

[14]Neurochemists usually trace back the beginnings of their discipline to Thudichum's 1884 treatise on the "Chemical Constitution of the Brain" (see McIlwain, 1991).

researchers involved in the new endeavor of "neuroscience" in the 1960s was the NRP. Judith Swazey (1975, p. 542) tells us that Schmitt and his colleagues often referred to the first meetings that shaped the NRP as an "invisible college" in reference to the precursor of the Royal Society, the seventeenth-century circle of virtuosi described by Robert Boyle as an "invisible college" in his letters written in 1646 and 1647 (Lyons, 1944; Lomas, 2002). This "invisible college" ultimately became "visible" once formally launched in 1962 as the NRP and with the incorporation of the Neurosciences Research Foundation (NRF) in the Commonwealth of Massachusetts in 1963 (Swazey, 1975; Schmitt, 1990). The latter was a private association established to support financially the NRP when public funds could not be used and to provide start-up funds for projects before further funds could be sought from national and federal agencies (Schmitt, 1990). Although the Society for Neuroscience (SfN)[15] has become the largest and most influential neuroscience society not only in the United States but also in the world, it was only created after the launch of several initiatives, the IBRO in 1961, the NRP in 1962, the International Society for Neurochemistry in 1965, the International Neuropsychological Society in 1967, and both the formal BRA and the European Brain and Behaviour Society in 1968. Unsurprisingly, some of the protagonists behind the NRP were among its founding members; Adelman tells us that "ten of the first 12 presidents of the SfN were NRP associates" (Adelman, 2010, p. 21).

Richter writes that his idea of launching a national research association in the United Kingdom was not unanimously received by the council members of the IBRO (D. Richter, 1989, p. 141). Without providing us the reasons of such an opposition, he tells us that five IBRO members from the United Kingdom who were also Fellows at the Royal Society were opposed to the idea (D. Richter, 1989, p. 141). The argument probably would have been that there was no need to as brain researchers in the United Kingdom were served by existing societies like the nineteenth-century old Physiological Society.[16] Following the opposition he encountered on the council, Richter decided to convene a meeting to discuss publicly the need for such a national association (D. Richter, 1989, p. 141). But as mentioned earlier, the meeting was seen as an opportunity to challenge Richter's monopolizing plan. According to the minutes of the BRA, this general meeting took place on May 9, 1968 at the National Hospital for Neurology and Neurosurgery on Queen Square, London. Richter writes: "At that meeting I explained the general idea of an association that could arrange informal discussions meetings of the kind we had in our Unit [MRC research unit], and the establishment of the BRA in the UK was finally agreed. In due course local discussion groups of the BRA were set up in 16 different regional centres round the country and the membership grew to more than 1,000" (D. Richter, 1989, p. 115).

Although both the archival documents and Richter's memoir do not mention the frictions and clashes of interests, the meeting in fact turned out to be "stormy" as it involved a great deal of politics and contestations related in specific to Richter's dismissal of the legitimacy of the Black Horse Group as the national representative of British neuroscience (Lagnado, 2010; S. P. R. Rose, 2010a). A committee ended up being elected including John B. Cavanagh, Barry A. Cross, John Dobbing, Chris Evans, Edward George Gray, Pat Wall, Ian C. Whitefield, and Oliver L. Zangwill. Three key people from the Black Horse Group took over the reins of the BRA, John Dobbing and Chris Evans as "joint secretaries"

[15]For more on the history of the SfN, see Doty (1987).
[16]I thank Steven Rose for this comment.

Table 1
BRA trustees

	BRA Trustees		
	Chairman	Hon. Secretary	Treasurer
1968–1972	P. D. Wall	C. R. Evans	J. Dobbing
1972–1973	P. D. Wall	C. R. Evans	J. Dobbing
1973–1974	P. D. Wall	C. R. Evans	J. Wolstencroft
1974–1975	H. Barlow	G. Einon	J. Wolstencroft
1975–1976	H. Barlow	G. Einon	J. Wolstencroft
1976–1977	H. Barlow	G. Einon	S. File
1977–1978	G. Einon	*	S. File
1978–1979	J. Wolstencroft	J. O'Keefe	S. File
1979–1980	J. Wolstencroft	J. O'Keefe	P. Lewis
1980–1981	J. Wolstencroft	J. O'Keefe	P. Lewis
1981–1982	A. Sillito	V. Stirling	P. Lewis
1982–1983	A. Sillito	V. Stirling	R. Hill
1983–1984	J. O'Keefe	V. Stirling	R. Hill
1984–1985	J. O'Keefe	*	R. Hill
1985–1986	J. O'Keefe	*	S. Logan
1986–1987	J. Kelly	P. Roberts	S. Logan
1987–1988	J. Kelly	P. Roberts	S. Logan
1988–1989	J. Kelly	P. Roberts	J. Garthwaite
1989– 1990	J. Kelly	I. Kilpatrick	J. Garthwaite
1990–1991	R. Morris	I. Kilpatrick	J. Garthwaite
1991–1992	R. Morris	I. Kilpatrick	P. Bradley
1992–1993	R. Morris	Mike Stewart	P. Bradley

