



Royal Netherlands Academy of Arts and Sciences (KNAW) KONINKLIJKE NEDERLANDSE AKADEMIE VAN WETENSCHAPPEN

Franz Junghuhn's Three-Dimensional and Transcendental Java.

Bosma, U.

published in

The Role of Religions in the European Perception of Insular and Mainland Southeast Asia Travel Accounts of the 16th to the 21st Century

2016

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Bosma, U. (2016). Franz Junghuhn's Three-Dimensional and Transcendental Java. In M. Arnez, & J. Sarnowsky (Eds.), *The Role of Religions in the European Perception of Insular and Mainland Southeast Asia Travel Accounts of the 16th to the 21st Century* (pp. 175-206). Cambridge Scholars Publishing.

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CHAPTER NINE

FRANZ JUNGHUHN'S THREE-DIMENSIONAL AND TRANSCENDENTAL JAVA ULBE BOSMA

Introduction

In spite of the fact that Germany did not become a colonial power until quite late in the 19th century, Germans were to be found in almost every colony of the world. Early 19th-century Romanticism may have been particularly conducive to persuading Germans to leave the *Heimat* and follow the example of the famous explorer Alexander von Humboldt, visiting unknown lands, gathering exotic plants, descending into rumbling volcanoes and climbing the highest mountains. In the early 19th century there were half a dozen prominent scientists originating from Germany in the Netherlands Indies alone: Caspar Georg Carl Reinwardt, Ernst Albert Fritze, Justus Carl Hasskarl, Carl Ludwig Blume, and last but not least Franz Wilhelm Junghuhn. The few French, Swiss or Dutch scientists were a minority in their company.

The transnational character of the pursuit of science in the Dutch empire may throw up some questions about the relationship between science and colonialism, which in post-colonial studies have become welded together in the assumed knowledge-power nexus. The biography of Junghuhn illustrates the tensions between science and colonial domination in a many-faceted way. Thanks to his belonging to a German academic network he was capable of maintaining himself as an independent scholar, while on a more spiritual level his ideas about nature and religion, which were rooted in the *Aufklärung*, left their stamp not only on colonial botany but even more so on Dutch intellectual history.

In general, I think, one should be wary of making *a priori* assumptions about the colonial affiliations of the 19th-century explorers of the earth's geology and natural habitats. Alexander von Humboldt, Charles Darwin, David Livingstone and Alfred Russell Wallace were the stars of their days – the comparison with astronauts has been made in this context. They were indeed reliant to a certain extent upon the colonial infrastructures and hence careful not to alienate colonial rulers while conducting their

research; with regard to the advancement of their careers, however, they felt themselves far more dependent upon their academic peers and public recognition than on the whims of the colonial regimes. In order to attract funding for their expeditions explorers had to sell their activities by evoking the elements of adventure and exoticism. The word “discovery” nicely captures this idea as a mixture of heroism and science, a mixture of personal experience and methodological assiduousness. While systematic and encyclopaedic, moving from geology and topography to linguistics, ethnography and history in their scope, the narratives the explorers produced were not yet couched in the trimmed, arid prose that fills present-day scientific journals. As a result, a poetic description of a sunrise was to be found on the same page as a mathematical formula only decipherable by professionals, or descriptions of the many bloodsuckers and mosquitoes pestering the explorer, or highly critical remarks about colonial officials.¹ And last but not least, the early 19th-century explorer was still the early 19th century explorer – in most cases a man but in some exceptional cases a woman – was still a *homo universalis*. So to sum up, the explorer had to work towards stardom in order to obtain support for his academic pursuits.

Junghuhn fits this description, and whilst his place on the ladder of fame was one rung below that of the great explorers Humboldt, Darwin and Wallace, he was indubitably the greatest explorer ever of Java, for which he was deservedly given the epithet “the Humboldt of Java”. His achievement of this position was quite an accomplishment in view of the remarkably gifted travellers that surrounded him in the Netherlands Indies. Once Thomas Stamford Raffles’s famous two-volume book on Java had set a completely new, and lasting, standard in making an interest in the natural habitat and ancient culture of Java the hallmark of cultured colonial rule, his Dutch successors followed suit. The enlightened Governor-General Godert van der Capellen (1816-1825) sent out one expedition after another. The most well-known was the voyage of Reinwardt and his team to the Eastern Moluccas in 1821-1822.² Natural history and botany became institutionalized in the Buitenzorg (Bogor) botanical garden, established in 1817 and linked to the *hortus* in Leyden. Bogor’s first two directors, Reinwardt and Blume, had just become professors of botany at Leiden University at the time when Junghuhn embarked for the Netherlands Indies in the mid-19th century. Many publications on botanical, geographical and ethnographical subjects appeared in the *Tijdschrift voor Nederlandsch-Indië*, established in 1838, one of the very few journals that were allowed to appear in Batavia anyway. From the outset the journal published a dozen articles per year

from all parts of the archipelago, authored by an impressive range of scholars including Pieter Bleeker, Pieter Melvill van Cambee, Heinrich Zollinger, and of course Franz Junghuhn.

