A 'Brainy' Dispute

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Abstract

In 1909, Acharya Prafulla Chandra Ray (P. C. Ray) wrote the Bengali essay *Bangalir Mastishka O Tahar Apabyabahar*, and authored the English version of the essay in 1910 with the title *Bengali Brain and Its Misuse*. The essay put forward the theory that the decline of Indian civilisation was due to the loss of rationalism and the spirit of free thought. In the context of Bengal, the essay identified problems with the attitude of contemporary youth. Both the Bengali and the English versions attracted a great deal of attention at that time. In 1909, Sri Aurobindo published a critical review of the Bengali version of the essay. We provide an extended summary of P. C. Ray's essay and examine in detail Sri Aurobindo's review of it. Our analysis shows that Sri Aurobindo's criticisms do not hold up against the essay. We next take a detailed look at Sri Aurobindo's essay *The Brain of India* also written in 1909. Our analysis shows that while P. C. Ray's approach was rationalistic where he provided arguments for the main points that he made, Sri Aurobindo provided a mostly metaphysical discourse with hardly any reasoned arguments. The difference in the approaches of the two figures is indicative of the fundamental difference between them – P. C. Ray was an accomplished experimental scientist, while Sri Aurobindo was on the path towards mysticism in 1909.

Keywords: Acharya Prafulla Chandra Ray, Sri Aurobindo, rationalism, Indian civilisation.

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1 Introduction

The two principal personalities that the present article is concerned with are Acharya Prafulla Chandra Ray (2 August 1861 – 16 June 1944) and Sri Aurobindo (15 August 1872 – 5 December 1950).

Acharya Prafulla Chandra Ray (or P. C. Ray) was an eminent scientist and a nationalist. He earned a D.Sc. in Chemistry from the University of Edinburgh and is widely credited with having founded the modern Indian School of Chemistry. Further, along with Acharya Jagadish Chandra Bose, P. C. Ray is credited for having laid the foundations of modern science in India. Apart from science, P. C. Ray founded the Bengal Chemical and Pharmaceutical Works which was the first such company in India. He was a well-known nationalist who reportedly supported the revolutionaries in early twentieth century Bengal, and later supported Gandhian principles. P. C. Ray was a prolific writer who authored many articles in both Bengali and English. We refer to [16, 5, 10] for an account of his life and works.

Sri Aurobindo (also known as Aurobindo Ghosh, and in later life known as Rishi Aurobindo) was among the foremost nationalist leaders in the first decade of the twentieth century. Through his writings and speeches, he was able to capture the imagination of the youth in their struggle

for nationalism. In 1908, Sri Aurobindo was arrested for his alleged involvement in the Muraripukur Bomb Case, but was acquitted in 1909. Within a few years of his release he became an ascetic and a spiritual person, and withdrew from direct engagement with society. We refer to [8] for a biography of Sri Aurobindo.

The starting year of the 'dispute' with which this essay is concerned is 1909. The intertwined timeline is the following.

31 January 1909: P. C. Ray delivered his Presidential address at the Rajshahi Literary Conference. This speech was published in the January–February 1909 (*Magh* 1315) issue of the Bengali magazine *Suprabhat* [14, p. 41, editorial comments].

July (or August) 1909: P. C. Ray published the essay *Bangalir Mastishka O Tahar Apabyabahar* in the Bengali magazine *Suprabhat*. This was his first major Bengali work [14, p. 3, editorial].

August 14, 1909: Sri Aurobindo published a review of the essay in *Karmayogin*. The date of the review is mentioned in [18], and the review itself is available from [1] and also as an appendix to [15]. Later we will quote from [15] for Sri Aurobindo's review.

October – November, 1909: Sri Aurobindo published his essay *The Brain of India* as a series of articles in *Karmayogin*. A note in [18] remarks that this essay by Sri Aurobindo "seems to have been, at least in part, a reply" to P. C. Ray's essay *Bangalir Mastishka O Tahar Apabyabahar*.

1910: P. C. Ray published the English translation of his essay with the title *Bengali Brain and Its Misuse*. See [15].

1917: In his presidential address to Indian National Social Conference, P. C. Ray quoted from his essay [17].

1910–1920: P. C. Ray's Bengali article *Bangalir Mastishka O Tahar Apabyabahar* underwent three editions [14, p. 3, editorial].

1920s and later: The multi-part essay by Sri Aurobindo was republished as a booklet with the title *The Brain of India* in 1921, 1923, 1944, 1948 and also subsequently (as mentioned in [18]). Later we will refer to the 1921 edition [6].

The preface of [14, p. 3, editorial] discusses a possible ambiguity of the year (i.e. whether 1909 or 1910) of the first publication of the essay *Bangalir Mastishka O Tahar Apabyabahar*. However, this ambiguity is resolved by noting that the review by Sri Aurobindo is dated 14 August 1909 in [18], and in the review itself Sri Aurobindo writes: "The paper *Suprabhat* ... enters this month on its third year. The first issue of the new year is before us." Sri Aurobindo then goes on to review all the articles which appeared in that issue of *Suprabhat* with the review of P. C. Ray's essay appearing as the last item. This places the issue of *Suprabhat* where P. C. Ray's essay appeared as either July or August of 1909, but definitely before the review of the essay by Sri Aurobindo on 14 August 1909.

The strands of thoughts that were expressed by P. C. Ray in his essay *Bangalir Mastishka O Tahar Apabyabahar* contain some of his core ideas which appeared later in various forms in a number of articles. The editorial of the later edition of *Bangalir Mastishka O Tahar Apabyabahar* mentions seven such further essays [14, pp. 4–5, editorial] published over a number of years which reflect some of the ideas in his original 1909 essay. The same editorial also mentions that in an essay entitled *Madhyabittyo Bangalir Bekar Somosya* (in Bengali) published in *Grihastya Mongal*, P. C. Ray explicitly referred to his essay *Bangalir Mastishka O Tahar Apabyabahar*. The subsequent essays of P. C. Ray mentioned in the editorial relate to the problems faced by Bengali youth with respect to unemployment and various other problems.

The criticisms of casteism and its effect on the loss of the spirit of inquiry which were discussed by P. C. Ray in his 1909–10 essay(s) were also mentioned in various future works of P. C. Ray. The first volume of his major work *A History of Hindu Chemistry* published in 1902 criticised the system of casteism for leading to the decline of scientific spirit [12, p. 192]. His 1917 presidential address [17] at the Indian National Social Conference laid great stress on the ill effects of casteism. Both casteism and the loss of scientific spirit came under severe criticism by P. C. Ray in his later essay *Satyer Sandhan* (in Bengali, see [2, p. 584]). The essay *Sadhana O Siddhi* (in Bengali, see [13, p. 196]) discussed themes which were close to the spirit of his 1909 essay. P. C. Ray's autobiography [16] published in 1932 devoted a whole chapter to the problems of casteism. The recurring ideas make the 1909–10 essay a centrepiece of P. C. Ray's thoughts and hence by itself worthy of further investigation.

Sri Aurobindo's review of P. C. Ray's essay was quite critical. While he appreciated P. C. Ray's scientific excellence and competence, and agreed about some of the remarks regarding progress in the essay, on the whole Sri Aurobindo sharply criticised the essay. Whether or not Sri Aurobindo wrote his essay *The Brain of India* as a partial response to P. C. Ray's essay, the two essays are far removed in their theme and approach. Given that both P. C. Ray and Sri Aurobindo were and still are influential intellectual figures, the dispute between them merits a thorough investigation. *To the best of our knowledge, other than Sri Aurobindo's review of P. C. Ray's essay, there is no further record of either P. C. Ray or Sri Aurobindo commenting on the essay of the other person.*

As far as we are aware, no previous work attempted to match Sri Aurobindo's criticisms against the actual essay by P. C. Ray. Neither are we aware of any previous work which attempted to place both P. C. Ray's and Sri Aurobindo's essays side by side and make a comparative analysis. In the present work, we take up this tantalising task.

Below we provide extended summaries of both P. C. Ray's essay *Bengali Brain and Its Misuse* and Sri Aurobindo's booklet *The Brain of India*. We would like to emphasise that our summaries are not a substitute for reading the original essays. Instead these summaries and the comments that we provide may help the reader in going through the original works.

2 An Extended Summary of the *Bengali Brain and Its Misuse*

In this section we primarily provide an extended summary of the English version of P. C. Ray's essay. We also include a few quotations from the Bengali version, and provide our translations

of the quoted passages.

The title of the essay *Bengali Brain and Its Misuse* suggests that it is primarily an attempt to investigate the misuse of the Bengali brain. Such an analysis is done in the broader context of the evolution of the Indian civilisation. In the process, the essay also makes some telling remarks on the reasons for the success and decline of any civilisation.

There are many ideas in the essay. Since we provide only a summary, we cannot include all such ideas. In our summary, we mention the ideas which we think form the core of P. C. Ray's views. The essay moves back and forth in time. Our description of the ideas does not follow the essay in its linear movement. Rather we extract these ideas and present them in a manner which is independent of the narrative.

2.1 Central Ideas and a Vision for India

Before getting into the various ideas in the essay, we present what we consider to be the three central ideas in the essay and also P. C. Ray's vision for a future India.

Central Idea 1: Reason. The essay repeatedly stresses the role of rationalism in the development of a nation. This point is succinctly expressed in the following sentence [15, p. 3]:

> **[R1]** Rationalism is the very fountain of a nation's life; the down fall of the Bengali nation commenced from the time when this fountain began to dry up and with it originality and the spirit of inquiry disappeared.

The above quotation strongly suggests that P. C. Ray considered rationalism to be the most important factor in the progress of a nation. Later we provide further quotations to support this view.

Central Idea 2: Empathy. P. C. Ray's whole life was a stellar example of empathy for fellow humans. (See [5] for details of how P. C. Ray selflessly helped others throughout his life.). The essay stresses the role of such empathy and its importance for nation building in the following sentence [15, p. 15]:

> **[R2]** When a man ceases to feel for brother man, he ceases to feel for his country.

Central Idea 3: Progress. A recurrent theme of the essay is progress and change. At several places, the essay mentions that it is important to understand the reality of the present situation and accordingly adapt. The following quotation from the essay neatly captures the idea [15, p. 12]:

> **[R3]** Progress—social, political and intellectual—is the law of Nature. A nation which refuses to move with the altered condition of the times is doomed to stagnation and decay.

Vision for India. Towards the end of the essay, P. C. Ray explicitly states his vision for a future India [15, p. 30]:

> **[R4]** In the India of the future there should be a harmonious comingling of the new and the old, a fusion of the West and the East. There should be equal opportunity for the growth and development of the Hindu and the Mussulman; of the high and the low; of the Brahmin and the Pariah.

2.2 Rationalism in Ancient India

The essay emphasises that in ancient times, India followed rationalistic thought which permitted free critical thinking. The rationalistic phase is identified as follows [15, p. 8]:

> **[R5]** From the time of the *Upanishads* up till the period of the Mahayanist activity, i.e. from about 600 B.C. to 700 A.D., has been named the *Rationalistic Age of India*—an age prolific of the best specimens of the Hindu brain-power.

The essay particularly mentions [15, p. 5]:

> **[R6]** Rationalism and the spirit of inquiry were the redeeming features of ancient India.

P. C. Ray provides two concrete examples of free thinking in ancient India. The first example is that of Sage Kapila who was the propounder of the school of philosophy known as *Samkhya Darshan*. About Sage Kapila, P. C. Ray writes [15, p. 5] that Sage Kapila

> **[R7]** goes the length of calling in question the very existence of God, for it cannot be proved to demonstration ... [though he] pays homage to the *Vedas*.

P. C. Ray's other ancient example is Sage Charvaka who according to P. C. Ray "boldly repudiates the divine origin of the *Vedas*." The essay explicitly mentions the following Charvaka point of view [15, p. 6]:

> **[R8]** The *Vedas* with their descriptions of the heaven and hell are the creations of the fertile imagination of a few rogues and impostors, who have secured an easy means of earning their livelihood by working upon the fears and superstitions and the credulity of the princes and the people at large. These impostors have the hardihood to assert that the animals which are sacrificed in the *yajnas* are translated to the Heavens. If these rogues really have faith in their assertions why do they not decapitate their own parents and offer them as sacrifices?

While P. C. Ray does not take a position on whether he agrees with the Charvaka point of view or not, he highlights that the importance of this view [15, p. 6]:

> **[R9]** The philosophy of Charvaka bears eloquent testimony to the spirit of inquiry in ancient India.

At various points in the essay, P. C. Ray mentions important ancient Indians who did outstanding works. We provide a categorised summary.

Medicine & Surgery: Susruta, Charaka, Nagarjuna, Vagbhata, Bhela, Jatukarna.
Chemistry: Nagarjuna.
Astronomy: Aryabhatta, Varahamihira, Brahmagupta, Srisena, Vishnuchandra.
Mathematics: Aryabhatta, Brahmagupta, Bhaskara II.
Grammar & Linguistics: Panini.
The essay endorses Professor (Albrecht) Weber's view about Bhaskara II (12th century CE): "Last star in the Indian firmament."

An important point made in the essay is that in the Rationalistic Age, Indians were willing to learn from others. Specifically P. C. Ray mentions [15, p. 13]:

> **[R10]** Varahamihira enjoins that as the *Mlechchha* teachers (Greeks) are experts in Astronomy we should sit at their feet and venerate them like *Rishis*.