*Information missing. The archival documents do not contain all the newsletters in which the new BRA committee members were announced. Also the minutes sometimes contradict the information published in the newsletters.

and Pat Wall as chair (see Table 1 for list of BRA trustees).[17] The newly elected "organizing committee" then gathered in the Board Room of the National Hospital to discuss the agenda of the new association (Brain Research Association, 1968–1987).

Hence, although the meeting on Queen Square officially launched the institutionalization of the British neuroscience project and although it is clear that Richter did play a catalytic role in formalizing brain research in the United Kingdom, he was in no way its initiator or indeed one of its founding members (Bachelard, 2004; Lagnado, 2010; S. P. R. Rose, 2010a). Moreover, despite Richter's presence at the first official meeting and the acknowledgement by those present of his instrumental role in formalizing the association, the Black Horse Group antedated the BRA for two to three years and it can be inferred from the archives that by 1967 it counted around 200 members, although, of

[17]Steven Rose did not stand for elections as he was heavily involved in other committees and associations like the newly formed British Society for Social Responsibility (BSSRS) that will be tackled later in the article. He would nonetheless serve as a BRA committee member from 1970 to 1975 and again from 1988 to 1990 (S. P. R. Rose, 2010a).

course, many fewer attended the informal monthly meetings (Brain Research Association, 1968–1987). Furthermore, the Black Horse Group remained the backbone of the BRA for a long time especially throughout its foundational years. It was envisaged as the nucleus of the BRA's London branch and the model for the new association's local branches that would spread all over the United Kingdom. More significantly, the Black Horse Group organized several multidisciplinary talks before the launch of the BRA on the very premise that multidisciplinarity was indeed the best way to approach the complexities of the brain and the nervous system. Besides informality, the topics that were discussed had to cross disciplines and had to be accessible to all kinds of backgrounds and disciplines (S. P. R. Rose, 2009, 2010a; Lagnado, 2010). In that sense, the BRA could be viewed as a more formal prolongation of the Black Horse meetings (Lagnado, 2010).

The aims of the British BRA and the American NRP were clearly in harmony: (1) to promote a *multidisciplinary* approach to the study of the structure and functions of the nervous system; (2) to *correlate* when possible the findings of such studies; (3) to promote *collaboration* among researchers from different fields and *communication* of research outputs and findings on a wide scale; and (4) to *advise* upon problems concerning the structure and function of the brain and the nervous system (Brain Research Association, 1968–1987). Multidisciplinarity was at the crux of the agenda as it was considered to cut with the "traditional" approaches of extant biological societies. But, of course, the idea of multidisciplinarity and collaboration in science, indeed in brain science, was not new, albeit not so old. The first documented networks of collaborative projects to ease and promote research in science date back at least to the nineteenth century (J. Richter, 2000). But the first such collaborative and multidisciplinary networks around "brain research" goes back to the creation in 1903 of a "Brain Commission" at the former headquarters of the Royal Society in London, at Burlington House, during the second General Assembly of the International Association of Academies and upon the request of the Swiss-German anatomist Wilhelm His (J. Richter, 2000). The Brain Commission had among its ranks the finest brain scientists at the turn of the twentieth century including, Wilhelm Waldeyer, Paul Flechsig, Camillo Golgi, Santiago Ramón y Cajal, Charles Scott Sherrington, and others (J. Richter, 2000). Its primary goals were the encouragement of both the formation of national brain institutes and collaboration among brain scientists (J. Richter, 2000). However, the collaboration was around one specific brain-related problem: comparative neuroanatomical research. As Jochen Richter tells us, the role of the organization was to provide "brain banks and archives of histological preparations, available at all times, and also to act as centres for the optimal application, and possibly for the improvement, of these studies" (J. Richter, 2000, p. 446). Moreover, by the time the Brain Commission dissolved at the outbreak of World War I, no brain institute got established in the United Kingdom though several brain institutes got established elsewhere in Europe but also in the United States.[18] Actually, Steven Rose had continuously argued for a London-based central brain research institute while he served as secretary of the "neuroscience committee" (from 1968–1969), set up by the Science Research Council (SRC) and chaired by J. Z. Young. Nevertheless, his recommendation never materialized for reasons of classic institutional rivalries: Oxbridge was not happy "to cede brain research to some central site in London" (S. P. R. Rose, 2010a). Several decades after the dissolution of the Brain Commission, the IBRO, founded in 1961 in Ottawa, would undertake similar goals: the formation of national brain research

[18]For more details about these institutes and a more elaborate history of the Brain Commission, see J. Richter (2000).

institutes and the encouragement of international collaboration among brain researchers (Marshall et al., 1996). Precisely because of their striking similar goals (broadly speaking), Jochen Richter considers the IBRO the natural successor of the Brain Commission (J. Richter, 2000).