There is an abundance of biographical material on Franz Junghuhn. Working his way towards academic fame Junghuhn carefully cultivated his image among his readership and much material out of his, undoubtedly reworked, diaries became part of his books. Junghuhn's most important publications can easily be found in digital repositories such as www.archive.org. The twenty or so articles, two anthologies and a popular biography rely heavily on Junghuhn's own publications and are therefore not entirely trustworthy. First-hand knowledge can be obtained from the Hunger collection at the National Archives in The Hague and the collection of Hans van der Kamp at the KITLV in Leyden, who also wrote a comprehensive inventory of all relevant sources and publications.³ The exhibition at the Goethe Institute in Jakarta in 2009, commemorating the second centennial of Junghuhn's birth, was another step towards a seriously researched biography. Renate Sternagel, who was one of the two co-organizers of this event, has written the most important, but still far from complete, biography of Franz Junghuhn. It does not, however, pretend to be the ultimate Junghuhn biography, but offers an excellent point of departure for further explorations of a variety of themes.⁴

One of these themes may concern the apparent contradiction between Junghuhn's intellectual and spiritual biography and the critical words applied to discoverers in post-colonial studies and New Imperial History, consigning them a place in history as "orientalists" in the sense attached to the word by Edward Said, "othering" the people whom they visited. As more and more snippets of information about Junghuhn's life are recovered, his permanent struggle for academic independence is revealed as a powerful counterpoint to this critical view. He and some of his fellow explorers in Java spent fifteen years fighting the hegemonic position of C. L. Blume, the director of the *Rijksherbarium* (State Herbarium) in Leyden, who did everything in his power to reduce the role of the botanists in the Netherlands Indies to that of field workers on his behalf, whose task it was to furnish him with fuel for his own academic glory. The way in which Junghuhn fostered his German academic network as a countervailing power to protect his scholarly autonomy in the Dutch colonial empire provides an important transnational addition, or perhaps caveat, to New Imperial History's focus on imperial networks.

Positioning Junghuhn as a member of German academia not only calls into question rather facile assumptions about the linkage between empire and science, but it also sheds light on how he perceived the relationship

between science and religion and how he developed his ideas about natural religion in particular. Junghuhn as a scientist was perceptive to the transcendental dimensions of knowledge, while as a deeply religious person he was searching for a system of beliefs that was compatible with modern science. He was steeped in German Idealism, on which Neoplatonic philosophy and German readings of Sanskrit texts had left their mark. With this background, it was almost inevitable that Junghuhn should construct his own image of Java, one that fitted his ideas about natural religion; while at the same time his scientific work in Java and his encounters with Islam, Freemasonry and the remnants of Buddhism and Hinduism widened his perspective on religion and ethics. In this respect, it should be noted that Theosophy did not yet exist in Junghuhn's day, and so could not serve as a medium for interreligious discourse as it would in the early 20th century. For Junghuhn rationalism was still the idiom of exchange, and like other adherents of the German *Aufklärung* he respected Islam as being more rationalist than Christianity, even though like many Europeans in Asia he was always suspicious of Muslim "fanaticism".

Epistemological foundations

Even if we accept the claim that scientism and European imperialism share a hegemonic discourse, there is every reason to except German Idealism from this; even though it is not difficult to detect its Eurocentrism, that is a different debate in my view. First of all, the professed unity of the natural sciences and the humanities, most consistently argued perhaps by the Humboldt brothers, speaks radically against scientism. Their coupling of the notion of individualism with an organic understanding of the universe, and even society, was in declared opposition to the Cartesian perspective that had ushered in scientific positivism. Of course, the Humboldt brothers did embrace empirical "hard" sciences, but this was never an end in itself but a basis for demonstrating the unity of the universe. As true sons of the *Aufklärung* they remained faithful to a Leibnizian world view, which entailed, according to Fullinwider, the principle that "[e]very object follows its own idea or nature, but this is done in harmony (thus in relation) with all other objects. This is what Leibniz meant by the principle of sufficient reason" (*Satz des zureichenden Grundes*).⁵ The result was what Reill has called Enlightenment vitalism, a reworking of the mechanistic Enlightenment world view, or scientism, by re-introducing the notion of active forces in nature with a purposeful direction and an epistemology that made room for imagination and intuition in scientific work.⁶ Wilhelm von Humboldt; in his essay "Über die Aufgabe des

Geschichtschreibers", notes that it is not only the historian who needs poetic talent to portray a from disparate elements, which he needs to describe most faithfully, but that the same is required of the "...scientist if he wants to study nature as a unity".⁷ The perceptions of the Humboldt brothers and later on of Junghuhn were heavily influenced by Friedrich Schelling's *Naturphilosophie* and his notion of the *Weltseele*, which gives rise to the urge to understand nature as a whole.