The Bengali version of the essay contains several passages on rationalism which were abridged in the English version. Since these passages provide a clearer glimpse of how P. C. Ray viewed rationalism, we provide these passages. First we provide the Bengali version, followed by our English translation. P. C. Ray writes [14, p. 36]:

> **[R11]** আমরা আর ভাবিয়া চিন্তিয়া কাজ করি না, যাহা ধারাবাহিকভাবে চলিয়া আসিতেছে, তাহাই অনুকরণ করি— একবার প্রশ্ন করি না 'কেন করিতেছি?'। ইহার পর আবার গুরুবাদ আসিয়া সর্বনাশ করিল। গুরু বলিলেন, 'আমার উপর অচলা আস্থা স্থাপন কর। কোনো যুক্তিতর্ক বা প্রশ্ন করিও না। তাহা হইলেই উদ্ধার হইবে, মুক্তিলাভ করিবে।' গুরু তোমার চোখ বাঁধিয়া গলায় রজ্জু দিয়া টানিয়া লইয়া যাইবেন, তুমি তাহাতে কোনো আপত্তি করিতে পারিবে না। একজন মানুষকে অভ্রান্ত মনে করিয়া তাহার আজ্ঞা পালনে নিজের যুক্তি বিবেচনা বিসর্জন দিলে, আমাদের কার্যসমূহ যে যুক্তিহীনতার সহিত সম্পাদিত হইবে এবং তদ্দ্বারা সমাজের অবনতি সংসাধিত হইবে সে বিষয়ে আর বিচিত্রতা কি আছে?

Our translation:

> We do not think for ourselves, and instead follow whatever is conventional – we do not question "Why are we doing something?" On top of this the system of following *gurus* caused further ruin. The *guru* says: 'You have to be completely obedient. You shall not question or reason with my teachings. Only then shall you be delivered and receive salvation.' The *guru* will blindfold you, and pull you by a rope around your neck, and you will not be permitted to protest. If by considering a person to be infallible, we follow his commands by discarding our own ability to think and reason, then is it surprising that our work and activities will not be based on reason and that this will lead to the degeneration of society?

The following passage from the Bengali version explicitly states that excellence in ancient India was due to rationalism and free thinking, and if India has to improve that spirit must be awakened [14, p. 37]:

> **[R12]** এককালে ভারতবর্ষের উন্নতি হইয়াছিল— স্বাধীন চিন্তা ও স্বাধীন আচারের দ্বারা। আবার যদি ভারতের উন্নতি হয়, তবে তাহাও স্বাধীন চিন্তা ও স্বাধীন আচারের অনুষ্ঠান দ্বারাই হইবে। ... হারবার্ট স্পেন্সার বা শঙ্করাচার্য উভয়েই বলিয়াছেন বলিয়াই কোনো কথা মানিয়া লইতে হইবে তাহা

নহে। নিজের যুক্তি ও বিচারের দ্বারা উহার যথার্থ প্রমাণিত হইলেই তবে তাহা গ্রহণ করিতে হইবে। ইহাই স্বাধীন চিন্তার মূল সূত্র।

Our translation:

> In the ancient age, India achieved excellence due to freedom of thought and action. If India is to improve in the future, then such improvement will also be based on free thought and action. ... One should not accept something only because Herbert Spencer or Shankaracharya said so. One should only accept a statement after determining its appropriateness using one's own judgement and reason. This is the core principle of free thought.

In the English version of the essay, P. C. Ray remarks [15, p. 8–9]: "Inscrutable are the laws which govern the rise and fall of nations." The statement literally means that it is very difficult to determine the reasons behind the flourishing and decline of civilisations. Nonetheless, from the above we see that P. C. Ray tried to put forward the broad idea that freedom of thought and action provides the most important, if not the sole, explanation behind the rise and fall of civilisations.

2.3 Buddhist Contributions

P. C. Ray mentions in glowing terms the Buddhist contribution to the Indian civilisation. Regarding the universal appeal of Buddhism and its effect on spread of knowledge, P. C. Ray writes [15, pp. 6–7]:

> **[R13]** The religion of Buddha later on preached the creed of universal love and brotherhood. The gates of learning were thrown wide open to every class of people and thus every class in its turn contributed its humble mite.

Regarding the scientific contributions of Buddhists to Indian civilisation, the essay states [15, p. 7].

> **[R14]** To the Buddhists India is deeply indebted for the cultivation and improvement of the sciences of medicine and chemistry.

P. C. Ray goes on to mention specific contributions of two important Buddhists.

Nagarjuna: About Nagarjuna, the essay mentions [15, p. 7]: "The great Nagarjuna rendered signal service to the science of chemistry," "first introduced iron preparations in medicine," "inventor of the process of distillation."

Vagbhata: The essay quotes Vagbhata as making two important rationalistic points [15, p. 7]:

> **[R15]** a work is to be preferred not on account of its authorship but because of its intrinsic merit.
>
> **[R16]** medicine is to be judged by its efficacy alone. It makes no difference whether it be administered by Brahma himself or by any one else.

In this context, we would like to point out that both Nagarjuna and Vagbhata are discussed in P. C. Ray's famous two-volume work *A History of Hindu Chemistry*. This suggests that term 'Hindu' in the title of the work was intended in a broad sense rather than in the narrower sense of talking only about the contributions by practitioners of Hinduism. In fact, P. C. Ray made a personal donation to institute a Nagarjuna Prize for research work in Chemistry [10].

2.4 Dark Age

P. C. Ray states that ancient India achieved excellence and poses the following question [15, p. 7]:

> **[R17]** In ancient India not only philosophy and literature reached a high level of perfection, but medicine, astronomy, mathematics and chemistry were zealously cultivated. The question now arises: why did all this intellectual progress come to a standstill and even stagnation?

The essay provides an explicit characterisation of what P. C. Ray considers to be the Dark Age of a nation, which goes beyond India in particular [15, p. 4]:

> **[R18]** The world's history, however, reveals the fact that when nation is reduced to [a] state of intellectual stagnation, it loses the capacity to think for itself and places unshakable faith in the past. It forgets that the world moves—that progress is the law of nature—that a nation, if it means to survive, must alter its manners and social customs according to the exigencies of times. When a nation is reduced to this abject and fallen state, it begins to look upon the scriptures as infallible and borrow light therefrom for its guidance in every-day life. This stage in the life of a nation may be characterised as its Dark Age.

P. C. Ray discusses what he considers to be the Dark Age of India. Disputing the view of some authors about the reason for entering the Dark Age, he writes [15, p. 8]:

> **[R19]** The decadence of the Hindu intellect had commenced long before the followers of Islam had set foot on the Indian soil.

P. C. Ray provides two examples to substantiate his view – firstly, Muslim supremacy was never permanently established in the Southern India, and secondly, Navadwipa and Vikrampur, the centres of learning in Bengal in the later period, were within the easy reach of the Nawabs of Dhaka and Murshidabad.

The essay identifies the reason for the Dark Age in the following terms [15, p. 9]:

> **[R20]** With the decline of Buddhism the Brahmins began to recover their lost ascendency. ... The spirit of inquiry now received a rude shock. Buddhism with its fundamental doctrine of universal brotherhood had thrown the gates of learning wide open to every class of people. The very essence of the rejuvenated Brahminism was exclusivism.

As the effect of the Dark Age starting from around the end of the Rationalistic Age, P. C. Ray mentions [15, p. 1]: "For nearly a thousand years the Hindu nation has been as dead." Since he was writing in 1909–10, the period P. C. Ray was referring started from around 900 C.E. and continued up to the end of the nineteenth century. P. C. Ray explicitly criticised the following figures in the Dark Age.

King Ballala Sen (reigned c. 1158–1179 CE). He introduced the social system known as *Kulinism* in Bengal. According to P. C. Ray, this system led to rigid entrenchment of the caste system which was responsible for dividing society.

Devivara Ghataka (usually placed somewhere in the 14th century). He developed a theory regarding the *Kulinism* system. P. C. Ray writes sarcastically about Devivara Ghataka: "Erudite works on the genealogy of the Kulins were composed."

Kullukabhatta (dated to sometime in the 13th to 15th century). He was a well-known commentator on *Manusmriti*. While P. C. Ray does not explicitly mention any particular criticism of Kullukabhatta, he pairs Kullukabhatta with Raghunandana in his general denouncement of commentators on *Smritis*.

Raghunandana (15th–16th century). He was a well-known commentator on the *Smriti* literature. P. C. Ray criticises [15, p. 1] Raghunandana for

> **[R21]** ransacking the pages of *Manu*, *Yajnavalkya*, *Parasara* and others and laying down the rigid rules of fasting to be observed by a child-widow of nine years of age and in default thereof holding out the terrors of hell fire for her ancestors on the paternal and maternal side.

Raghunatha (1477–1547), Jagadisha (c. 1625 CE), Gadadhara (c. 1650 CE) These were well-known logicians of the Navya-Nyaya school based in Navadwipa. P. C. Ray scathingly writes of their efforts [15, pp. 1–2]:

> **[R22]** engaged in composing glosses and commentaries on the classical works of logic and were thus adding to the consternation of the pupils of the *tols*.

P. C. Ray mentions [15, p. 2] that Bankim Chandra "says somewhere" about Raghunandana, Kullukabhatta, Raghunatha, Jagadisha, and Gadadhara that "even in her fallen state Bengal has given birth to mighty intellects." He says that [15, p. 3]:

> **[R23]** those who base their estimate of past glories of the... Hindu nation, in the light of the writings of Bankim Chandra... are unconsciously led into cherishing mistaken ideas.

Later in the essay, P. C. Ray was willing to give some credit to the people he criticised. Regarding Kulinism, he writes [15, p. 14]:

> **[R24]** We may give credit to those who were responsible for the institution of Kulinism when they made it the reward for personal merit and intellectual and moral attainments. But when Kulinism became hereditary the Bengali sank deeper and deeper in the mire of degradation.

Further, towards the end of the essay, he remarks [15, p. 26]: "Kullakabhatta and Raghunandana may be given their dues. We may even admire their learning. But they have had their

days." So P. C. Ray's criticism was not wholesale. Importantly, he was advocating the view of not clinging to the past.

Three particular injunctions of the scriptures are criticised by P. C. Ray. Two of these are explicitly directed towards Manu. The first relates to casteism. P. C. Ray writes [15, p. 10]:

> **[R25]** In my 'History of Hindu Chemistry' under the chapter devoted to the 'knowledge of Technical Arts and Decline of Scientific Spirit,' I have thus summed up the pernicious consequences of the 'Laws' of *Manu*. 'It was considered equally undignified to sweat away at the forge like a Cyclops. Hence the cultivation of the *Kalas* by the more refined classes of the Society... has survived only in traditions for a very long time past.
>
> The arts being thus relegated to the low castes and the professions made hereditary, a certain degree of fineness, delicacy and deftness in manipulation was no doubt secured, but this was done at a terrible cost. The intellectual portion of the community being thus withdrawn from active participation in the arts, the *how* and *why* of phenomena – the co-ordination of cause and effect – were lost sight of – the spirit of inquiry gradually died out among a nation naturally prone to speculation and metaphysical subtleties and India for once bade adieu to experimental and inductive sciences. Her soil was rendered morally unfit for the birth of a Boyle, a Des Cartes or a Newton and her very name was all but expunged from the map of the scientific world.

One may note that in the above passage P. C. Ray is referring to the macroscopic effect that casteism had on the progress of civilisation as a whole. The effect that casteism had on large sections of the society are also discussed and sharply criticised.

The second criticism of Manu is the following [15, p. 10].

> **[R26]** Manu now laid down that the very touch of a corpse would defile the sacred person of a Brahmin and thus we find that shortly after the time of Vagbhat the handling of a lancet was discouraged and anatomy and surgery fell into disuse and became to all intents and purposes lost sciences to the Hindus.

The word 'now' in the above passage was not intended to be read in the literal sense of being next. *Manusmriti* was written much before the time of Vagbhat. The word 'now' in this context is to be interpreted as saying that from around the time after Vagbhat, *Manusmriti* began to be strictly implemented, while it was not so earlier.

The third injunction criticised by P. C. Ray pertains to sea voyage. Referring to "*Manu* and other law givers," P. C. Ray says [15, p. 11]:

> **[R27]** Sea voyage was equally interdicted. ... Our Shastras by proscribing sea-voyage aimed a death-blow at our future progress.

The "other law givers" referred to by P. C. Ray likely refers to Baudhayana, though the name is not specifically mentioned in the essay.

In contrast to the strict implementation of the restriction on sea voyages, P. C. Ray cites historical examples of sea voyages [15, p. 11].

> **[R28]** We learn from the travels of the Chinese pilgrim Fahian that he sailed on his homeward journey from Tamralipta (Tamluk) to Ceylon and travelled in company with Brahmin merchants.

Fahian, also written as Fa-hien, or Faxian, travelled to India between 399 CE and 414 CE during the reign of the Gupta Emperor, Chandragupta II, also known as Chandragupta Vikramaditya. Further, P. C. Ray cites "vestiges of Hindu religions and temples" in Java and Bali, suggesting that there must have been sea travel in ancient times for these to have come about. Also, he cites Buddhist literature: "extensive maritime trade was carried on between Varocha (modern Broach) and Alassandra (Alexandria)." P. C. Ray goes on to say that

> **[R29]** there was not only commercial, but also intellectual intercourse between India and Egypt and that the Neo-Platonists thus received the doctrines of the Upanishads.