Yet, the formation of local multidisciplinary gatherings around the brain, be they in the United States or in the United Kingdom, allowed the emergence of something more than just a plural dialogue across disciplines. By hybridizing different schools of thoughts, practices, and techniques around one new object of study, "the brain," a new discipline was born: neuroscience. However, as with molecular biology, neuroscience brought with it a new "approach," a new style of thinking, examining, visualizing and studying the brain, a "neuromolecular gaze" (Abi-Rached & Rose, 2010). It added a new level of analysis onto the "traditional" ones, be they clinical or physiological: a molecular approach that proved successful in molecular biology and that would inspire so many leading neuroscientists who would dominate the twentieth century (for example, see Schmitt, 1990; Crick, 1995, 1999; Kandel, 2006; Dudai, 2008; Squire & Kandel, 2009).

From BRA to BNA (1968–1996)

Institutionalizing Neuroscience in the United Kingdom

The launch of the formal BRA in May 1968 was announced in the journals and newsletters of the most prestigious medical and biological institutions in the United Kingdom: the *Physiological Society's Bulletin*, the *British Medical Journal*, and the *Biochemical Journal*. The new association took off thanks to an initial grant of £500 from the Wellcome Trust followed by another grant of $1,000 from an American fund, the Foundations' Fund for Research in Psychiatry (FFRP). Interestingly, FFRP seemed to have shifted its funding policy in the 1960s from psychoanalysis to neurobiology, investing in what was heralded as the "modern era of psychiatric research" (Pines, 1983) or what some would call, perhaps more sensibly, the era of "modern neuroscience" (Kandel, 1982). Shortly after its establishment, the BRA sought charitable status. A newsletter was introduced and subscription to the new association became a source of financial income, covering the expenses of both local group meetings and more general BRA-related meetings. But, as with many successful organizations, it is the judicious management and strategic investment of the association's assets and savings that helped it sustain itself. Nevertheless, the BRA faced some serious financial difficulties especially in its early years as attested by the cancellation of several events, including two summer schools for lack of funds. These financial hurdles faced by the BRA were obviously in stark contrast with the American neuroscience project that benefited from invaluable resources, be they federal or private (Schmitt, 1990).

BRA memberships kept rising steadily over the years (Figure 1) reaching almost 2,000 members in 1997 (Kalaria, 1997, p. 3). Clearly this is a very modest number compared to the American SfN: with 10,000 members by 1985 (less than two decades after its foundation in 1969), 30,000 by 2002, and over 40,000 in 2010.[19] Four types of meetings were introduced to promote multidisciplinary and collaborative work: Summer Schools, Annual General Meetings (AGM), one-day meetings on a specific topic, and local group meetings (Table 2 summarizes some of the events organized by the BRA). These were generally well attended and sometimes financially supported by the pharmaceutical industry

[19]SfN official Web site http://www.sfn.org/index.aspx?pagename=about_SfN (Accessed May 2010).

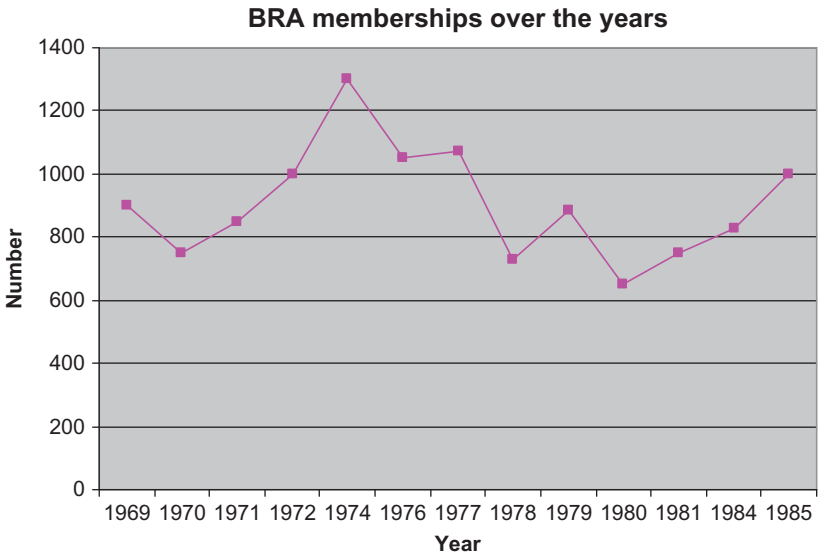

Figure 1. BRA membership (1969–1985). Note that there are no references for the years 1973, 1975, 1982, and 1983. In addition, these numbers sometimes refer to all memberships (including unpaid ones) and sometimes to paid memberships only (color figure available online).