Junghuhn's friends have recorded that he was deeply inspired by both Schopenhauer and Goethe, who in turn played an active role in the revival of Neoplatonism and Spinozism in particular.⁸ Spinoza's claim of knowing through intuition exerted a tremendous appeal on Goethe and his so-called Weimar circle, which included the Humboldt brothers.⁹ Moreover, Schopenhauer, whom Junghuhn particularly admired, was the epitome of that vitalist way of thinking which merged Spinozism and certain interpretations of Indian philosophy into the epistemological monistic position that the universe is recognizable through direct intuition.¹⁰

According to some authors, this radical divergence from scientism still does not exculpate Junghuhn and his *Aufklärung* pedigree from complicity in "subjugating the world to their knowledge". They may argue that Schelling spoke enthusiastically of Humboldt's publication of his account of his American explorations as a spiritual conquest of the universe.¹¹ But contrary to what Pratt suggests, and as Sachs has pointed out, it is a long way from Humboldt's "planetary consciousness" to the utilitarian use of knowledge for the conquest and exploitation of the globe.¹² I would like to add that Humboldt's, and hence also Junghuhn's, world view is radically different from what James Scott has labelled 'seeing like a state', which entails the legibility of nature and society with the intentional purpose of colonial exploitation.¹³ In this respect, I must admit, Junghuhn's position is less straightforwardly anti-colonial than Humboldt's, because he favoured colonial settlements in Java and pioneered cinchona cultivation, but in his many publications he presents himself as a scholar grappling with how to *understand* universe not as someone intent on exploiting and destroying it. His colonial interventions focused on the acclimatisation of plants and humans after their "transfer", rather than on reshaping the natural environment, as will be explained in detail later on.¹⁴ Quite remarkably for a scholar of his time, he warned against the dangers of deforestation, foreseeing its catastrophic effects on the entire ecosystem.

There is yet another point made by Pratt in her *Imperial Eyes* that relates much better, and perhaps more interestingly, to Junghuhn's publications. Pratt argues that travelogues focus on how the colonial metropolis determined the periphery, but remain silent on how the

periphery shaped Europe.¹⁵ This may be true for the individual travelogues, but in this case it is important, in order to assess the interaction between metropolis and periphery, to expand the analysis to cover the reception of the entire *oeuvre* of an explorer. Junghuhn's academic and philosophical preoccupations were enriched by his experiences in Java, and this would pave the way for his role as a freethinker critical of European Christian culture. Again, his German Idealist background coloured this "speaking back" to the metropole, but at the same time it opened his eyes to register faithfully what he saw and, what is particularly relevant here, made him aware of the "sublime".

For Schopenhauer the "sublime" in nature is the process by which the observer becomes part of overwhelming nature through the experience of "extase". For him this is the only way to overcome the suffering of our ephemeral and tormented existence. But Junghuhn's experience of the 'sublime' in nature may be closer to Schelling's perception which comprised a dialectic of first experiencing the overpowering sight of, for example, a volcano, followed by the overcoming of the fear instilled by the phenomenon, looking the volcano straight in the eye. The subsequent identification with the power of nature, becoming in a spiritual sense nature's equal, is perceived by the observer as proof of the grandeur of the human spirit. The notion of the sublime that is rendered to us in philosophical writing is visualised by Caspar David Friedrich's paintings of nature conveying immanent powers. The procedure needed to be slightly different for a scientist, of course. Junghuhn combines meticulous description with picturesque descriptions, in which he followed the admired master Alexander von Humboldt.¹⁶ Some of Junghuhn's own paintings, depicting himself as a minute figure in an immensely overwhelming landscape, testify to his profound awareness of human fragility vis-à-vis the power of nature, but at the same time of the Promethean spirit driving him to confront them. Looking into a volcano was for Junghuhn essentially looking God right in the face.

As I have said, Junghuhn's world view was inspired by Schopenhauer. Yet it held to the old Leibnizian adage of the best of all possible worlds. In his *Images of Light and Shadow* (1854), which lays out Junghuhn's religious persuasion, ethics and world view, he describes the cruel sight of a sea turtle, crawling onto the beach in southern Java to lay her eggs, being torn apart by wild dogs, who in the middle of the bloody scene are themselves smashed aside by a ferocious tiger leaping out of the forest. Junghuhn sees the tragedies behind the beach littered with sea turtle shells. He first wonders why some animals have so many natural enemies, but then arrives at the insight that it is not for nothing that turtles produce so

many eggs.¹⁷ For Schopenhauer, however, there is no order in this suffering apart from “so objektivirt sich der Wille zum Leben.”¹⁸ Junghuhn was not such an inveterate pessimist. For him the main principle behind all human pursuits was pleasure, but since, in his view, no one would know what pleasure was without the experience of pain, the latter belonged unavoidably to the best of all possible worlds.¹⁹

The quest for the sublime is what drove Alexander von Humboldt and Franz Junghuhn to explore the earth and undergo the exhaustion, sickness, dysentery and malaria that accompanied such expeditions. Three-dimensionality was central to their mountain-climbing endeavours and their government assignments to explore beneath the surface of the earth in search of commodities that could be extracted. After most the earth's surface had been mapped, the early 19th century was the time to discover the vertical dimensions of the world. The three-dimensional world was not just a scientific step forward; for Junghuhn it was also a way to unravel the design of the world and thus of God's creation. In this respect, Junghuhn's three-dimensional world was essentially a transcendental world.