He emphasised the positive aspect of travel in the following passage [15, pp. 11–12].

> **[R30]** Commerce secures exchange of ideas, rounds off the angularities of nations and binds together mankind in the golden tie of brotherhood. The more we know a people by actual contact the more we begin to think charitably of it.

His point was that by restricting sea voyage Indians stopped intermingling with other nations, and this was an important factor in the downfall of the civilisation. In fact, P. C. Ray mentions [15, p. 12]:

> **[R31]** The Hindu began to regard himself as the quintessence of all that is good and noble in creation and to look down upon those who had the misfortune to live outside the pale of his society. The latter were contemptuously named *barbarians* from whom nothing was to be learned.

This attitude he contrasts with Varahamihira who opined that one should learn from the Greeks (see (R10)).

The effect of rigid adherence to scriptures on inventiveness is captured by the following passage from the essay [15, p. 27].

> **[R32]** The Hindu put on the shackles of the *Shastras* and *Smritis* and the result was that from morn to noon and from noon to dewy eve his life was a dreary routine of rites and observances. He became an automaton—all his movements being controlled from outside. He had no time to think for himself. No wonder he ceased to produce any work betokening originality.

This passage is important for his argument. It explains that rigid adherence to customs does not permit a person to think for oneself. Unless an individual is allowed to think freely, he or she cannot produce original work. So in this passage P. C. Ray traces the reason why blind adherence to custom led to intellectual decline.

The use of the word 'any' by P. C. Ray in the last sentence is strong. His essay itself provides a counter-example, the case of Bhaskara II, who belong to the twelfth century CE and was thus

clearly within the period that P. C. Ray considered to be the Dark Age. Since Bhaskara II is praised in the essay, the more reasonable interpretation of the word 'any' is that in comparison to the ancient times and with contemporary Europe, India did not produce sufficiently many brilliant works.

Towards the end of the essay, P. C. Ray clarifies what he meant by his repeated use of the word 'Hindu' [15, p. 13].

> **[R33]** I have so long been using the term "Hindu" in a wide sense. It should be noted here that by this term is not to be meant the mass of people who were simply allowed to live on sufferance under the pale of the society, but a handful of men who had managed to monopolise all the privileges of a dominant caste.

As a specific example of degeneration of science, P. C. Ray discusses the case of astronomy [15, pp. 9–10].

> **[R34]** By the fifth century A.D. we find the beginnings of a scientific astronomy had been laid. Varahamihira distinctly sets forth the doctrine of the diurnal revolution of the earth on its axis. Again Varahamihira, Aryabhatta, Srisena and Vishnuchandra offered the true explanation of the solar and lunar eclipses. But by and by, this scientific explanation came to be discarded. In compliance with the prejudices of the bigots an eighth planet, Rahu, was invented as the immediate cause of the eclipse. Astronomy thus slowly degenerated into astrology.

Keeping in line with the word 'Misuse' in the title of his essay, P. C. Ray does not say that the Bengali, and more generally Indian, intellect become stagnant. Rather, his emphasis is on the misdirected use of the intellect. In fact he writes [15, p. 2]:

> **[R35]** while the intellectuals of Navadwipa were thus utilizing the precious gift of time, in Europe Galileo, Kepler, Newton and other philosophers were unravelling the mysteries of nature and ushering in a new epoch and thus glorifying the intellect of man.

See (R21) and (R22) for what P. C. Ray means by 'thus utilising the precious gift of time.'

Further, P. C. Ray quotes Swami Vivekananda to emphasise his point about the misuse of the intellect [15, p. 13]:

> **[R36]** [T]he country whose best intellects have for the last two thousand years busied themselves with such abstruse problems as the propriety of taking up the food with the right hand or the left, ... that country only courts and richly deserves downfall.

In fact, P. C. Ray writes [15, p. 23]:

> **[R37]** It is to Europe that we must now turn our eyes for the realisation of the ideal presented by our own *Rishis*—unflagging and concentrated devotion to the pursuit of knowledge for its own sake. If Europe has become the mistress of the world, it is because she could not help it since *knowledge is power*.

2.5 Connection to European Thinkers

William H. Lecky (1838–1903) was an Irish historian who wrote the famous book *The Rise and Influence of Rationalism in Europe* (1865) [9]. P. C. Ray drew an interesting analogy. In Europe starting from about the second century CE for many centuries there were numerous individuals who wrote hagiographies of various Christian saints. Such hagiographies were full of descriptions of various miracles being performed by saints. P. C. Ray quotes Lecky as stating [15, p. 5]:

> **[R38]** Those who know how thoroughly the supernatural element pervades the old lives of the saints, may form some notion of the multitude of miracles that were related and generally believed from the fact that M. Guizot has estimated the number of these lives, accumulated in the Bollandist Collection, at about 25,000.

The Bollandist Collection (seventeenth century onwards, founded by the Flemish Jesuit Jean Bolland) was an enormous scholarly compilation which aimed to gather together the various hagiographies which had been written in earlier centuries. Guizot had estimated the number of such hagiographies to be around 25000. Through the quote by Lecky, P. C. Ray was pointing to the enormous effort put in by the hagiographers (i.e. the people who wrote the hagiographies) in propagating miracles and supernatural elements. P. C. Ray went on to draw the nice analogy of such hagiographers with the commentators on *Smriti* literature and concludes [15, p. 5]:

> **[R39]** The period in a nation's life when its best intellects are busy with writing commentaries and interpretations upon the sages of old is not a period to take glory in – it is a period of decadence.

The essay makes another reference to Lecky [15, p. 1]:

> **[R40]** According to Lecky, the spirit of enquiry began to be noticeable in Europe after the torpor of the dark ages about the 12th century A.D. From about this time, India, however, became enveloped in intellectual darkness.

So the civilisational rebirth of Europe started at almost the same time as the civilisational decadence of India.

In 1828, French historian and statesman François Guizot delivered a series of lectures which were later published in a volume *General History of Civilization in Europe* [7]. P. C. Ray quotes Guizot [15, p. 9]:

> **[R41]** a priestly despotism restricts learning to its own classes and renders progress impossible, because while the mass of the people remains ignorant, its rulers have no incentive to improve or expand the learning which they possess. Hence in course of time learning loses its vitality and becomes a mere fossilized tradition.

English historian Henry Thomas Buckle in *History of Civilization in England* (two volumes, 1857 and 1861) [3, 4] attributed the decline of Spanish civilisation to religious superstition. P. C. Ray quotes Buckle [15, p. 27]:

> **[R42]** The victory gained by the church increased both her power and reputation... the interests of the clergy deemed superior to the interests of the laymen... The

> minds of men succumbed and were prostrate ... Spain, numbed into a death-like torpor, spell-bound and entranced by the accursed superstition which preyed on her strength.

By quoting these European thinkers who commented on the reason for the decline of European civilisation in general, and the Spanish civilisation in particular, P. C. Ray drew an European analogy to his view that in the Indian context strict adherence to scriptures led to stifling of intellectual creativity which in turn led to the decline of the ancient Indian civilisation.

2.6 Good and Bad in Rationalistic and Dark Ages

A close reading of the essay shows that P. C. Ray was not saying that everything in the Rationalistic Age was good, and that everything in the Dark Age was bad.

The essay criticises Manu and other law givers, who belong squarely to the period P. C. Ray describes as the Rationalistic Age. While the essay does not explicitly say so, the point is that even though the works of these law givers were done during the Rationalistic Age, in line with the spirit of inquiry of that age, they were not strictly followed. Rather, it is during the Dark Age with its blind adherence to scriptures, that the injunctions of the law givers began to be rigidly implemented.

On the other hand, P. C. Ray praises certain figures who clearly belong to the period that he mentions as the Dark Age. One such figure is Bhaskara II, who belonged to the twelfth century. The other figure that the essay mentions is Chaitanya, who was a socio-religious reformer in the fifteenth and sixteenth century CE. P. C. Ray calls Chaitanya "the Prophet of Navadwipa." He mentions [15, p. 15]:

> **[R43]** The religion of love which Chaitanya preached did away with the inequalities and barriers of caste. The depressed classes rallied round his banner, nay, some of the best intellects of the day responded to his call.

So even during the Dark Age, P. C. Ray identified figures who were worthy of praise. His general criticism was that in comparison to the rationalistic age, in the Dark Age such figures were the exception.

Further, while not in the essay itself, P. C. Ray's own work on the History of Hindu Chemistry goes up to the mid-sixteenth century. So this also suggests that Ray was not of the view that there was nothing good in the period that he labelled as the Dark Age.

2.7 Case of Bengal

In his discussion of pre-modern India, P. C. Ray primarily focuses on achievements in various scientific fields, which excelled in ancient India and then later degenerated (see (R34) and (R25)). There is not so much mention of the excellence in ancient India and subsequent degeneration in other fields of human activity such as literature, or commerce. This ties in with his point about rationalism and free inquiry. Other than the issue of Kulinism, the general ideas described in the essay apply *mutatis mutandis* to the whole of India and not only to Bengal.

For modern Bengal, P. C. Ray shifts focus to industry, and rues the lack of enterprise and over dependence on university degrees and government jobs among the contemporary youth.

For modern India, P. C. Ray draws a sharp contrast of achievements between Bengalis and other Indians in the field of industry [15, p. 18]: Bombay's textile industry roused "from the sleep of stupor", "enterprising people of Bombay, Gujarat, Bikanir and the United Provinces" who captured the trade that Bengal lost. P. C. Ray makes a pointed reference [15, p. 21] that of the "40 mills plying on the banks of the Hugli... not even a solitary one is owned by a Bengalee."

The criticisms of nineteenth century and early twentieth century Bengalis by P. C. Ray consist primarily of two aspects. The first aspect is that P. C. Ray traces the intellectual tradition of the Navadwipa logicians morphing into lawyers and into pen-pushers for the East India Company and later the British government in India [15, p. 30]:

> **[R44]** Under the existing regime a race of lawyers has sprung up, who are maintaining the traditions of old as the intellectual descendants of the products of the *tols* and displaying admirable forensic acumen.

While the sentence is intended to criticise, it also expresses appreciation for the intellectual skills of the Navadwipa logicians. He goes on to say that law can provide careers to "an infinitesimal fraction of our educated youth" [15, p. 30]. Further, P. C. Ray says that "the Bengalee has learned to look upon service under the Government... as the be-all and end-all of his existence" [15, p. 19], and that "a network of Bengalee keranis" [15, p. 19] follow the fortunes of the British Raj as affording opportunities to display his "clerical genius." He summarises [15, p. 31]: "The Bengalees have practically degenerated into a race of quill-drivers."

The second aspect is that instead of issues of rationalism and the spirit of free inquiry, P. C. Ray focuses on the lack of initiative among the Bengali youth in setting up businesses and their obsession with a university degree as merely a passport to a well paid government job. He says that due to the lack of enterprise among Bengalis, Marwaris have captured the space of industrial development. Further, P. C. Ray mentions that Bengalis decry Marwaris as "brainless," and goes on to remark [15, p. 20] "as if the very perfection of brain-power lies in the routine-work of quill-driving!" He says that people will have to face reality. The Marwaris were already established businessmen about whom P. C. Ray comments [15, p. 21]:

> **[R45]** The Bengalee youth cannot do better than learn the first principles of business at the feet of these enterprising people. He must go through the period of probation and apprenticeship in their warehouses. He must study the conditions of the market and must know where to buy and when to sell.

He provides the example of Bombay [15, p. 18].

> **[R46]** During the last half-a-century fighting against tremendous odds, Bombay has been able to rear a magnificent industry in textile fabrics. Bombay was roused from the sleep of stupor and could take time by the fore lock.

In contrast, he points to the lack of enterprise on the part of Bengalis to say that the flourishing textile industries of Dhaka did not survive.

P. C. Ray criticises the excessive value placed on academic brilliance as a marker of success in future life. He provides the example of Walter Scott who was considered "blockhead"/"dunce" at school, and further refers to George Eliot, and Emerson. P. C. Ray also refers [15, p. 24] to

an unnamed Hindu College teacher ("idol of his pupils" who wrote "more than sixty years ago" which would be earlier than 1850 since P. C. Ray was writing in 1910; the only likely person who fits the description is Henry Louis Vivian Derozio) who wrote [15, p. 24]: "The human mind is like an April day: the dawn is exceedingly deceitful."

On the issue of lack of enterprise, P. C. Ray himself was a counter-example to his argument. The Bengal Chemical and Pharmaceutical Works that he set up was the first indigenous Chemical and Pharmaceutical industry in India which successfully competed with the English companies. Further, he also patronised and supported the setting up of a number of other indigenous industries in different fields. So the argument about lack of initiative that he was making was essentially about the aggregate societal psyche, and not that no Bengali could succeed. In his argument, P. C. Ray was implicitly considering himself to be an exception. This is connected to the use versus misuse of the Bengali brain. P. C. Ray's own life demonstrated that a proper direction of the brain power combined with enterprise can lead to successful industry. Presumably, this is the reason why he felt morally authorised to write the essay's exhortation to the Bengali youth in the first place.