when alternative funding (through the Wellcome Trust or Nuffield Council) was unavailable. The idea of "national meetings" only emerged when the members realized that the BRA was not "visible" enough in the United Kingdom and as such could not be said to legitimately represent the interests of all British neuroscientists and British neuroscience more broadly speaking. Perhaps because the name of the association referred to the "brain" rather than "neuroscience," its status as the representative of "British neuroscience," or its "natural base" (Brain Research Association, 1977–1984), has never been self-evident.[20] Indeed, the BRA had to intervene a few times to abort attempts to launch another "British Society for Neuroscience." For example, in 1985, Dr. William Winlow sent a manifesto, a "call to arms" as he put it, that he intended to publish in the journal *Trends in Neurosciences* (*TINS*), arguing for the need of a neuroscience society in Britain. David Bousfield, the then editor of *TINS*, was aware of BRA's existence having participated a month earlier in a key round table organized by the BRA on the future of neuroscience funding in the United Kingdom. Sensing the serious implications of Winlow's manifesto, he immediately alerted the committee members of the BRA. After several discussions on a possible merger of interests between the BRA and the "Northern Neurobiology Group" (NNG), chaired by Winlow, it became apparent that the NNG did not even amount to a BRA chapter as it constituted mainly of a large mailing list of scientists based in Leeds with occasional symposia organized sporadically (Brain Research Association, 1977–1984).

[20] Another contentious debate worth mentioning is the one concerning the need to have a British journal dedicated to the neurosciences. According to Steven Rose, this debate was even more salient than the debate over the name of the association, although curiously not mentioned once in the minutes. The issue seems to have been resolved with the publication of the *European Journal of Neuroscience,* the official publication of the Federation of European Neuroscience Societies (FENS) founded in 1998.

Table 2
A Synoptic overview of some of the events organized by the BRA over three decades

Year	Meetings
1970	Summer School, King's College, Cambridge (Topics covered: Sleep; Psychoactivators; Brain Development; Brain Analogues; Genetics and Environmental Factors)
1971	First AGM Summer School, King's College, Cambridge (Topics covered: Neurochemistry; Psychology; Anatomy; Pathology; Physiology)
1973	Summer School, Birmingham University (Topics covered: Neuroendocrine control of behavior; Sensory processing in the visual system; Role of the hippocampus; Plasticity and Connectivity; Applications of neurobiology in clinical practice; New techniques for investigating the central nervous system)
1974	Meeting on Social Aspects of Brain Research (Topics covered: Psychosurgery; Use of drugs to control behavior, Models of man; Psychological methods of controlling behavior; Legal and ethical aspects of the above)
1975	Summer School, King's College, Cambridge (Topics covered: Interhemispheric communication and Consciousness; Amines and behavior; Sensory receptors and patterns in development) One-day meeting Septo-hippocampal satellite, UCL (jointly with the Ciba foundation and EPS)
1978	Two-day meeting "Memory in Man and Animal, " UCL (jointly with EPS) Recent advances in research into pain and pain control – Pain I meeting, Birmingham Mill Hill Neurobiology Meeting "Axons guiding" (first "Quiche meeting") AGM
1979	Vision and motor systems meeting, Birmingham AGM
1980	Pain-II meeting, NIMR, Mill Hill Biology of Brain Tumors, National Hospital for Neurology and Neurosurgery, London Meeting on "feeding mechanisms" Learning and Memory –II (jointly with EPS) Current techniques in neuroanatomy, Oxford (jointly with SEB) DNA repair and neurological disease, London Basal Ganglia Meeting (jointly with Parkinson's Disease Society)
1981	Novel transmitters, Birmingham Learning and Memory III, Institute of Neurology, London (jointly with EPS) Symposium on Neuropathology (jointly with Wye College) Quiche II Mill Hill, NIMR

(*Continued*)

Table 2
(*Continued*)