Franz Junghuhn (1809-1864)

From the philosophical background and epistemological corollaries of Junghuhn's world view we now descend to the more mundane levels of his tense relationship with colonial interests. Here I want to explore how Junghuhn maintained and developed his German network not only through correspondence but also by sending specimens and manuscripts back home. This he did to stay independent and prevent plagiarism and subsumption of his work by the Leyden professor C.L. Blume. His own permanent resistance against all forms of authority, whether parental, ecclesiastical, academic or governmental, was part of his unabating struggle for intellectual and spiritual autonomy, in which his painstaking description of the geology and habitat of Java and his involvement in dissident strands of Freemasonry come together. While Junghuhn's religious tolerance and rejection of the Bible as divine revelation were grounded in the spirit of the *Aufklärung*, his fiercely anti-ecclesiastical stance, which would make him one of the founders of Dutch free thought, was something that built up over the course of his lifetime.

Franz Junghuhn was born in the early years of the Romantic era, in 1809, in Mansfeld, in Prussian Saxony, as the eldest child of a modest village barber-surgeon; his younger brother and two surviving sisters were at least ten years younger. Being destined to become a village surgeon (*Wundarzt*) like his father, Franz was sent to the university town of Halle,

about 40 kilometres from Mansfeld, at the age of sixteen, after having had private education from a local ultraconservative Catholic cleric. This was not sufficient preparation to obtain entrance to a university, but more than enough to instil a lifelong revulsion against the church and Catholic priests in particular. His next teacher, however, acquainted Franz with an entirely different, and far more enlightened, theological idiom. In order to be admitted to the Faculty of Medicine he had to undergo further education in Halle, where he was taken into the home of Johann Karl Thilo, a young Professor of Theology at Halle University. In all probability Thilo acted as Junghuhn's tutor, and if so he would not only have thoroughly upgraded his knowledge of Latin and Greek but also have shared with him his own theological insights, which were attuned to the historical-critical school. Thilo is known for his work on the apocrypha and on the role of Neoplatonism in early Christianity as exemplified by Origen.²⁰

Junghuhn's inquisitive mind, his enthusiasm for botany and geology, his talent for drawing and his entertaining pen were the wherewithal for a successful career as a scientific natural historian (*Naturforscher*) in his day.²¹ Disregarding his father's refusal to pay for academic ambitions, which he deemed utterly unnecessary for a provincial surgeon,²² Franz prepared himself, without informing his parents, for admission as a doctoral student, to which end he had to enrol in philosophy courses. During his spare hours Junghuhn was out and about in the countryside around Halle, often with his friend H. Burmeister, who in his later years would become a famous zoologist and one of those who helped him to get his work published in Germany. On the basis of these tours he wrote his first article, in Latin, in the field of mycology (fungi), which would appear in 1830.²³ Unfortunately for Franz his father found out about his transgressions into philosophy and stopped his study allowance. Franz tried to make ends meet by selling his furniture and even his books, and subsequently eked out a living as actor, but soon found out that this was all in vain and in desperation walked back to Mansfeld.²⁴ His father's dismissive attitude to his academic ambitions drove Franz into deep mental depression, which brought him to attempt suicide by shooting himself in the head. He miraculously survived. Under pressure from relatives and friends his father gave in and allowed his son to study medicine in Berlin. There he went to the university where Hegel was still teaching (though he would die in 1831), but even more importantly, where the Humboldt brothers lectured.

However, thanks to his own foolishness Junghuhn would hardly benefit from Berlin's unique academic environment. Only a few months into the academic year 1830-1831, he became embroiled in a duel, in

which no one was killed; only he himself was slightly wounded. In June 1831 he was nonetheless sentenced to ten years' imprisonment. This was a draconian sentence, but as a rule a pardon could be obtained after a few months in prison. From his prison in Koblenz Junghuhn submitted his first appeal for clemency to the Prussian king after 18 months. In the months waiting for a response, he became desperate about his chances of obtaining clemency and began to feign insanity – in fact it is not entirely impossible that his mind did become somewhat unbalanced because of his addiction to opium during his stay in prison. Transferred to a mental hospital, he met a fellow botanist, Philipp Wirtgen, who was asked by the prison staff to check whether Junghuhn, whose only coherent sentences were about fungi, really was insane. Wirtgen, however, felt too much sympathy for his colleague to declare him fit for ordinary prison and instead began to visit him almost every day, which would be the beginning of a life-long friendship.²⁵

In mid-September 1833 Junghuhn seized a chance to escape from his asylum, which with the benefit of hindsight was not a very wise thing to do as one week later the Prussian king read his petition for clemency and immediately granted it.²⁶ By that time Junghuhn had already crossed the French border and was trying to make a living in Paris, where he continued his botanical explorations in the fields and forest around the city while trying to earn his living as painter's servant. According to one source he got in touch with the prominent French botanist Adolphe Brongniart, who allegedly arranged an appointment for him as a medical officer with the French Foreign Legion.²⁷ Whether or not this happened is uncertain, but what is sure is that instead of becoming an army doctor Junghuhn found himself a soldier with the rank of a sergeant stationed in the Algerian port of Bone.²⁸ In the first few months he seems to have reconciled himself to his new environment, making a lot of notes and drawings – including his first three-dimensional maps, collecting plants, in short doing all the things that were necessary for him to work his way back into academic life.²⁹ Meanwhile, he tried to enlist in the service of the *Württembergischer botanische Reiseverein*, an organization created by Christian F.F. Hochstetter and Ernst Gottlieb von Steudel to assemble botanical material from all over the world.³⁰ He did not succeed in becoming part of their North African expedition, and in the midst of the atrocities perpetrated by the French Foreign Legion in trying to break the resistance of the Algerians, Junghuhn's opportunities for botanical and geological research dwindled.