P. C. Ray criticises the view of some contemporary writers who highlight that Europe is materialistic, and India is spiritual [15, p. 22].

> **[R47]** It has become customary with certain writers to decry and inveigh against western civilisation and hold up the Europeans to scorn as being worshippers of Mammon. But they forget that the Hindu society, *as it is*, is thoroughly permeated with materialism. Those who go up for University education are taught to look upon it purely as a means to an end. A diploma is judged by its monetary equivalent – as something which can be turned into cash.
>
> We are concerned only with the present and not with the past – with the society of to-day. If such a state of things is to be characterised as conducive to spiritualism, as opposed to materialism, I do not know what vandalism is.

He goes on to make a very strong comment against the mindset of acquiring knowledge only for the purpose of earning money [15, p. 22]:

> **[R48]** The Bengalee is as fond of money as any people on earth, nay, he is perhaps the most mercenary of all. He has prostituted one of the noblest gifts of God, namely, thirst for knowledge.

While the charge that he brings against Bengali youth is very strong, he goes on to moderate it by shifting the blame to the environment in which they are brought up [15, p. 23]:

> **[R49]** Our boys of course are not to blame for this morbid appetite. They have been brought up amidst surroundings which have taught them to set a fictitious value upon a University qualification and upon book-lore in general.

The essay, however, does not solely criticise. P. C. Ray states [15, p. 26]: "I have written more in sorrow than in anger." Further, he mentions [15, p. 30]:

> **[R50]** The Bengalees are inferior to none as far as the brain-power is concerned, but unfortunately his intellectual gifts have been misapplied.

P. C. Ray ends the essay with the following message of hope [15, p. 31]:

> **[R51]** It is time we were roused from our torpor. Let the vast latent potentialities of the nation be roused to activity. Let the Bengalee distinguish himself in the field of researches and scientific investigations; let him organise industries. He will soon have his place in the comity of nations and thus fulfil the will of God.

3 Sri Aurobindo's Review and Its Rebuttal

On 14th August, 1909, Sri Aurobindo published a review of P. C. Ray's essay in *Karmayogin*. While Sri Aurobindo's review was of the Bengali essay *Bangalir Mastishka O Tahar Apabyabahar*, in our summary we have considered the English translation. As mentioned above, at certain places the English version is not an exact translation of the Bengali version. Further, the English version contains a few long quotations by European thinkers, which were not present in the Bengali version. Nonetheless, the Bengali and the English versions covered essentially the same theme and message. Since Sri Aurobindo's review was in general terms (as we describe below), it does not matter much whether the English or the Bengali version of the essay is considered for assessing whether Sri Aurobindo's criticisms hold.

At the outset, Sri Aurobindo's review explicitly mentions P. C. Ray's stature as a scientist, and says [15, p. 49]:

> **[A1]** Dr. P. C. Ray is a name which is already a pride to the nation to which he belongs and his deep scientific knowledge, original research and creativeness are one of the most conspicuous instances of that strong, acute and capable Bengali intellect which he admits to be inferior to none. Any article from his pen must be of great interest and cannot be without value.

Though Sri Aurobindo does not explicitly say so, his review implicitly agrees with P. C. Ray's essay that there was a glorious past followed by a period of intellectual decay. The review agrees with P. C. Ray on the point of changes required for the future [15, p. 49]:

> **[A2]** As to the necessity of far-reaching changes in the future we do not greatly differ with the writer.

Other than this point, the review makes several critical comments about the essay. Towards the end of the review, Aurobindo comments [15, p. 50]:

> **[A3]** Nevertheless the article is ably written and should be studied as a complete expression of the Europeanised standpoint in looking at Indian problems.

Note that even though Sri Aurobindo was critical of the essay, he was not suggesting that it should not be read.

We next carefully consider each of the criticisms made by Sri Aurobindo and match these against what P. C. Ray's essay actually says. This analysis constitutes our rebuttal of Sri Aurobindo's criticisms of the essay.

Sri Aurobindo writes [15, p. 49]:

> [**A4**] it is one of the unfortunate results of the denationalising influence of our past education that a mind like Dr. Ray's should be without intellectual sympathy for the old national culture whose inherited tendencies his own character, life and achievements illustrate in so distinguished a manner.

Rebuttal. In the context of early twentieth century, denationalising influence of education signified that the education was Western and completely ignored the contributions of Indians. We investigate the charge of 'denationalising influence of our past education' that Sri Aurobindo brings against P. C. Ray on two fronts. First, we compare the educational trajectories of both the personalities, and then we compare the subsequent activities of the two personalities.

P. C. Ray received his early education in his village school, followed by Albert School, Hindu College, and subsequently he moved to the University of Edinburgh where he completed his B.Sc. and D.Sc. degrees. His move to Edinburgh was made possible due to his winning one of the two annual presitigious Gilchrist scholarships, which required knowledge of at least four languages. Among the languages P. C. Ray knew were Bengali and Sanskrit. During his student days in the U.K., P. C. Ray wrote an essay on the Mutiny of 1857 which was critical of the role of the English. This suggests that P. C. Ray had nationalistic tendencies from an early point of his life. On the other hand, Sri Aurobindo was taken to England by his father at the age of seven and lived there for fourteen years. He received his education at St. Paul's School in London in 1884 and subsequently at King's College, Cambridge. During his education in England, Sri Aurobindo did not learn Bengali (or Sanskrit). So, if anything, the education that Sri Aurobindo received was far more denationalised than the education that P. C. Ray received.

Next we consider the subsequent trajectories of the two individuals, with the idea being that it is not the early education that matters, what is important is whether the person was able to overcome any possible denationalising influence that the education may have imparted. Let us now consider the evidence that P. C. Ray and Sri Aurobindo overcame the supposedly denationalising influence. In the case of P. C. Ray, as already mentioned above, he had written an essay from a nationalistic viewpoint while he was a student in U.K. After returning to India, he set up the Bengal Chemical and Pharmaceutical Works, the first Indian such industry with the goal of providing impetus to national industrial effort and employment to the youth. Another important aspect is the authoritative two-volume work *A History of Hindu Chemistry* which P. C. Ray published in 1902 and 1909. In the English version of the essay, P. C. Ray wrote [15, p. 26]:

> [**R52**] I am as proud of the glories of the Hindus of old as anybody and I have spent the best years of my life in rescuing from oblivion and bringing before the world the contributions of the Hindus to the great branch of the science which I have the honour to profess.

All of these points suggest that whatever possible denationalising influence that P. C. Ray may have had during his education (of which there is no evidence, and on the contrary his essay on the 1857 Mutiny suggests otherwise), his subsequent works clearly show that he was a

nationalist at heart who greatly valued ancient Indian knowledge. Regarding Sri Aurobindo, he learnt Bengali and Sanskrit through his own effort after returning to India. He was well known to be a nationalist who supported the revolutionary cause. Through his writings, Sri Aurobindo expressed his admiration for the ancient India. In terms of possible overcoming denationalising influence, possibly Sri Aurobindo had to put in considerable effort since his education was indeed completely denationalised. Nonetheless, there is no evidence to suggest that P. C. Ray had more denationalising influence than Sri Aurobindo.

So the whole point based on 'denationalising influence of our past education' falls apart. We would like to point out that even if the point is hypothetically admitted (which evidence shows cannot be admitted), then also an argument based on a person's education works like an *ad hominem* attack. In other words, rather than engaging with the actual points put forward by the person, the idea is to discredit the person's opinion by saying that the person's education makes his opinion biased and not worth considering.

Let us now consider the charge "without intellectual sympathy for the old national culture" that Sri Aurobindo brings against P. C. Ray. This charge clearly does not hold. In his essay, P. C. Ray explicitly identifies a Rationalistic Age during which the Indian civilisation reached great heights. It is only the decline of civilisation in the Dark Age that P. C. Ray criticised. Further, his work on history of Hindu Chemistry (published in 1902 and 1909) clearly illustrates that P. C. Ray spent many years of his life on achievements of ancient Indians. So the charge that Sri Aurobindo brings does not stick to P. C. Ray.

Sri Aurobindo writes [15, p. 49]:

> **[A5]** If it had not been for the past which Dr. P. C. Ray condemns, such noble types as the last fifty years of Bengal teems with, would not have been possible.

Rebuttal. Possible examples of "noble types" in the "last fifty years of Bengal" would be Rabindranath Tagore, Jagadish Chandra Bose, P. C. Ray himself, Sri Ramakrishna, Swami Vivekananda, and others. The question then arises whether P. C. Ray indeed criticised the past from which such figures arose. The specific criticisms that P. C. Ray made of the Dark Age were of strict adherence to rituals, casteism and in general of the spirit of what he called an "exclusivist" temperament. None of the above examples arose from such past culture. In fact, other than Sri Ramakrishna and to some extent Swami Vivekananda, a major reason for the rise of such personalities were the efforts of earlier figures like Rammohan Roy and Vidyasagar who struggled against the regressive social customs. It is due to such efforts that major social changes came about in the nineteenth century. To take specific examples, P. C. Ray studied at the Albert School which was set up by the renowned Brahmo reformer Keshab Chandra Sen, while Swami Vivekananda studied at the General Institution which was set up by Alexander Duff with the help of Rammohan Roy. So when carefully examined this particular criticism by Sri Aurobindo becomes empty of content.

Sri Aurobindo writes [15, p. 49]:

[**A6**] The immediate past has been a period of contraction and the reservation of strength, the future will be a period of expansion and the liberation and expenditure of strength.

Rebuttal. Literally understood, the statement sounds as if the separate periods of contraction and reservation of strength were conscious decisions of society. In other words, it is as if the people who constitute the society decided consciously to contract and not do anything useful so as to reserve strength. For example, people did not decide to consciously practise rigid rules of casteism so that some time in the future, other people will decide to do away with such rules. Also, it is absurd to suggest that practising rigid casteism corresponds to a reservation of strength. Similarly, Sri Aurobindo's view that in the future there will be period of expansion seems to sound like a pre-determined conclusion that will happen irrespective of the conscious actions of the people. However, there is nothing to suggest that breaking away from the decay and stagnation of the past is inevitable and such change will occur without the conscious effort of the people. So the literal meaning of the sentence is absurd. One may interpret the sentence metaphorically. Under this interpretation, the terms contraction and expansion only provide labels to what was already known – low point of civilisation is labelled as contraction, and high point as expansion – without additional explanatory power.

So, for one thing, the sentence does not provide any understanding of how or why a civilisation flourishes and declines, and secondly, it does not relate to anything in P. C. Ray's essay.

Sri Aurobindo writes [15, p. 49]:

[**A7**] The structure of the new age must necessarily differ from that of the old. But the spirit of the article is narrow and intolerant.

Rebuttal. P. C. Ray identified rationalism and the spirit of free thought and inquiry as the key parameters of the rise and fall of civilisations. Further, he emphasised that progress is fundamental for a society, which clearly suggests that he was not clinging to old structures.

On the charge of "narrow and intolerant", the essay by P. C. Ray is emphatically tolerant. The essay praises the Rationalistic Age precisely for tolerating widely divergent viewpoints (the examples of Kapila and Charvaka), Buddhism throwing "the gates of learning wide open to every class." Further, the essay explicitly decries the decadent phase as intolerant and exclusivist (see (R20)): "the very essence of the rejuvenated Brahminism was exclusivism." A person who harshly criticises casteism, injunction on sea travel and its frog-in-the-well effect, rigid adherence to customs, is criticising narrow and intolerant views, rather than himself being narrow and intolerant.

Further, even while criticising the Dark Age, P. C. Ray mentions worthy figures such as Bhaskara II and Chaitanya who lived during the Dark Age. Also, while his criticism of Raghunandana and Kullukabhatta is sharp, he goes on to say that they may be "given their dues," and further, he even suggests that those who introduced Kulinism might have done it for good reasons (see (R24)). So P. C. Ray's criticisms were not wholesale. Thematically, tolerance versus intolerance is one of the themes that Ray considers and he is clearly on the side of tolerance.

It is indeed true that P. C. Ray harshly criticised the outlook of the Bengali youth of that age. At the same time (as quoted above), he tempered this criticism by pointing to the prevailing societal environment, stated that his words were "more in sorrow than in anger," clarified that the intellect of the Bengali was not inferior to any other race, and ended the essay with a call for shaking of lethargy and achieving greatness. So it is completely off the mark to characterise the spirit of the essay to be narrow and intolerant.

Sri Aurobindo writes [15, p. 49]:

> [**A8**] It is couched in that general spirit of self-depreciation and indiscriminate fault-finding which was a characteristic of our people when national hope and energy were at their nadir.

Rebuttal. It is not clear to which period the word 'when' in the above statement refers. If 'when' refers to pre-nineteenth century, then it is not clear what is meant by the 'general spirit of self-depreciation and indiscriminate fault-finding.' As far as the present author is aware, history does not tell us about any such activity in the eighteenth century, or earlier. In particular, Sri Aurobindo does not provide any specific example.