Year	Meetings
1982	Pain Meeting, Bristol
	Environmental pollutants and the brain
	Neuroendocrine mechanisms, Oxford
	AGM
	Quiche III – olfactory conference, NIMR
	Chris Evans memorial lecture, Bedford (during the EPS meeting)
1983	Neurostereology meeting, Liverpool
	Scottish Meeting
	Excitatory Amino Acids, Cardiff
	AGM
	Symposium in memory of Wolstencroft, The Royal Veterinary College, London
	Brain transplants, NIMR
1984	Receptor workshop, Southampton
	Cortex meeting, Cardiff
	Spinal cord meeting
	Neurobiology of dopamine systems, Leeds
1985	First National Meeting, Southampton (with a session on "the future of neuroscience funding in Britain")
1986	National Meeting, Birmingham-*First Wolstencroft Memorial Lecture*
	Pain meeting, Liverpool (jointly with the International Association for the Study of Pain)
	Recombinant DNA and neurobiology, Mill Hill
	Making the nervous system, Wye College
	Glial cell meeting, NIMR
1987	National Meeting, Edinburgh
	Autoradiography and Imaging Analysis, The Open University
	Recent advances in the spinal cord
	Brain cell, Liverpool
	Alzheimer's disease, Southampton (jointly with Alzheimer's disease society)
1988	National Meeting, London
	Recovery of Neural Function, Oxford
	Neural and behavioral plasticity in the domestic chick, Sussex
	Mechanisms of recovery of function after brain damage, Oxford
	Neural and sensory mechanisms in locomotion, Bristol
1989	National Meeting, Sheffield
	(Topics covered: development and regeneration of the cerebellum; axonal transport; neural control of the gastrointestinal tract; neuropharmacology; functions of the superior colliculus; clinical advances in basic neuroscience; formation of axonal connections; First meeting of BWINS)

(*Continued*)

Table 2
(*Continued*)

Year	Meetings
	AGM
	Calcium and neuromodulation, Southampton
	New perspectives in glial cell research (jointly with UCL and Middlesex Hospital Medical School)
1990	National Meeting, Bristol
	(Topics covered: plasticity; neural integration; trends in neuroscience; Evening forum on "mind and society")

Note. AGM: Annual General Meeting; EPS: Experimental Psychology; NIMR: National Institute for Medical Research; SEB: Society for Experimental Biology; UCL: University College London.

Putting aside the minutiae of the discussions that went on between the BRA and Winlow, this encounter proved to be beneficial to the BRA for it reinforced its status as the sole national representative of "neuroscience" in the United Kingdom and proved to be a strong impetus thereafter to advertise it as such. The BRA was already well established, it had a formal constitution, it was well equipped to sustain itself financially, it was affiliated with the world's premier neuroscience societies — the American SfN, the European Neuroscience Society (ENA), and the IBRO (considered "the world federation of neuroscience")—it had active groups all over the United Kingdom, and it held many local and national events on a regular basis. Moreover, it took the initiative to "represent the interests of neuroscientists" in the United Kingdom on several occasions and expressed its wish to become more active on this front. And, lastly, it had established links with the industry.

This moment of "existential" or "identity crisis" had also a significant impact on the name of the BRA. As the minutes indicate from the moment of its inception, there was vehement opposition and resistance to changing the name of the association — though the founders themselves were indifferent to the politics of naming (Lagnado, 2010; S. P. R. Rose, 2010a). Indeed, in 1982 at the AGM in Southampton, members of the BRA unanimously voted to keep the name of the association unchanged as it was deemed unnecessary and disadvantageous (Brain Research Association, 1985–1989). Moreover, the BRA did not feel compelled to change the name because it was not a condition for their membership in international forums like the IBRO. This tension around the name of the BRA would remain dormant until 1996 when members of the association will unanimously vote this time to supplant the "brain" by "neuroscience." But more on that later.

By February 1969, there were eight active local groups throughout the United Kingdom. These were located in Manchester, Birmingham, Exeter, Swansea, Edinburgh, Bristol, Dublin, and London. By 1974, the number had risen to 18. National events such as summer schools had become a regular feature. And many local and national events were made possible through the work of these groups in conjunction with the BRA committee. The memberships related to the London group were unsurprisingly overwhelming, with 40% of total memberships and with new groups continuously budding like the Imperial College Neuroscience Group, the Spinal Cord, the Glial Cell, and Developmental Neurobiology Clubs. These would help form an ever-growing neuroscientific hub based in London.

But the activities of the local branches were not the only means of promulgating this new multidisciplinary approach to brain, mind, and behavior. The BRA sought collaboration with several British societies, specifically the Experimental Psychology Society (founded in 1946), the British Society for Developmental Biology (founded in 1948 initially as the "London Embryologist Club"), and the British Society for Cell Biology (founded in 1965). Since the very beginning, the BRA committee members were particularly keen to formalize the longstanding links with the SfN, which was growing on a remarkable pace. The official link was finally announced in BRA's sixth bulletin published in 1971. But perhaps it is the relation of the BRA with the IBRO that deserves closer scrutiny. Although the general impression was that the BRA was established *because* the IBRO needed a national representative for the United Kingdom, this is clearly not the case for reasons already mentioned but also because it took many years before the link with the IBRO became official. In 1978, the BRA's application to join the IBRO was rejected on the basis that the Royal Society had a longstanding application before the BRA. In fact, it was only in 1982, more than a decade after its foundation, that the BRA became publicly affiliated with the IBRO (Brain Research Association, 1981–1987). Of course, this was seen as a strategic and advantageous move for the BRA as it now meant that it was indeed the official national neuroscience association in the United Kingdom.