After managing to get himself declared unfit for military service he was allowed to travel back to Paris, where he visited C.H. Persoon, the

most famous mycologist in Europe at the time and a personal friend of Alexander von Humboldt's. Persoon lived in wretched circumstances in a sixth-floor attic on a pension of 800 guilders per year, which he had received in exchange for donating his extensive herbarium of 14,000 specimens to Blume's *Rijksherbarium* at Leiden University.³¹ Persoon appears to have been able, probably via Blume, to arrange with the Ministry for the Colonies for Junghuhn to be hired for a botanical and zoological expedition to the Moluccas.³² Before going to the Netherlands Junghuhn returned to Germany for a few months; not to visit his relatives but to wait to be issued with a passport and to strengthen his German academic network. He renewed his friendship with Philipp Wirtgen and visited Theodor Nees von Esenbeck, with whom Philipp Wirtgen was at that time engaged in founding the Botanical Society of the Middle and Lower Rhine (*Botanischer Verein am Mittel- und Niederrhein*). Ten years later Christian Gottfried Nees von Esenbeck, Theodor's younger brother, would help Junghuhn with the publication of his books. Theodor himself held a Doctor's degree from Leiden University, where his supervisor had been ... Carl Ludwig Blume.

Upon his arrival in The Hague Junghuhn was told that his ship had already left. With his letter of recommendation to Blume from Nees von Esenbeck he walked, completely penniless, from The Hague to the *Rijksherbarium* in Leyden, where he was warmly received by its director who advanced him 55 guilders. However, Blume, who had obtained Persoon's immensely valuable collection for a pittance, had his own agenda, namely to get people sent to Java to gather material for his collection. Junghuhn's fellow-countryman Justus Hasskarl had the same experience; when he left for Java one year after Junghuhn he was warned by one of the Nees von Esenbeck brothers – it is not clear from the source which one it was – that it would be utterly impossible to work as a botanist in the Netherlands Indies while keeping out of Blume's reach.³³

Having thus forfeited his chance to go the Indies as a botanist, Junghuhn opted to go as a medical officer with the Dutch army, and came within sight of the shores of Java in October 1835. While for most military men this sighting was a moment of deep regret and the first pangs of homesickness, as they realized that they would be away for many years and became aware that their chances of dying out there were considerable, Junghuhn was elated at the sight of the island and immediately began to make notes on the natural habitat around him.³⁴ Junghuhn had at least got a free passage to the Netherlands Indies, as he had previously for Algeria, and he probably expected that in the Netherlands Indies he would soon get ample opportunity to conduct botanical research and become involved in

one botanical pursuit or another. Moreover, he was now certain of his position as an officer, and he must have known that many of his fellow-countrymen had already gone there and had achieved, if they were lucky enough to survive, a decent standing in the colony. About 20 per cent of the military with whom he embarked for the Indies were Germans, and German physicians were particularly well-represented in the colonial army as medical officers. Moreover, in the first half of the 19th century colonial society in the Netherlands Indies was more multinational than that of most other colonies, with 35 per cent of all European newcomers being non-Dutch and 10-15 per cent of them being German.³⁵

Blume may have informed Junghuhn that the Chief Medical Officer in the Indies was his fellow-countryman Dr Ernst Albert Fritze, himself a botanist and an expert on volcanoes. He may also have informed Fritze about Junghuhn; but if not he must have found out soon enough since only a handful of medical officers arrived in Batavia each year, and the antecedents of most of these newcomers were known. Fritze allowed Junghuhn to devote a considerable part of his time to botanical research and did everything in his power to further Junghuhn's naturalist explorations. In July 1836, Junghuhn wrote jubilantly to (probably Theodor) Nees von Esenbeck about the great mushrooms he had found in Yogyakarta, where he was located.³⁶ In this letter he also alluded to his trips to the *Zuidergebergte* (southern mountains), to which he was allowed to travel after obtaining a pass from the Prime Minister of the Sultan of Yogyakarta. This document ensured him the most forthcoming treatment in every village he visited and all possible help in recruiting his team of porters. Again, Fritze must have arranged this. Junghuhn also recounts how he had to work with primitive instruments, to some extent simply tinkered together, to measure the heights of Java's volcanoes. His first conquest was Mt Merapi, which he climbed in September 1836 guided by the *kapala gunung*.

At that time Junghuhn was clearly not yet fully accustomed to Java, as he shot his rifle at the volcano to "kill the volcano spirit". This demonstrated a disturbing lack of respect for Javanese beliefs, and the role of the *kapala gunung* in particular. Not surprisingly, Junghuhn used the opportunity of his assignment in Yogyakarta to visit the Prambanan temples, at that time still in ruins, where he discovered that the stones they were built of did not originate from the local mountains.