On the other hand, if 'when' refers to the early to mid-nineteenth century, then the statement is clearly wrong. This period had figures like Rammohan Roy and Vidyasagar, both of whom showed tremendous energy and held out great hope for the future which motivated them to work. Further, Rammohan Roy in particular held the ancient Indian contributions in great regard, and his debates with Christian missionaries clearly show that he did not indulge in self-depreciation. Both Rammohan Roy and Vidyasagar, as well as other important figures did point out faults in society, but those were specific faults, and not 'indiscriminate fault-finding.'

Coming to the period of mid to late nineteenth century, we find figures such as Debendranath Tagore, Rabindranath Tagore, Keshab Chandra Sen, Sri Ramakrishna Paramhamsa, Swami Vivekananda, and many others. None of these figures fit the description of the statement of Sri Aurobindo.

Let us hypothetically assume that the word 'when' in the above statement does refer to some specific period. Even under this hypothesis, the sentence does not relate to P. C. Ray's essay at all. The essay does not reflect the spirit of self-depreciation and indiscriminate fault-finding. For ancient India, the essay extolls the rationalistic outlook which resulted in excellence in various fields, while for medieval India, the essay made pointed criticisms of the problems that led to the decline of Indian civilisation. There is a difference between self-criticism and self-depreciation. For a rationalist, focused and structured self-criticism is the first step towards path correction.

Regarding Bengalis, P. C. Ray writes: "The Bengalees are inferior to none as far as the brain-power is concerned, but unfortunately his intellectual gifts have been misapplied." The phrase "inferior to none" does not reflect self-depreciation, and "intellectual gifts have been misapplied" cannot be called indiscriminate fault-finding.

So it turns out that 'when' in the statement by Sri Aurobindo is not anchored to any definite time period, and historically it becomes difficult to identify a time period which fits the

description of Sri Aurobindo. Further, even if there were such a period, the criticism inherent in Sri Aurobindo's statement does not apply to P. C. Ray's essay.

Sri Aurobindo writes [15, p. 49]:

> [**A9**] These are all the stock denunciations with which we were familiar before the recent resurgence.

Rebuttal. Stock denunciations would mean that other figures also indulged in "general spirit of self-depreciation and indiscriminate fault-finding." However, no figure in the nineteenth century – whether traditionalist such as Bankim Chandra Chattopadhyay, or reformists such as one of the figures mentioned in the previous rebuttal point – indulged in self-depreciation and indiscriminate fault-finding. The "recent resurgence" in the statement would refer to the rise of the spirit of nationalism. P. C. Ray was at the front and centre of such nationalistic resurgence. So the statement by Sri Aurobindo does not seem to have much content, particularly in relation to P. C. Ray and the essay under review.

Sri Aurobindo writes [15, pp. 49–50]:

> [**A10**] Such writings void of the note of hope, encouragement and energy, will not help a nation to rise but rather depress it and push it back into the past.

Rebuttal. P. C. Ray's actual biography as of 1909 is not of someone who is void of hope, encouragement and energy. He had already founded and was running a major indigenous industrial enterprise (Bengal Chemical & Pharmaceutical Works) showing the alternative pathway to government-service dependency he criticises in the essay. So P. C. Ray not only diagnosed the problem, by 1909 he had actually spent several years in developing a solution to the problem. Calling an essay by such an author to be "void ... of energy" does not survive contact with who P. C. Ray actually was and what he had already accomplished.

In the essay, P. C. Ray is actually asking Bengalis to become more energetic, to stop looking for government service and start businesses. P. C. Ray says that Bengalis should apprentice with the Marwaris and learn business "at the feet of these enterprising people." The criticism of P. C. Ray about the prevalent attitude of Bengalis is to inspire/provoke them to think for themselves and for the nation. So P. C. Ray's theme in the essay – whether it is ancient India, or it is contemporary Bengal – is diagnostic and prescriptive: he identifies the problem and spells out a solution, rather than expressing resignation. The criticisms themselves are meant to initiate introspection and course correction. In fact, P. C. Ray writes: "I write more in sorrow than in anger." The directed criticisms, however, do not constitute the whole message of the essay for the Bengali youth. As mentioned above, P. C. Ray mentions that the "Bengalees are inferior to none as far as the brain-power is concerned," which is clearly a statement of encouragement. Further, as quoted above, P. C. Ray ends the essay with a message of hope.

So the criticism by Sri Aurobindo in the above sentence fails for essentially the same reason the "narrow and intolerant" and "self-depreciation" criticisms failed in the earlier rebuttal point.

Both of these sentences describe P. C. Ray's essay (and his well documented life up to 1909) in terms that are quite the opposite of the essay's own explicit content and structure.

Sri Aurobindo writes [15, p. 50]:

> [**A11**] Moreover, Dr. Ray makes the same mistake which European writers made when they condemned the Middle Ages wholesale because they were a period of contraction and not of expansion. That mistake has now been recognised in Europe and justice has been done to that which was praiseworthy as well as to that which was bad in the "Dark Ages".

Rebuttal. In the first sentence Sri Aurobindo compares P. C. Ray's denunciation of the Dark Age with European criticism of the Middle Ages in Europe. The analogy is too broad – "condemned wholesale," "period of contraction not expansion" – and does not specify which European historians, which specific claims about the Middle Ages in Europe, parallel which particular aspects of the Dark Age in P. C. Ray's essay.

P. C. Ray quoted Lecky, Guizot, and Buckle in the English version, while the Bengali version did not include the quotations by Guizot and Buckle. Since Sri Aurobindo's review was of the Bengali version, he would have considered only Lecky. Even if we consider all the three European thinkers whom P. C. Ray quoted as commenting on the Middle Ages in Europe, his point in quoting these figures were specific. Through these quotations, P. C. Ray underlined that these European thinkers also shared the view that superstition, priestly despotism, and mindless customs were responsible for the decline of civilisation in Europe (see (R38), (R41), and (R42)). So P. C. Ray was not quoting any whole sale condemnation of the Middle Ages in Europe. The statement by Sri Aurobindo sounds authoritative, but misses the mark when held against P. C. Ray's essay.

Further, the charge of wholesale condemnation does not stick to P. C. Ray's essay. As described above, P. C. Ray makes specific and targeted criticisms, and at the same time also provides substantial praise for the works (both during the Rationalistic and the Dark Ages) that he considers praiseworthy. So the analogy is not only unspecific, it is built on a premise which does not hold for P. C. Ray's essay.

The second sentence of the review continues with the Middle Ages in Europe and Dark Age in India analogy. Sri Aurobindo says that instead of wholesale condemnation, later European thinkers have done justice by praising what was praiseworthy in the period in Europe under consideration. Sri Aurobindo is implicitly suggesting that P. C. Ray has failed to do justice by not identifying praiseworthy works in the Dark Age. This criticism fails for at least two reasons. Firstly, the essay itself mentions and praises the works of Chaitanya in socio-religious domain and that of Bhaskara II in the scientific domain, both of whom fall within the Dark Age identified by P. C. Ray. Secondly, while not directly mentioned in the essay, P. C. Ray's work on History of Hindu Chemistry goes right up to the middle of the sixteenth century. The History of Hindu Chemistry is referred to in the essay, but the period covered by this work is not mentioned. So the general charge against making "the same mistake" does not hold.

Sri Aurobindo writes [15, p. 50]:

> [**A12**] We in India are recovering from a similar error and if there are those who go to the opposite extreme and see nothing good outside the mediaeval Hindu culture and forms, the same thing happened in Europe and for the same reason, as a reaction from that very intolerance and sweeping denunciation which are the spirit of Dr. Ray's article. It cannot last any more than it lasted in Europe.

Rebuttal. When Sri Aurobindo writes "We in India are recovering from a similar error" it is not clear to which aspect of the Dark Age that P. C. Ray describes he is referring to. If the "error" is P. C. Ray's alleged wholesale condemnation, then we have already argued that this criticism does not stick to the essay. In effect, the "recovering from a similar error" carries a rhetorical weight of a generational historical correction, but since the statement does not specify the error, and nor the people who were involved in the recovery from the error, the sentence becomes inapplicable to the actual essay in question.

When Sri Aurobindo charges P. C. Ray about seeing "nothing good outside Mediaeval Hindu culture and forms," it is not clear to which medieval aspect he was referring to. There are two possible interpretations.

Firstly, the literal grammatical meaning of the sentence would be referring to the conservative traditionalists of the Dark Age who believed there was nothing that was worthwhile to know outside the medieval Hindu culture and forms. Under this interpretation, Sri Aurobindo would be criticising the conservative traditionalists, but then he was on the same side as P. C. Ray, since in his essay, P. C. Ray sharply criticises such conservative traditionalists. Specifically, P. C. Ray writes: "The Hindu began to regard himself as the quintessence of all that is good and noble in creation..." It is unlikely that this was the intended meaning of Sri Aurobindo.

Secondly, Sri Aurobindo could have been in broad agreement with P. C. Ray about his criticism of medieval Hindu culture and forms, and that Sri Aurobindo was charging P. C. Ray with not identifying anything good in the Dark Age outside such culture and forms. As described above, this charge fails when tested against the essay (namely the praise of Bhaskara II and Chaitanya) and P. C. Ray's other famous work done up to 1909 (namely his History of Hindu Chemistry which goes up to mid-sixteenth century).

So on both the interpretations, the criticism fails. We do not see any other way to interpret the phrase about seeing "nothing good outside Mediaeval Hindu culture and forms."

Sri Aurobindo goes on to say that P. C. Ray's article shows "intolerance" and makes "sweeping denunciation." As has already been mentioned earlier in the rebuttal, the charge of intolerance does not fit an essay whose explicit thesis (via Charvaka, Kapila, Buddhism) is that tolerance and openness were the hallmark of India's best period. The sweeping denunciation charge also does not fit, since as also mentioned earlier, P. C. Ray was specific in his criticism of the "rejuvenated Brahminism," while at the same time praising Chaitanya.

Since Sri Aurobindo's charge about intolerance and sweeping denunciations do not check out with respect to P. C. Ray's essay, the point that it cannot last any more than it lasted in Europe becomes vacuous with respect to the essay.

Overall, this passage from the review of Sri Aurobindo – arguably the rhetorical centerpiece

of the whole review – turns out not to be textually anchored to P. C. Ray's essay. The passage provides an analogy without specified terms, an "error" without named instances, a "nothing good outside medieval Hindu culture and forms" charge which does not fit the essay. The passage adopts a tone which is in conflict with the essay's actual content and message.

Sri Aurobindo writes [15, p. 50]:

> **[A13]** Some of the strictures we hold to be too much at secondhand; especially in his criticisms of religion the writer seems to us to be wandering outside the province in which he can speak with authority. After all one must enter into the spirit of an age and civilisation before one can profitably criticise it, otherwise we miss the meaning of history and falsify its values.

Rebuttal. The point about criticisms of religion does not hold. The religions mentioned by P. C. Ray are Hinduism, Buddhism, and Islam. Regarding Buddhism, P. C. Ray makes an appreciative statement as quoted earlier (see (R13)). Regarding Islam, P. C. Ray writes [15, p. 14]: "which not only preaches but practises brotherhood of man," which is also a positive statement. Regarding Hinduism, he is full of praise for ancient Hindu achievements, and also praises Chaitanya who propagated his religious ideas in the Dark Age. Even for the Hinduism practised in the Dark Age, P. C. Ray does not criticise the philosophy behind the Hindu religion. He criticises the social practices (Kulinism, caste exclusivism, scripture-as-infallible-guide) which came to be adopted by the Hindu community. Criticism of such social practices does not constitute criticism of the religion as such. In fact, P. C. Ray quotes Swami Vivekananda as making a similar criticism (see (R36)). Swami Vivekananda was certainly not criticising the Hindu religion. So Sri Aurobindo's criticism that P. C. Ray criticises religion does not stick.

The part of the review of Sri Aurobindo about questioning P. C. Ray's credibility is problematic on two grounds. Firstly it can be read as an *ad hominem* argument, i.e. instead of engaging with the statement, deride the credibility of the person making the statement. Secondly, even the *ad hominem* argument does not completely stick. For his work on the History of Hindu Chemistry, P. C. Ray had studied a large amount of the Hindu scriptures including the *Atharvaveda*, and the *Tantras*. So to say P. C. Ray was not sufficiently informed is incorrect.

The charge about not entering "the spirit of an age and civilisation" is proposed by Sri Aurobindo against P. C. Ray. The essay, on the other hand, just does not assert that the Dark Age was bad. It develops in some detail a rationale about how the Dark Age came about: loss of free inquiry; increased dependence on inherited authority; rise of the "law-giver and his commentator" class; priestly monopoly on interpretation; ossification of learning into "fossilized tradition"; degeneration of scriptural dictates into superstition and mechanical ritual. P. C. Ray abstracts this entire process into a model of how a nation enters a Dark Age. This entire process is exactly the kind of internal, mechanism-level historical analysis that "entering into the spirit of an age" would require. P. C. Ray was not simply asserting that the Dark Age was bad, he was explaining why the period came about. It is possible for Sri Aurobindo to disagree with P. C. Ray's description of the mechanism of how the Dark Age came about, but the essay provides no ground to suggest that P. C. Ray's analysis was superficial.

Sri Aurobindo writes [15, p. 50]:

> **[A14]** As to the present, Dr. Ray lays too much stress on the survivals of the end of the nineteenth century when the national consciousness touched bottom and ignores the youthful strength and energy which is preparing the twentieth.