Although the need for university degrees and chairs in neuroscience was discussed since at least 1968, it was not seriously followed up. Ten years later, the BRA was still facing a lack of research centers dedicated to the neurosciences and a lack of university degrees that taught neuroscience. Nevertheless, the institutionalization of neuroscience does not only work for the sake of knowledge but it also reflects and serves to cement the recognition of the growing importance of a new expertise beyond the closed circle of professional and learned societies. Indeed a discipline cannot survive without institutions that endorse it, support it and enable its growth. That is why it was decided that the BRA, which was not initially invited to comment on the University Grants Committee (UGC)'s "research selectivity exercise" for the year 1988, should comment on the draft and press the committee to allocate funds for the creation of chairs and departments that would focus exclusively on neuroscientific research. A subcommittee including John Wolstencroft, Paul Lewis, and John Cowley was formed to look into these proposals and to prepare a formal submission to the UGC. Furthermore, during the 1989 national meeting in Sheffield, an evening session was devoted to introduce neuroscience in educational textbooks for schools and university degree courses.

Neuroscience was clearly growing in importance as the subcommittee argued in its proposal to the UGC. Four industrially funded neuroscience research centers had been established, the Merck Sharp and Dohme in Harlow, Parke-Davis in Cambridge, Sandoz at UCL, and Astra at the Institute of Neurology in London. As mentioned earlier, new bachelor and master degrees in neuroscience were being introduced across the country, though at a much later stage compared to the United States.[21] Finally, the Science and Engineering Research Council (SERC) had established an initiative for "invertebrate neuroscience" (Science and Engineering Research Council, 1985) and both the MRC and SERC, two of the United Kingdom's main funding agencies for medical and engineering research, respectively, were pushing forward the establishment of an Interdisciplinary Research Centre dedicated to the neurosciences. Yet, even at the dawn of the Decade of the Brain, British neuroscience was still struggling for adequate governmental funding.

[21]For example, the first undergraduate degree in neuroscience was introduced at Amherst College in 1973.

Ethics, Society, and Politics

Although the BRA became more committed throughout the years to issues at the interface of brain research and society, its relation to "ethics" and "politics" was somewhat ambiguous. When the newly formed British Society for Social Responsibility (BSSRS), to which some BRA members were also affiliated, planned a meeting on the social and ethical impact of the brain sciences, a year after its establishment in 1969 (H. Rose & Rose, 1976), the BRA decided not to collaborate (Brain Research Association, 1968–1987). Eight years later, and in anticipation of the 1979 Laboratory Animals Protection Bill, John O'Keefe, Honorary Secretary, raised the issue whether the BRA should formulate a position on the ethics of animal research. The committee again turned down the suggestion. There are in fact several other references that clearly show the cautious and "low key" approach the BRA would take whenever it would deal with potentially controversial topics particularly those related to animal and environmental research. For example, it was decided not to seek sponsorship for an event in 1981 on the impact of environmental pollutants on the brain to avoid attracting pressure groups and other activists. Even the one-day conferences on the social implications of brain research that O'Keefe and Nadel ended up organizing in the 1970s were not open to the public (Brain Research Association, 1968–1987).

Several reasons could explain this reluctance to engage with the broader impacts and implications of brain research. Perhaps it was too soon for the BRA to express overtly its views on these matters. It was after all still a nascent society that was struggling to consolidate its own "disciplinary" agenda. The priority was to foster cross-disciplinary talks, an endeavor that was hard enough to achieve. Besides, the BSSRS was precisely founded to deal with such issues. But one should also remember that "bioethics" only came into existence in the 1970s, an advent that significantly reshaped research governance (Rothman, 1991; Jonsen, 1998).