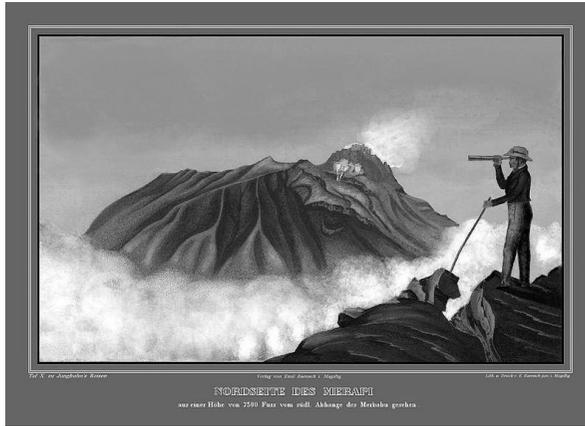


Fig. 9-1 Franz Wilhelm Junghuhn watching Mount Merapi from its northern neighbour, Mount Merbabu (Image by F. W. Junghuhn)

By 1837 it had become clear to Fritze that Junghuhn was an important asset to science in Java, and he succeeded in having him appointed as a temporary member of the Science Committee.³⁷ Blume may have had a positive influence on this development, as is suggested by the fact that there was some correspondence between Junghuhn and Blume in 1837.³⁸ Between 1837 and 1839 Junghuhn travelled widely in Java as an assistant to Fritze, from whom he learnt a lot about volcanoes. His first publication on Java appeared in the first volume of the venerable *Tijdschrift voor Neêrland's Indië*, which was founded by W.R. van Hoëvell. In the years that followed Junghuhn was one of the key contributors to this journal.

However, Junghuhn's position as a scientist in the Netherlands Indies was still tenuous and during the 1840s he became more rather than less reliant upon his German network. In May 1839 his protector Fritze died, and a few months later Junghuhn was dismissed from his position as a temporary member of the Science Committee. This apparently happened in response to his refusal – he had written evasive letters to Blume in this regard – to submit his *entire* collection of plants to the Science Committee, which would then have transferred it to Blume's *Rijksherbarium*.³⁹ Junghuhn decided to smuggle his material on board a ship in Batavia that was bound for Hamburg and entrust them to Gottfried Nees von Esenbeck, who was probably already informed about Blume's monopolistic practices through his brother Theodor and Hasskarl.⁴⁰ In addition he also sent Gottfried Nees von Esenbeck his manuscript "*Topographische und naturwissenschaftliche Reise durch Java*". Nees von Esenbeck, being the

Chair of the *Kaiserlich Leopoldinisch-Carolinische Deutsche Akademie der Naturforscher*, made Junghuhn a member of this society in order to bestow upon him the necessary academic stature. After some failed attempts Nees von Esenbeck also found a publisher for Junghuhn's book on Java, which would appear in 1845.⁴¹ Junghuhn was not alone in circumventing Blume's influence and dictates. His compatriot Justus Carl Hasskarl, the assistant director of Bogor, who was forbidden to send any plant material from the colony without Blume's permission, reacted by developing an herbarium at Bogor and secretly sending material to Blume's competitor, the Amsterdam professor W. H. de Vriese.⁴²

During his tours around Java, Junghuhn had written to his friend Philipp Wirtgen in Koblenz that apart from collecting and describing cryptogams (lower plants and fungi), his ambition was to map the physiognomy of Java following the *freilich unerreichbares* (admittedly unattainable) example of Alexander von Humboldt.⁴³ But after having antagonized the powerful director of the *Rijksherbarium* and lost his patron Fritze, hospital duty was waiting for him. To escape from that he sought the protection of the highly respected senior civil servant Pieter Merkus, who was on a mission as a Government Commissioner (*regeringscommissaris*) on Sumatra. The assignment Merkus gave him was to assess the fertility of the area – this perhaps in view of plans to expand the forced coffee cultivation that had been introduced on Sumatra's west coast – and the possibilities for timber production, and to do ethnographic research and investigate the phenomenon of cannibalism. In 1840-1841 Junghuhn travelled across the Batak lands with a few dozen porters and a few armed men. Merkus meanwhile became the best protector Junghuhn could have wished for, being elevated to the position of Governor-General in 1840.

In spite of having been seriously ill for ten of the eighteenth months of his expedition, and only able to keep going by suppressing his dysentery with opium, Junghuhn had assembled sufficient material for two tomes: one on the geography and the other on ethnography. The two volumes represent the earliest first-hand description of the Batak lands by a European.⁴⁴ Like Hasskarl, he sent the plants he collected on Sumatra to De Vriese, at that time still Professor of Botany in Amsterdam, in order to prevent his precious material from falling into the hands of Blume.⁴⁵ However, Blume found out about this, and Junghuhn was convinced that the Leyden professor, out of rancour, then successfully lobbied to blockade attempts by Merkus to have him appointed a member of the Science Committee. This would have allowed him to conduct his explorations on a decent salary and with the reimbursement of his

expenses.⁴⁶ Whatever had happened, it was still within Merkus' power to make 6,000 guilders available, enabling Junghuhn to prepare his Batak book.⁴⁷ Meanwhile, he was able to continue his work on Java, where he explored dozens of volcanoes, which he started to publish articles about in the *Tijdschrift voor Neêrland's Indië*.⁴⁸