Rebuttal. Nowhere in the essay does P. C. Ray stress the survival of the end of the nineteenth century. The essay's historical arc starts from the Rationalistic Age (roughly 600 BCE to 700 CE), and moves through the Dark Age, and through the British period. The essay's most recent concrete historical reference points are the 1815 cotton export figures, Dhaka's population decline by 1840, Bombay's ascendency in textile industry in the last fifty years. Nowhere in the essay does P. C. Ray isolate "the survivals of the end of the nineteenth century" as a distinct target. So this part of the above criticism by Sri Aurobindo does not match up against the actual text of the essay.

Let us now consider the last part of Sri Aurobindo's criticism, i.e. the point about P. C. Ray ignoring "youthful strength and energy." This is in direct opposition to the final statement of the essay where he calls upon the Bengali youth to take up scientific research and organise industries, calling for the "vast latent potentialities of the nation" to be "roused to activity." This shows that P. C. Ray was actually saying that energy and potential exists and needs to be activated. Nothing in the essay suggests that P. C. Ray ignored the "youthful strength and energy." Like other parts of the review, the last part also does not apply to what P. C. Ray wrote in his essay.

Sri Aurobindo writes [15, p. 50]:

> **[A15]** the article is ably written and should be studied as a complete expression of the Europeanised standpoint in looking at Indian problems.

Rebuttal. The only European whom P. C. Ray quoted as commenting on India was Albrecht Weber. He quoted Weber as saying [15, p. 1] "Bhaskara is the last star in the Indian firmament." This sentence has two distinct meanings. The first meaning is the appreciation of Bhaskara (actually Bhaskara II), and by extension of the achievements of ancient Indians. At the same time, the phrase "last star" indicates that Weber was saying that there were no stars after Bhaskara II. This last statement can be considered to be a criticism of India.

Sri Aurobindo's position that P. C. Ray adopted a European viewpoint of India is not borne out in the actual text. The only possibility is the second interpretation of Weber's quote. It is not clear whether Sri Aurobindo actually had Weber's quote in mind when he criticised P. C. Ray for adopting a European viewpoint of India. Even if he did, using a single short quote which can possibly be interpreted to favour Sri Aurobindo's criticism is hardly sufficient evidence to support the general charge that Sri Aurobindo levels at P. C. Ray.

Further, in the nineteenth century, there was no single European view of Indian problems. Even in the early nineteenth century, there was a considerable difference of opinion between the so called Orientalists and the Anglicists in viewing the problems of India. So Sri Aurobindo's

statement about *the* "Europeanised standpoint" ignores the different shades of opinion about India among European scholars.

We note that Weber is mentioned in both the Bengali and the English versions. Lecky is also mentioned in both the versions. The Bengali version mentions Herbert Spencer, who is not mentioned in the English version, while the English version includes quotations from Guizot and Buckle. Other than Weber, P. C. Ray does not refer to any European thinker as commenting on India. There is nothing in the essay (neither in the Bengali version which Sri Aurobindo reviewed, nor in the later English version) to suggest that P. C. Ray viewed India through an European lens. So Sri Aurobindo's criticism of P. C. Ray's essay being that of the Europeanised view of Indian problems is not substantiated.

3.1 Summary

As can be understood from the above discussion, the criticisms made by Sri Aurobindo about P. C. Ray's essay are general in nature. His review does not provide any concrete example of a statement in the essay which is demonstrably wrong. The whole of Sri Aurobindo's review proceeds through broad characterisation. Every substantive charge that Sri Aurobindo makes – wholesale civilisational condemnation, denationalised education, lack of sympathy for old culture, narrow and intolerant spirit, stock denunciations, absence of hope and energy, the Middle Ages analogy, wandering outside his domain of expertise, failing to enter the spirit of an age, and overstressing the recent past while ignoring youthful energy – does not survive close comparison with the actual text of P. C. Ray's essay and his well documented life. Sri Aurobindo does not point to any specific passage from the essay as problematic, and does not identify any factual or historical error in P. C. Ray's entire argument. As a result, not a single criticism made by Sri Aurobindo survives.

We would like to mention that our rebuttal of Sri Aurobindo's review is not to be seen as saying that there are no flaws in P. C. Ray's essay. In fact, in Section 4, we point out a few possible gaps and inconsistencies in P. C. Ray's essay. Arguably, P. C. Ray's essay has defects, but our rebuttal shows that Sri Aurobindo's review does not identify any such defect.

As mentioned in the introduction, the Bengali version of P. C. Ray's essay was well received and underwent three editions within a decade. The publisher's preface to the 1910 edition of the English essay states [15, Preface]:

> Suggestions have reached us from several quarters that this thoughtful and masterly essay should be brought out in a handy form so as to be within the easy reach of the youth of our country.

The preface also notes that the essay "appeals with equal force to the whole of India." So the available contemporary evidence suggests that the negative portrayal of the essay in Sri Aurobindo's review was not shared by the public at large. Instead, the essay was understood by the public for its pointed self-criticism and its message of hope in the call to the youth for path correction, as was intended by P. C. Ray.

4 Questions About *Bengali Brain and Its Misuse*

P. C. Ray's brilliant essay makes a whirlwind tour of ancient and modern India. Even today, it is instructive for a thoughtful person to pick up important points from the essay. Nonetheless, our close study of the essay has led to the formulation of some questions and possible gaps in the analysis. In this section, we discuss some of these issues.

4.1 Missed Figures

Quoting his Presidential address at the 1909 Rajshahi Literary Conference, P. C. Ray writes: "For nearly a thousand years the Hindu nation has been as dead." This would mean roughly the period from 900 CE onwards. There are several counter-examples to such an assertion. Two such examples were mentioned above – namely Bhaskara II, who is mentioned in the essay itself, and secondly P. C. Ray's own work on Hindu Chemistry goes up to the middle of the sixteenth century. We mention several other examples that P. C. Ray missed: Aryabhata II (flourished c. 920–1000 CE) wrote *Maha-Siddhanta*; Hemachandra (1088–1172 CE), a Jain scholar, later referred to as "Kalikala Sarvajna" ("Omniscient of the Kali Age") for the breadth of his contributions, who identified the sequence named after Fibonacci before Fibonacci; and importantly, the Kerala School of Mathematics – founded by Madhava of Sangamagrama (c. 1340–1425), in which later important figures were Nilakantha Somayaji (1444–1544), and Jyesthadeva (c. 1500–1575). So P. C. Ray's criticism of being "dead" for the last thousand years is not wholly correct. It is not clear whether P. C. Ray was aware of the figures we have mentioned. Arguably, the intended meaning of P. C. Ray was not that nothing worthwhile happened during the Dark Age, but rather that the intellectual climate degenerated and ultimately creativity and innovativeness died out completely by the end of the eighteenth century.

4.2 Casteism as an Impediment

P. C. Ray was one of the strongest critics of casteism. In the essay, he explicitly pointed to the separation of the intellectual portion of the society from the practitioners of the arts as the major cause for the dying out of science in India (see (R25)). We may consider this view with respect to the Kerala School of Mathematics.

Kerala reportedly had a rigid caste system, which was as rigid as anywhere else in India. In spite of such rigid caste system, the Kerala School of Mathematics flourished right in to the Dark Age. On the face of it, this provides a counterexample to P. C. Ray's implicit suggestion that under rigid caste system great learning cannot flourish. There are two things to note. First, while caste system closes education to a large section of the society, in certain small pockets with substantial political patronage intellectual activity can indeed flourish. One may make the point that in an open society without caste system intellectual activity would have flourished even better, which is conceivably correct. Secondly, P. C. Ray's criticism about the decline of sciences due to the separation of the intellectual portion of the society and the practitioners of arts resulting from casteism does not really apply to mathematics. Excellence in mathematics can be achieved only through the application of the intellect. This point seems to have been missed by P. C. Ray.

4.3 Navya-Nyaya School of Logic

Of the Navya-Nyaya school of logic, P. C. Ray criticised Raghunatha, Jagadisha, 1625 CE), Gadadhara, but did not mention Gangesa Upadhyaya (flourished c. 1325 CE, Mithila) who is considered to be the founder of the Navya-Nyaya School, perhaps because he was not based in Bengal. Raghunatha is usually considered to have founded the Navya-Nyaya School in Navadwipa. P. C. Ray dismissed the work of the Navadwipa logicians with a single sentence (see (R22)).

The Navadwipa logicians built a sophisticated system of logical argument. Their discourse was epistemology and centred around what constitutes correct knowledge. P. C. Ray's criticism of the works of these logicians somewhat resembles the criticism that Bacon directed at the Scholastic philosophers in Europe, i.e. of building a "spider's web of knowledge." Both the Navadwipa logicians and the scholastic philosophers shared the same approach of systematically formulating the opposition's views, and then carefully using various logical arguments to refute the various arguments. While there is a similarity of approach, the actual method of the Navadwipa logicians was different from that of the Scholastic philosophers, where the former built a system of logic and the latter developed Aristotelian syllogistic logic. Further, the object of argument was also different, with the Navadwipa logicians focusing more on epistemology, and the scholastic philosophers focusing on issues related to God and divinity. Nonetheless, the complete focus on logical analysis was something that would not appeal to an experimental scientist like P. C. Ray. It is perhaps not surprising that P. C. Ray considers the employment of the brain to *only* fine logical analysis a misuse of the brain. Even so, this is a question of relative emphasis, and from a modern point of view it is hard to dismiss the achievements of the Navadwipa logicians. Also, it is somewhat ironical to criticise logicians in an essay praising rationalism.

In the later part of the essay, P. C. Ray draws a line of intellectual lineage from Navadwipa logicians to modern day lawyers and he does provide credit to the intellectual skills of the lawyers (see (R44)). So though indirectly, perhaps he did show some appreciation for the intellectual contributions of the Navadwipa logicians.

4.4 The Rahu Mythology

On the issue of the mythology of Rahu as 'explanation' for eclipses, P. C. Ray mentions the Rahu mythology (see (R34)). However, the explanation for the degeneration of astronomy into astrology is simplistic. The mythology of Rahu predates the Dark Age and goes back to much earlier times. (We refer to [11, p. 40] for a passage from *Valmiki Ramayana* which suggests Rahu as the cause for a total solar eclipse.)

The scientific explanation for eclipses was indeed obtained in India, but it is quite likely that these explanations co-existed with the mythological explanation. Further, the scientific explanation continued into the Dark Age as evidenced in the works of the Kerala School of Mathematics. On the other hand, it is not clear whether the scientific explanation for eclipses ever penetrated down to the laity.

So while admittedly the foundations of scientific astronomy were laid in ancient India, it is perhaps not correct to say astronomy degenerated into astrology in the Dark Age. Rather,

astrology predates astronomy and co-existed with astronomy. It is likely that the astronomical explanations for eclipses were known and appreciated by only a few scholars. The general population always believed the mythological explanation for eclipses. It is among the learned that perhaps the scientific explanation for eclipses came to be forgotten, and was supplanted by the mythological explanation.

There is the possibility in the above passage P. C. Ray was talking about the degeneration of astronomy into astrology *even* among the scholars. In the essay [15, p. 13], he clarifies that his criticisms were directed at the "handful of men who had managed to monopolise all the privileges of a dominant caste." Even with this explanation, saying that Rahu "was invented" in the Dark Age seems to be incorrect.

4.5 Change of Emphasis

P. C. Ray's narrative starts with the ancient Rationalistic age (which supported the spirit of inquiry), then came the Dark age (with blind adherence to scriptures). The Rationalistic Age, Dark Age distinction is at an all India level. While P. C. Ray praises figures in the Rationalistic Age at a pan India level, his criticisms of the Dark Age figures are restricted to Bengal. He also criticises Manu and other law givers who belong to the Rationalistic Age.

P. C. Ray continued the discussion of the Dark Age in Bengal with the East India Company rule. He drew a line about how the misuse of brain during the Dark Age became misuse of brain under Company rule, with the latter misuse being the greed for university degrees so as to be able to obtain a government job.

The rationalism/spirit of inquiry parameter that he uses to delineate the boundary between the Rationalistic and the Dark Age is discarded when describing the problems of his contemporary time. This is a silent change of emphasis.

The issue that he takes up for contemporary Bengal is the lack of enterprise on part of the Bengali youth. Further, while praising other communities in India for being enterprising, P. C. Ray does not comment or even suggest that they are more enterprising because they are more rationalistic. So the narrative of the essay itself shows that rationalism is not the only measure of success of a community/civilisation.

In fact, P. C. Ray does not clearly describe what he means by success. For ancient India, he describes success in terms of achievements in science and mathematics (as also literature and philosophy, see (R17)), while for modern times, he shifts the parameter to success in business and economy/commerce. This does not necessarily mean that he abandoned the parameter of scientific success. Nonetheless, the shift of evaluation parameter from rationalism to enterprise, and the success parameter from achievements in intellectual domains to achievements in commerce leaves a gap in the essay.

4.6 Unsettled Issues

In the English version of the essay, P. C. Ray quotes [15, p. 16] from *History of Bengal under the Nawabs* written by Kaliprasanna Banerji. The book is likely a Bengali book *Nababi Amal* by Kaliprasanna Banerji. A reference to this Bengali book was made by P. C. Ray in his autobiography [16, p. 150]. We were, however, not able to locate any English translation of

the book by Banerji. Further, P. C. Ray referred [15, p. 24] to the Hindu College teacher who taught more than 60 years ago (which would be earlier to 1850) and was adored by his students. This teacher was likely Derozio. We have not been able to settle this point with certainty.