At the turn of the 1980s, the committee started to change its stand vis-à-vis ethics and "public engagement" more broadly speaking. This radical shift was perhaps catalyzed by an invitation to discuss the draft of the new bill on animal research proposed by the President of the Research Defence Society, Lord Halsbury, as an amendment of the nineteenth-century old "Cruelty to Animals Act" deemed outdated and inadequate to regulate the growing use of laboratory animals.[22] The meeting, which took place at the Royal Society in 1983, was attended by Adam Sillito and John Wolfstencroft from the BRA, Lord Halsbury and a number of notable speakers, among them, philosopher Bernard Williams. Although the discussion was thought to be provocative, wide-ranging, and valuable, it was unanimously decided that the BRA should adopt a "low key approach" unless it was decided otherwise at the AGM. But this "low key" attitude was ultimately challenged by the BRA committee members not only because animal ethics and animal research were deemed crucial to brain research (and accordingly to the interest of neuroscientists) but also because it became clear that if the BRA intended to push forward the British neuroscience agenda it ought to be more visible like its twin association on the other side of the Atlantic.

Although this ambiguous relation towards the ethical and social dimensions of the neuroscientific project might be the result of the natural process of discipline formation, it might equally be the result of three broader shifts that marked the twentieth century. The first is the birth of bioethics in the 1970s. The second is the emergence of the notion of "public engagement" and "public understanding of science" in the 1980s (The Royal Society Council, 1985; Gregory & Miller, 1998). The third is a general move towards

[22]The bill eventually became known as the 1986 Animals (Scientific Procedures) Act.

what Nikolas Rose has called a "somatic ethics," that is ethics not in the sense of moral principles but in the sense of values that give central importance to the body and bodily existence (N. S. Rose, 2007, p. 6) and accordingly that give importance to the brain and to our existence as individuals endowed with brains. In other words, what was at the core of much debate and concern, at least in the 1960s and until the end of the 1980s, was the rise of a new ethos vis-à-vis science in general, brain research in particular, the brain as an organ, and the body in much broader terms.

BSSRS was founded on the ground that the close alliance between science and military research was becoming increasingly problematic, more so since the use of the atomic bombs at the end of World War II and the use of toxic agents during the Vietnam War (H. Rose & Rose, 1969, 1976). But these new concerns about the social, ethical, and political implications of science were not simply the result of the problematic entanglement of science and the military, though the latter (as well as other issues such as human experimentation) clearly ignited the birth of a new awareness concerning the far-reaching implications of science. They also reflected how the body and specific organs like the brain could challenge established values, notions, concepts, human attributes, and what it means to be human. Some of these new concerns were tackled (albeit cursorily) at the first Nobel conference on the "human mind" held in 1967 at the Gustavus Adolphus College (Roslansky, 1967). This was in fact the first comprehensive conference on the implications of the new advances in brain research, specifically the new challenges posed by the molecular processes and computational models of cognitive functions to what it means to be a "conscious self" (Eccles, 1967). Obviously, we are still far from the era of enhancement, "brain fingerprinting" and other controversial and problematic ethical issues associated with neuroimaging and other neurotechnologies (Abi-Rached, 2008). These latter developments in brain research would eventually raise new ethical problems, questions, and concerns that set the stage for the rise of a new sort of discipline dubbed "neuroethics."[23]

Besides these ethical and more broadly speaking sociopolitical tensions, it was the role of the BRA as a lobby or pressure group that was deemed more urgent, if problematic. Without some form of representation on governmental advisory boards in addition to its affiliations with major European, trans-Atlantic, and international societies, not only would the BRA lose any legitimacy as the main representative of British neuroscience but it would also compromise the viability and sustainability of the British neuroscience project. As mentioned earlier, the association favored a "low key" approach in relation to controversial ethical and social debates for a relatively long period of time. Similarly it relegated issues at the interface of politics (in its very broad and mundane definition). And it is only when the BRA realized the successful and powerful lobbying capacity the SfN had, particularly in terms of thwarting governmental funding cuts, that the idea of following the example set by the SfN became a recurrent item on the agenda.

Hence, funding was a good reason why the BRA needed to be represented on influential governmental advisory committees. Although funds were successfully raised from a gamut of sources, they were clearly not enough. This is precisely why it was decided to organize an entire panel discussion on "the future of neuroscience funding in Britain" in the

[23]For more about this new "discipline," see (Marcus, 2002; Illes, 2006; Levy, 2007). The twenty-first century saw an upsurge in interest in "neuroethics" since the first conference held in California in 2002 and sponsored by the Dana Foundation. The meeting resulted in a book entitled *Neuroethics: Mapping the Field* (Marcus, 2002). Since then a "Neuroethics Society" was established in 2006, followed by the National Core for Neuroethics at the University of British Columbia, in Vancouver, Canada, a new journal entitled *Neuroethics* was launched in 2008 and, in 2009, the University of Oxford established The Wellcome Centre for Neuroethics.

first national meeting held in 1985 in Southampton. The roundtable chaired by *TINS*'s editor aimed both at raising awareness about the need for a sustainable neuroscience project and at explicating the promissory agenda of this new discipline. The speakers included representatives from all major funding councils and charities in the United Kingdom including the MRC, the Wellcome Trust, and the SERC. The important conclusion was the urgent need to shift from a "defensive" to an "offensive" strategy to be able to attract funds and to sustain growth in this new area of research that allegedly had far-reaching implications. Consequently, it was suggested to have a BRA expert adviser on the MRC. This advisory role would also involve some form of "public relations" as the expert adviser would endeavor to raise the profile of the association in the eyes of parliamentarians. The British neuroscience project was now under way.