Unfortunately, Merkus died in 1844, and Junghuhn fell out of grace with the government in Batavia because of some disparaging references to the Javanese aristocracy. The first time Van Hoëvell, the editor of the journal, in consultation with the government in Batavia, left out a section to avoid trouble.⁴⁹ But a few months later a passage in Junghuhn's lively narrative on a tiger fight organised by the court of the *Susuhunan* escaped Van Hoëvell's attention and prompted a severe reaction from the colonial government. As an epigraph Junghuhn had quoted a line from Goethe's description of the crowd at an annual fair: "*Geputzte Affen, schnuffeln und gaffen, schlendern and laufen*" – "Dolled-up monkeys, snooping and gawping, sauntering or dashing around". Moreover, he compared the Susuhunan to a puppet living in a golden cage, and expressed the expectation that such a specimen of eastern despotism would soon fall prey to modernity. Junghuhn received an official written warning that if he ever dared to commit such words to paper again he would face extradition.⁵⁰ Things became even worse for Junghuhn when a high government official discovered in his Batak manuscript, which was also at the printer's in Batavia at the time, his condemnation of the harsh treatment of convict porters by a military expedition. The publication of the book was stopped immediately, and it would never appear in Dutch.⁵¹

Junghuhn once again had to call upon his friends in Germany, where the original German version of his manuscript was. It had been sent to Europe in 1844 and was in the capable hands of his friend Hermann Burmeister, who took care of the publication, ensuring that the book appeared in 1847 and soon found its way to Batavia too. Moreover, in November 1846 Junghuhn wrote a letter, probably his first, to Alexander von Humboldt, who was a personal friend of the newly appointed Governor-General J. J. Rochussen, with a view to getting the publication of the Dutch edition of the Batak book on track again.⁵² Junghuhn had also sent an immense amount of material on Java to Humboldt, asking for his help to find a publisher in Germany, but Humboldt was quite reluctant to do so. He probably judged that the material was not ripe for publication yet. However, he granted Junghuhn's request to send a letter to his friend Rochussen to impress upon the Governor-General that he should facilitate the publication of Junghuhn's work in Dutch. Unfortunately the letter was lost in the mail, and it was only after receiving a rather angry reminder

from Junghuhn that Humboldt wrote to Rochussen again in April or May 1848 to convince him that Junghuhn should be financially supported in order to get his precious material on Java published in Dutch.⁵³

Since late 1847 Junghuhn had found his physical strength waning and his anxiety grew that Blume might confiscate his material, while he perished at the equator. His ambition, which he had written to Wirtgen about in the late 1830s, namely to write about the physiognomy of Java along the lines of Alexander von Humboldt, was close to realization if only he could find the time to get his material into publishable shape. These anxieties may explain the rather rude letter Junghuhn sent to Alexander von Humboldt in early 1848. The latter, who was not only a famous scholar but also one of Europe's most adroit diplomats, apparently understood Junghuhn's predicament, and, as already mentioned, wrote to Rochussen again urging him to support Junghuhn in his ambition to write the natural history of Java. Junghuhn left for the Netherlands in August 1848 and brought his plant collections to Prof. De Vriese, who had succeeded Reinwardt as the director of the *Hortus* in Leyden in 1845 and had started his own herbarium in competition with Blume's. Moreover, Junghuhn asked Esenbeck to return to him the material he had sent via Hamburg in 1839 in order to have everything complete in Leyden, where a team of six botanists began to arrange the material.⁵⁴ With the support of the most powerful coalition of De Vriese and his team, Humboldt, Governor-General Rochussen, the Minister for the Colonies J.C. Baud and eventually even the Dutch Prime Minister J.R. Thorbecke, for whom academic freedom was a serious issue, Junghuhn won his battle against Blume. The Science Committee was dissolved. De Vriese made an inventory of Junghuhn's herbarium that was published under the latter's name. Junghuhn was able to write his book on Java again, under his own name.⁵⁵

In the early 1850s, Junghuhn was on his way to becoming a real star. He had been victorious in his fight with Blume and the first volume of his 13-volume work on Java's physical appearance had been published. Having secured his position he could think of marriage. It seems that he had not lived with a Javanese "housekeeper", which was quite unique for a European bachelor. In Leyden he found a spouse for himself in the person of Johanna Louisa Frederica Koch, whose sister was a daughter-in-law of former Governor-General Rochussen. The couple married in 1850. Junghuhn himself became befriended with his brother-in-law Henri Rochussen, the Governor-General's son. The publication of his 1,736 page magnum opus comprising the complete description of physical appearance of Java, including a complete survey and maps of all volcanoes, would

appear between 1849 and 1854. The whole work was sold out in no time; in Java hundreds who had ordered the book were disappointed, a fact that becomes even more amazing taking into account that in those days the European population of Java hardly numbered 30,000.⁵⁶ The most outstanding feature of Junghuhn's *tour de force* is a single sheet of paper, a contour map of Java on a scale of 1:350,000. For the Minister for the Colonies, Ferdinand Pahud, who had commissioned this item, it was probably a hallmark of colonial control; for Junghuhn it was a sign of scientific accomplishment, of bringing Alexander von Humboldt's methods to their fullest potential, illuminating the perfection of the cosmos.