5 A Summary of *The Brain of India*

The content of *The Brain of India* can be thematically divided into several groups.

5.1 Superiority Relations

The essay describes various types of superiority relations. The first of these is about ranking of mental faculties, while the others are superiority relations among various races.

Direct knowledge versus reason and imagination. Sri Aurobindo writes [6, pp. 2–3] that the Bengali

> **[A16]** has in a greater degree than other races the yet undeveloped supermind or faculty of direct knowledge, latent in humanity and now to be evolved, which is above reason and imagination, the faculty which in Sri RamKrishna, the supreme outcome of the race, dispensed with education and commanded any knowledge he desired easily and divinely.

The above passage states that "direct knowledge" ranks higher than "reason and imagination." Whether reason ranks above or below imagination is not specified.

Bengali superiority relative to other Indian races/regions. Sri Aurobindo writes [6, pp. 1–2]:

> **[A17]** The Bengali has always led and still leads the higher thought of India, because he has eminently the gifts which are most needed for the new race that has to arise.

Sri Aurobindo goes on to mention the various qualities that Bengalis have, namely "emotion and imagination which is open to the great inspirations," "the invaluable gift of thinking with the heart," and

> **[A18]** a subtle brain which is able within certain limits to catch shades of meaning and delicacies of thought, both those the logic grasps and those which escape the mere logical intellect.

Finally, Sri Aurobindo makes the explicit claim quoted above in (A16) which is an unequivocal statement about Bengali superiority.

Bengali inferiority in certain aspects of mental faculty. Sri Aurobindo writes [6, p. 6] about the Bengali:

> **[A19]** he is inferior to other Indian races, such as the Madrasi and Maratha, in the capacity of calm, measured and comprehensive deliberation which is usually called intellect or reasoning power, and which, though it is far from the whole of thought, is essential to the completeness of thought and action.

Taken together with Sri Aurobindo's ranking of mental faculties, the Bengali still comes out on top in comparison to other races. In his ranking of mental faculties, Sri Aurobindo ranks direct knowledge to be higher than reason and imagination. He ranks Bengalis higher than other races with respect to direct knowledge, but ranks Bengalis lower than other races with respect to reason and intellect. In Sri Aurobindo's two component mental faculty comparison between races, Bengalis win on the higher ranked mental faculty, so even if they lose on the lower ranked mental faculty, overall the Bengalis win. This issue is made explicit by the following passage [6, p. 7]:

> **[A20]** By itself the logical or reasoning intellect creates the accurate and careful scholar, the sober critic, the rationalist and cautious politician, the conservative scientist, that great mass of human intelligence, which makes for slow and careful progress. It does not create the hero and the originator, the inspired prophet, the mighty builder, the maker of nations; it does not conquer nature and destiny, lay its hand on the future, command the world. The rest of India is largely dominated by this faculty and limited by it, therefore it lags behind while Bengal rushes forward.

Qualitative superiority of the type of Indian intellect over the type of European intellect. Sri Aurobindo states [6, p. 40]:

> **[A21]** The highest creative intellects in Europe have achieved sovereignty by limitation, by striving to excel only in one field of a single intellectual province or at most in two. ... But in India it is the greatest who have been the most versatile and passed from one field of achievement to another without sacrificing an inch of their height or an iota of their creative intensity, easily, unfalteringly, with an assured mastery.

5.2 The *Brahmacharya* System

Sri Aurobindo extols the ancient *Brahmacharya* system. He states [6, p. 36] it is through *Brahmacharya* that the ancient Aryans "placed all the energy of which the system was capable and which could be spared from bodily functions, at the service of the brain". Further, Sri Aurobindo credits [6, p. 36–37] the system for strengthening "the *medha* or grasping power, the *dhi* or subtlety and swiftness of thought conception, the memory and the creative intellectual force." He puts forward [6, p. 22] the theory that "the energy at the basis of the operation of intelligence must be in ourselves and it must be capable of greater expansion and richer use," and states [6, p. 23] that *Brahmacharya* is "one of the chief processes" for storing that energy. Further he points out the following properties of the mind [6, pp. 27–29]:

Tapas: heat/stimulus, generated by self-control and austerity, source of "powerful action and success." *Tejas*: light, "the energy which is at the source of all knowledge." *Vidyut*: electricity,

"the basis of all forceful action whether intellectual or physical." *Ojas*: the *pranashakti* (primal life-energy) "involved" within *vidyut*, described as proceeding "from ether."

The base substance *retas* [6, p. 26]:

> **[A22]** The fundamental physical unit is the *retas*, in which the *tejas*, the heat and light and electricity in a man, is involved and hidden. All energy is latent in the *retas*.

The four-stage refinement, with each term defined in sequence [6, p. 27–28]:

> **[A23]** The excess of the *retas* turns first into heat or *tapas* which stimulates the whole system, and it is for this reason that all forms of self-control and austerity are called *tapas* or *tapasya* because they generate the heat, or stimulus which is a source of powerful action and success; secondly, it turns to *tejas* proper, light, the energy which is at the source of all knowledge; thirdly, it turns to *vidyut* or electricity, which is at the basis of all forceful action whether intellectual or physical. In the *vidyut* again is involved the *ojas*, or *pranashakti*, the primal energy which proceeds from ether.

The cumulative effect, culminating in the brain [6, p. 28–29]:

> **[A24]** The *retas* refining from *jala* to *tapas*, *tejas* and *vidyut* and from *vidyut* to *ojas*, fills the system with physical strength, energy and brain-power and in its last form of *ojas* rises to the brain and informs it with that primal energy which is the most refined form of matter and nearest to spirit. It is *ojas* that creates a spiritual force or *virya*, by which a man attains to spiritual knowledge, spiritual love and faith, spiritual strength.

A summary of the entire procedure is the following [6, p. 29]:

> **[A25]** It follows that the more we can by *Brahmacharya* increase the store of *tapas*, *tejas*, *vidyut* and *ojas*, the more we shall fill ourselves with utter energy for the works of the body, heart, mind and spirit.

Sri Aurobindo posited *Brahmacharya* against European materialism [6, p. 24]:

> **[A26]** The mistake made by European materialism is to suppose the basis to be everything and confuse it with the source. The source of life and energy is not material but spiritual, but the basis, the foundation on which the life and energy stand and work, is physical ... To raise up the physical to the spiritual is *Brahmacharya*, for by the meeting of the two the energy which starts from one and produces the other is enhanced and fulfils itself.

5.3 Theory of Learning

Sri Aurobindo explicitly criticises [6, p. 14] the Bengal National College as providing an "improved European system, not Indian or National" of education. Note that Sri Aurobindo was the first principal of the Bengal National College which started in August 1906 and the college

was set up by the National Council of Education. Sri Aurobindo also criticises [6, p. 14] "the reactionary idea that in order to be national, education must reproduce the features of the old *tol* system of Bengal." He goes on to state [6, p. 14]:

> **[A27]** It is not the eighteenth century India, the India which by its moral and intellectual deficiencies gave itself into the keeping of foreigners, that we have to revive, but the spirit, ideals and methods of the ancient and mightier India in a yet more effective form and with a more modern organisation.

Regarding achievements of the ancient Aryans, Sri Aurobindo asks [6, p. 15] what lay behind "the incomparable public works and engineering achievements, the opulent and exquisite industries, the great triumphs of science, scholarship, jurisprudence, logic, metaphysics, the unique social structure," and the formation of "that civilisation second to none in the massiveness of its outlines or the perfection of its details," attributing all this to a distinctive "secret of Aryan success."

Continuing the discussion, Sri Aurobindo states [6, p. 16] that the secret of Aryan success was their knowledge of human psychology.

> **[A28]** It would be an error to look for the secret of Aryan success in the details of the instruction given in the old asrams and universities so far as they have come down to us. We must know what was the principle and basis on which the details were founded. We shall find the secret of their success in a profound knowledge of human psychology and its subtle application to the methods of intellectual training and instruction.

Sri Aurobindo states the psychology of gaining knowledge has three aspects, namely *tamas* (dullness or passivity which obscures knowledge), *rajas* (indiscipline which obscures knowledge), and *sattva* (illumination which reveals hidden knowledge). He then goes on describe [6, p. 31] the teacher's task as "the removal of tamas, the disciplining of rajas and the awakening of sattva."

5.4 Aryan Civilisation, *Brahmacharya*, and *Siddha*

Sri Aurobindo writes [6, p. 17]:

> **[A29]** At the basis of the old Aryan system was the all-important discipline of *Brahmacharya*.

He goes on to mention [6, p. 18] various points such as "Information cannot be the foundation of intelligence," "An education that confines itself to imparting knowledge, is no education." Sri Aurobindo further writes [6, pp. 18–19]:

> **[A30]** The various faculties of memory, judgement, imagination, perception, reasoning, which build the edifice of thought and knowledge for the knower, must not only be equipped with their fit and sufficient tools and materials, but trained to bring fresh materials and use more skilfully those of which they are in possession. And the foundation of the structure they have to build, can only be the provision of a fund

> of force and energy sufficient to bear the demands of a continually growing activity of the memory, judgement and creative power.

For the source of the energy, Sri Aurobindo states [6, p. 19] that an

> **[A31]** infinite energy, *Prakriti*, *Maya* or *Shakti*, pervades the world, pours itself into every name and form, and the clod, the plant, the insect, the animal, the man are, in their phenomenal existence, merely more or less efficient *adharas* of this Energy.

Regarding achievement of *siddha*, he writes [6, p. 21]:

> **[A32]** When that energy is the highest in kind and the fullest in amount of which the human *adhara* is capable, and the *adhara* itself is trained utterly to bear the inrush and play of the energy, then is a man *siddha*, the fulfilled or perfected man, his evolution is over and he has completed in the individual that utmost development which the mass of humanity is labouring towards through the ages.

At this point, Sri Aurobindo moves from the absolute to the hypothetical and considers [6, p. 22]: "If this theory be correct...," leaving open the possibility that the theory is not correct. If the theory is correct, then Sri Aurobindo argues that it was the practice of *Brahmacharya* by the ancient Aryans which was "one of the chief processes which they used for the increased storage of energy." This is the only point in the whole essay where Sri Aurobindo considers the possibility of the theory he was propounding to be false. However, he does not go on to provide further argument as to why the reader should accept his theory to be true.

5.5 Religious and Spiritual Awakening

Sri Aurobindo writes [6, p. 6] about "a religious and spiritual awakening as the next necessity and the next inevitable development." He specifically states [6, p. 4] that the Bengali has "a mighty will-power which comes from the long worship of *Shakti* and practice of the *Tantra*," making him "the most perfect *adhar* of *Shakti*," with "that Will and Energy" having "rushed into him" recently, "lifting him to the level of his future mission and destiny."

6 Some Questions and Comments about Sri Aurobindo's *The Brain of India*

In this section, we put forward some questions and comments about Sri Aurobindo's *The Brain of India*.

6.1 Metaphysical Ideas

The description of a primal life source filling all living beings (see (A31)), the achievement of *Siddha* (see (A32)), and the description of the human psychology as part of the system of *Brahmacharya* (see Section 5.2), are metaphysical ideas. As such these are normative models, arguably put forward with the take-it or leave-it position, and are not meant to be reasoned with.

6.2 Lack of Explanations

The Brain of India does not provide supporting evidence, or explanatory justifications. None of the claims in the essay, such as Bengali emotional/intuitive superiority, the "direct knowledge" faculty being more evolved in certain races, the Aryan civilisational "secret," Indian versatility over European specialisation, the tamas/rajas/sattva mechanism, *Shakti* as the source of civilisational expansion, are supported by concrete evidence, comparative data, textual sources, or named historical sources. As such these statements are direct assertions which are meant to be wholly believed and not reasoned with.

6.3 Racial Superiority Statements

The essay makes various evidence-less statements about racial superiorities. The claim that fixed hereditary races (Bengali, Madrasi, Maratha) possess various ranked mental faculties by birth rather than through environment or training is racial essentialism in the strict sense.

Regarding the quotation in (A16) about Sri Ramakrishna, as far as we are aware no other source in history mentions that Sri Ramakrishna could command "any knowledge he desired easily and divinely," and neither does Sri Aurobindo provide any concrete example of Sri Ramakrishna easily obtaining any specific knowledge. Asking for an example may be countered by saying that Sri Ramakrishna could have divined specific knowledge *if* he wanted to do so. Such a counter is an unfalsifiable argument and does not merit rational investigation.

More importantly, Sri Aurobindo's reference to Sri Ramakrishna sits awkwardly with the various racial superiority statements made by Sri Aurobindo for at least the following two reasons.

Firstly, Sri Ramakrishna himself was well-known for self-effacement and indifference to worldly status. So invoking his name ("the supreme outcome of the race... which is above reason and imagination") to support a statement of racial rank does not conform to his personality.