The Birth of the BNA

It was at the 1996 AGM in Newcastle that members of the BRA unanimously decided to change the name of the association to the British Neuroscience Association (BNA). The rebranding of the association was celebrated on October 1, 1997 at the Wellcome Trust in the presence of Britain's most distinguished neuroscientists. But why wait almost three decades? Why wasn't "neuroscience" adopted from the very start particularly if it was clear to all members that this was a key moment in the history of the brain sciences, in general, and British brain science, in particular? This also comes as a surprise in view of the efforts mentioned earlier to institutionalize and push forward neuroscience in Britain. Names do matter in the end. They are important "acts" that mark the debut of new disciplinary and institutional trajectories (S. P. R. Rose, 1993).

With hindsight, there were definitely some signs of the inevitable incorporation of neuroscience in the name of the association. Minor details like the change of the logo in the 1980s from a sagittal cut of the brain to a neuron or the incident mentioned earlier in relation to NNG and the debate that ensued were a clear indication of an ongoing resistance to the term "brain." The battle over terminology kept resurfacing every now and then until "brain" became an almost polemical word undermining the entire project. Indeed, it is no surprise if "invertebrate neuroscientists" and those working on the spinal cord felt alienated, marginalized, and disgruntled (Allen, 2010).

For some, "neuroscience" is simply a more elegant word than "brain," perhaps even more succinct with a scientific ring to it (S. P. R. Rose, 2010a). But perhaps more convincingly, the term "neuroscience" is panoptic as it embraces a broader range of specialisms beyond the meningeal boundary. Under "neuroscience" could be included any scientist dealing with the brain as an organ, brain tissues, the nervous system or the interactions of all of these with "mind" and "behavior." Indeed, in recent years, it would even come to encompass a new technological field, neuroimaging, which since its rise into prominence in the 1980s paved the way for a new "revolution" in the brain sciences and the rise of a new specialty with its own journals, societies, and institutions.

It would require another article to analyze in greater details the broader sociocultural shift that allowed such a terminological change but one thing is certain, this linguistic mutation is not insignificant. It signals a shift not only in the brain sciences but also in the larger sociocultural setting. The shift "from brain to neuro" was shaped by what could be termed the "neuro-turn" that occurred at the end of the twentieth century marked by the infiltration and exaltation of neuroimages and neurotechnologies in popular culture (Beaulieu, 2000; Dumit, 2004; Joyce, 2008) and at the dawn of a new century heralded as "the century of neuroscience" (Jacob, 1998; Kandel, 1999). All of these developments clearly indicate

that the neurosciences have gained prominence both in scientific and popular imaginations. This in turn might explain why after years of resistance, the BRA finally decided to replace the "brain" by "neuroscience."

Conclusion

The article examined a key historical moment in the short history of the modern neurosciences: the launch of the first British neuroscience project. It traced it back to the early informal gatherings of the London brain discussion group in the Black Horse Pub in Rathbone Place. It showed how the humble beginnings of the group, known as the London Black Horse group, set the stage for a formal organization the Brain Research Association (BRA) renamed a few decades later the British Neuroscience Association (BNA). The article characterized some of the features of this new disciplinary project particularly its claim for multidisciplinarity and yet its predominantly molecular approach to its object of study.

The article also showed how in contrast to the American Society for Neuroscience (SfN), which was well supported by governmental funds, the BRA had to struggle to push forward the institutionalization of neuroscience in the United Kingdom. Nevertheless, the BRA had learnt a great deal from the SfN particularly the need to act as a "pressure group" and being well represented on governmental advisory boards. In addition, the article tackled the ambiguous relation the BRA had in its early years vis-à-vis some of the ethical and social implications of the neuroscientific project and argued that such a shift in the overall position of the association must be situated within three broad mutations that occurred in the twentieth century: the birth of bioethics, the imperative of "public engagement," and the rise of a "somatic ethics" (Rose, 2007). The article ended with a cursory exploration of the renaming of the association from the *Brain* Research Association to the British *Neuroscience* Association.

Does this mean that after the "Decade of the Brain," the twenty-first century will be remembered as "the century of neuroscience"? Although it may be too soon to start appraising the new century, the emergence of neuroscientific projects in the 1960s, both in the United States and the United Kingdom, are certainly indicative of a new "style of thought" that will mark this century in many ways.

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