Secondly, the single most important of all the teachings of Sri Ramakrishna was the principle of "*jato mat tato patha*." This principle captures the idea that all spiritual paths lead to the same divine reality. So by extension, this principle also implies that no one path, tradition, or people holds superior access to divine realisation. The principle is fundamentally a universalist doctrine which removes claims of ranking among religious paths and, by extension, among the people who walk them. Sri Aurobindo states that Bengalis have an innate higher mental faculty compared to other races, while Sri Ramakrishna's teaching implies divine spiritual attainment is available through any religious path, followed by any sincere person. In Sri Ramakrishna's teaching there is no notion of a certain race having innate superior ability to attain spiritual bliss.

6.4 Aryan Achievement

Sri Aurobindo stated that ancient Aryan civilisation produced "incomparable" achievements because of a psychological "secret," namely *Brahmacharya*-conditioned energy, and *sattvic* illumination training. Irrespective of whether his theory is correct or not, it fails to explain why

the civilisational decadence set in. That the civilisation did decline is not contested by Sri Aurobindo; if anything, his essay was written to revive what was lost. If the secret of Aryan civilisational success was indeed *Brahmacharya*, then what caused the decline of the civilisation? Further, why should the revival of *Brahmacharya* lead to a different outcome than it did earlier? Sri Aurobindo's essay does not address this gap. In particular, Sri Aurobindo does not provide any explanation of why the practice of *Brahmacharya* became dormant in the first place for an indefinite period of time.

In ancient times, there were other civilisations, such as the Egyptian, Babylonian, Sumerian and Greek civilisations, which either pre-dated or were contemporary with the Aryan civilisation. These civilisations achieved greatness in various fields of human endeavour. There are no historical records that such civilisations practised *Brahmacharya*. So while it cannot be ascertained with certainty whether *Brahmacharya* was indeed the secret behind the greatness of the Aryan civilisation (as stated in (A29)), since other civilisations achieved greatness without *Brahmacharya*, one may conclude that *Brahmacharya* is at least not necessary for attaining civilisational greatness.

Another important issue is that the identification of "Aryan" as the sole source of achievements of classical Indian civilisation is problematic. Even in the early twentieth century, a single-origin, single-race account of ancient Indian achievements was a contested theory. Even though the Indus Valley Civilisation was not discovered until the 1920s, the Dravidian contribution to Indian civilisation was well documented. Attributing the whole of ancient Indian achievement to Aryans disregards the Dravidian contribution.

It is possible that Sri Aurobindo was concerned only with Aryan civilisation, and not with the entire Indian civilisation. Under this hypothesis, ignoring Dravidian contribution to Indian civilisation would not be an anomaly. However, the title of his essay is *The Brain of India*, which conceivably includes all of India. So the defence that Sri Aurobindo was narrowly focused only on Aryan civilisation does not match the broad theme promised by the title of his essay.

We note the further following points with respect to Aryan achievements.

1. Aryans are praised by Sri Aurobindo (see Section 5.3). Since Bengalis are a mixed race, it is not clear that the praise of Aryans applies to the Bengalis.
2. Aryan civilisation is not of Indian origin. This point is not mentioned in Sri Aurobindo's essay.

6.5 Sanskrit Terminology in Theory of Learning

Sri Aurobindo employs several Sanskrit terms – *tamas*, *rajas*, and *sattva* – to describe the process of learning, where *tamas* is described as dullness or passivity which obscures knowledge, *rajas* is described as indiscipline which obscures knowledge, and *sattva* is described as illumination which reveals hidden knowledge. The use of Sanskrit terminology creates an appearance of authority, but on close examination these terms appear to be basic ideas dressed in a philosophical/technical language. It is not clear what the Sanskrit terminology supplies in addition to a plain understanding of a teacher's task of removing dullness, encouraging students to discipline their minds, and helping students understand the material under study.

6.6 Some Further Issues

Quotation (A20)**.** Sri Aurobindo puts forward the position that the mental faculty of "logical or reasoning intellect" is sufficient to create certain kinds of individuals who constitute the mass of human intelligence and are responsible for slow and careful progress, while the same faculty is not sufficient to create great personalities. Undoubtedly achieving greatness requires mental faculties beyond "logical or reasoning intellect." However, such faculties are not in opposition to those of reasoning. There are examples of great personalities, such as Issac Newton, who possessed great reasoning powers and also mental faculties beyond reasoning.

The last part of (A20) mentions that the rest of India is dominated by the faculty of "logical or reasoning intellect" and is limited by it, while Bengal is not, and hence Bengal is proceeding much faster than the rest of India. We note here that contemporary examples of Bengalis who possessed great "logical or reasoning intellect" were P. C. Ray himself and Acharya Jagadish Chandra Bose who were the leaders of science in modern India. Leaving aside other aspects of Sri Aurobindo's statement, these examples become awkward to fit within the framework described by him.

Quotation (A21)**.** Sri Aurobindo distinguishes between the achievement of single domain excellence by individual European personalities and the achievement of multi-domain excellence by Indian personalities. No examples are provided, so it is not clear what he means. There are examples of European personalities, such as Issac Newton, who achieved excellence in different intellectual fields. Whether Newton would qualify as a counter-example to Sri Aurobindo's position is not clear. In this context, one may note that P. C. Ray states (see (R37)) that in the present age Europeans have achieved the ideals of the ancient *Rishis* in their "unflagging and concentrated devotion to the pursuit of knowledge for its own sake."

Section 5.5. While *Tantra* was indeed practised in Bengal, a large section of Bengalis were under the influence of Chaitanya and practised Vaishnavism. So while talking about the Bengali in abstraction, it is perhaps not correct to say that the Bengali worships *Shakti*, as that delegitimises the followers of Chaitanya. Further, stressing that it is the practice of *Tantra* that provides greatness to the Bengali somewhat calls into question the contribution of Chaitanya himself.

Quotation (A19)**.** The passage talks about inferiority of Bengali brain with respect to intellect. This is somewhat in opposition to the passage in (A18) which talks about Bengali having a "subtle brain" which can catch "delicacies of thoughts."

Quotation (A26)**.** In this statement, Sri Aurobindo points to European materialism. We note that P. C. Ray emphatically stated that in his contemporary time, the Bengali was no less materialistic than Europeans (see (R47)).

7 Concluding Remarks

We have performed an in-depth study of *Bengali Brain and Its Misuse* by P. C. Ray which is an English version of his essay *Bangalir Mastishka O Tahar Apabyabahar* in Bengali. Further, we have carefully considered Sri Aurobindo's review of the (Bengali version of the) P. C. Ray's essay. Subsequently we analysed the essay *The Brain of India* by Sri Aurobindo which was written around the same time as P. C. Ray's essay.

We find that Sri Aurobindo's review does not hold up against P. C. Ray's essay. Based on our detailed study, we put forward some of our own questions and criticisms of P. C. Ray's essay. While our questions point to certain gaps in P. C. Ray's essay, these do not detract from the brilliance of the work and its continuing relevance in the modern age.

Regarding Sri Aurobindo's essay, we find that the essay is based on metaphysical ideas and does not provide justifications or evidence for the various statements that are made. We raise a few questions about some of the points in Sri Aurobindo's essay. Arguably Sri Aurobindo's essay was not written to be reasoned with. Rather, it was written with an authoritative tone to be accepted without questioning. One may contrast this approach with the view of P. C. Ray who in the Bengali version of his essay explicitly says that a statement should not be accepted without reasoning even if Shankaracharya himself stated it (see (R12)). Perhaps this points to the fundamental difference between the two personalities – P. C. Ray who was an accomplised scientist, while Sri Aurobindo who even in 1909 was arguably moving towards mysticism.

References

[1] Sri Aurobindo. "Suprabhat: A Review". In: *Karmayogin* (Aug. 14, 1909). Review of the Bengali monthly Suprabhat, including a discussion of P. C. Ray's "The Bengali Brain and its Misuse". URL: https://worksofthemotherandsriaurobindo.org/index.php/01-works-of-sri-aurobindo/03-cwsa/01-early-cultural-writings/69-Reviews-Suprabhat-Vol-01-early-cultural-writings (visited on Aug. 21, 2026).

[2] Anil Bhattacharyya, ed. *Acharya Prafulla Chandra Ray Rachana Sankalan*. Vol. 2. Kolkata: University of Calcutta, 2012. URL: https://archive.org/details/dli.calcutta.03854 (visited on Aug. 26, 2026).

[3] Henry Thomas Buckle. *History of Civilization in England*. Vol. 1. London: Grant Richards, 1857. URL: https://archive.org/details/in.ernet.dli.2015.533689 (visited on Oct. 13, 2026).

[4] Henry Thomas Buckle. *History of Civilization in England*. Vol. 2. London: Parker, Son, and Bourn, 1861. URL: https://archive.org/details/in.ernet.dli.2015.45576 (visited on Oct. 13, 2026).

[5] Manas Chakrabarty. "Acharya Prafulla Chandra Ray: A Revisit to His Life and Work". In: *Science and Culture* (Sept. 2021–July 2022), pp. 338–350, 108–118, 222–233. Part I: https://scienceandculture-isna.org/uploads/latestIssue/September_October_Art_CHAKRABARTY__Abstract_matter_2021-3.pdf; Part II: https://scienceandculture-isna.org/uploads/latestIssue/06_Manas_Chakrabarty.pdf; Part III: https://

scispace.com/pdf/acharya-prafulla-chandra-ray-a-revisit-to-his-life-and-work-3grwpyle.pdf.

[6] Aurobindo Ghose. *The Brain of India*. Chandernagore: Prabartak Publishing House, 1921. URL: https://archive.org/details/in.ernet.dli.2015.189302/page/n5/mode/2up (visited on Oct. 9, 2026).

[7] François Guizot. *General History of Civilization in Europe. From the Fall of the Roman Empire to the French Revolution*. Originally delivered as lectures in 1828; English translation first published in 1837. 1828. URL: https://archive.org/details/general_history_of_civilization_in_europe (visited on Oct. 13, 2026).

[8] Peter Heehs. *The Lives of Sri Aurobindo*. New York: Columbia University Press, 2008.

[9] William Edward Hartpole Lecky. *The Rise and Influence of Rationalism in Europe*. Originally published in 1865. 1913. URL: https://archive.org/details/in.ernet.dli.2015.278330 (visited on Oct. 13, 2026).

[10] Sisir K. Majumdar. "Acharya Prafulla Chandra Ray: A Scientist, Teacher, Author and a Patriotic Entrepreneur". In: *Indian Journal of History of Science* 46.3 (2011), pp. 523–533. URL: https://insa.nic.in/writereaddata/UpLoadedFiles/IJHS/Vol46_3_6_SKMajumdar.pdf (visited on Aug. 21, 2026).

[11] N. C. Rana. *Myths and Legends Related to Eclipses*. New Delhi: Vigyan Prasar. URL: https://www.indiascienceandtechnology.gov.in/sites/all/themes/vigyan/pdf_file/books/english/Myths-and-Legends.pdf (visited on Oct. 11, 2026).

[12] Prafulla Chandra Ray. *A History of Hindu Chemistry from the Earliest Times to the Middle of the Sixteenth Century, A.D.* Vol. 1. London: Williams and Norgate, 1902. URL: https://archive.org/details/in.ernet.dli.2015.39319 (visited on Oct. 13, 2026).

[13] Prafulla Chandra Ray. *Acharya Prafullachandra Rayer Prabandha O Baktritabali*. Calcutta: Chakrabarty, Chatterjee and Co. Ltd., 1927. URL: https://archive.org/details/in.ernet.dli.2015.340083 (visited on Aug. 26, 2026).

[14] Prafulla Chandra Ray. "*Bangalir Mastishka O Tahar Apabyabahar*". Bengali. In: *Suprabhat* (1909). Digitized copy of a later edition, Internet Archive. URL: https://archive.org/details/20220627_20220627_1711 (visited on Aug. 21, 2026).

[15] Prafulla Chandra Ray. *Bengali Brain and Its Misuse*. Published by the City Book Society. Calcutta: K. C. Choudhury, Jan. 1910. URL: https://play.google.com/store/books/details/Bengali_Brain_and_Its_Misuse?id=hnPrPSEGtD4C (visited on Aug. 21, 2026).

[16] Prafulla Chandra Ray. *Life and Experiences of a Bengali Chemist*. Vol. 1. Calcutta and London: Chuckervertty, Chatterjee & Co. Ltd. and Kegan Paul, Trench, Trübner & Co. Ltd., 1932. URL: https://archive.org/details/in.ernet.dli.2015.90919 (visited on Oct. 13, 2026).

[17] Prafulla Chandra Ray. "Presidential Address at the Indian National Social Conference". Indian National Social Conference (Calcutta). Presidential address delivered at the 31st Indian National Social Conference. Dec. 30, 1917. URL: https://archive.org/details/in.ernet.dli.2015.238076 (visited on Aug. 21, 2026).

[18] Sri Aurobindo Ashram Trust. “Notes on the Texts. Early Cultural Writings”. In: *The Complete Works of Sri Aurobindo*. Vol. 1. Editorial notes describing the provenance, publication history, manuscripts, and textual editing of the writings included in *Early Cultural Writings*. Pondicherry: Sri Aurobindo Ashram Publication Department, 2003. URL: https://worksofthemotherandsriaurobindo.org/index.php/01-works-of-sri-aurobindo/03-cwsa/01-early-cultural-writings/89-Notes-on-the-Texts-Vol-01-early-cultural-writings (visited on Aug. 23, 2026).