Meanwhile, partly thanks to Humboldt's intervention, Junghuhn had obtained a firm permanent position within the colonial administration in 1852 as Inspector of Natural Exploration, a rank equalling that of Resident (District Commissioner), and in 1853 his request for Dutch citizenship was granted. A true sign of appreciation, arranged by Alexander von Humboldt and Rochussen, was extended to him by both the Prussian and Dutch governments in 1855: Junghuhn was invited to a dinner at Sanssouci given by the Prussian king Friedrich Wilhelm IV in honour of the visit of the Dutch crown prince. In the Spring of 1855 Junghuhn embarked on a boat trip on the Rhine together with his wife Louisa Koch. In Koblenz they disembarked to visit Philipp Wirtgen, and from there the couple travelled to Berlin, where, apart from attending the royal banquet, Junghuhn planned to meet Alexander von Humboldt for the first time in his life.⁵⁷

Cosmic world view and the transfer of cinchona

The features that are apparent from Junghuhn's struggle are his disregard for authority, the energy he devoted to obtain and preserve his intellectual autonomy and the importance of his German academic network. All the time in Java, he had just one goal in mind, namely to describe the entire physical appearance of Java, both the geology and the flora and fauna. He treated his subject as an organic whole in which any changes to individual elements have repercussions for the entire system. Moreover, Junghuhn is known for his concern that the deforestation of Java would lead to serious ecological and even climatic problems; this sensitivity to ecological issues is something he shared with Alexander von Humboldt. It is no coincidence that the Foundation that bears the latter's name grants scholarships in the field of climate protection. In Junghuhn's view human beings were part of a cosmic unity, and this transcendental consciousness had a direct bearing on his scientific approach, as the case of the introduction of cinchona to Java demonstrates.

Junghuhn was of the opinion that people from Europe could not bear tropical heat for many consecutive years. Partly this was their own fault. From the first days of his presence in Java, Junghuhn had been baffled about how little the Dutch cared about dressing properly and eating properly, and about the lack of protection their houses offered against the tropical heat. In a word, they were not acclimatized.⁵⁸ It was a theme that he would develop into an essay on how to survive the heat by going to higher altitudes.⁵⁹ This was indeed a correct observation, which had to do with the absence of the malaria mosquito, a slow but certain killer of many Europeans, and not just Europeans of course, in tropical environments, from areas with cold nights. While the cause of malaria had not yet been discovered at the time, the prophylactic and curing properties of quinine were already known and applied. The biggest problem was the availability of this medicine.

According to Junghuhn, the idea of obtaining cinchona trees or seedlings from Peru was born in 1837 during one of his trips with Dr Fritze, who had apparently submitted a proposal to the colonial government to send Junghuhn to Peru at the time. In all probability Junghuhn and Fritze were inspired by Alexander von Humboldt's reporting on the destructive way in which cinchona bark had been collected in Peru, leading to the loss of 25,000 of these trees per year.⁶⁰ In 1851 the Minister for the Colonies, Ferdinand Pahud, had decided to send a botanist to Peru to obtain cinchona seeds and seedlings to start the cultivation of this medicinal tree in Java. Initially, he had asked Junghuhn to go to Peru, who was quite willing to go because it would have offered him the opportunity literally to follow in the footsteps of Alexander von Humboldt. However, according to his own account he gave in to pleas from his colleague Hasskarl, who had returned to Germany a few years earlier in dire circumstances, to allow him to undertake this assignment.⁶¹ This is quite plausible, since Hasskarl at that time was editing – not translating as is indicated on the title page⁶² – Junghuhn's magnum opus into German.⁶³ Moreover, Hasskarl and Junghuhn had been on the same side in the public campaign against Blume in 1850.

Hasskarl's assignment was an extremely difficult one, as it was considered an act of botanical espionage by the Peruvian authorities. It was only after immense difficulties and hardships that he was able to send seed and seedlings back to Europe. The results of this disorganized expedition turned out to be immensely disappointing, however, because when the trees grew it became clear that their bark contained hardly any quinine.⁶⁴ Hasskarl left Java in 1856 broken man, because the ship with his wife and daughters that should have reunited his family in Java had been

lost; whereupon Junghuhn was asked to take over the project. In fact, he had always considered the production of quinine in Java as his pet project. When he took up his office as Inspector of Natural Explorations in 1855, he left for Java with some cinchona trees that had been grown in the Hortus of Leyden by De Vriese from seeds collected by Hasskarl.⁶⁵ Even before leaving for the Indies Junghuhn had convinced Pahud that the plantation had to be removed from its initial location at Cibodas – where the soil was only 6 foot deep and therefore unfit for this type of trees – and transferred to Lembang.⁶⁶ As he wrote to Humboldt, he had arranged for the trees to be planted in accordance with his own insights and those of Hugh Weddell, the botanist who had researched cinchona production in Latin America.⁶⁷ Junghuhn managed to raise several hundred trees from the seeds that had been collected by Hasskarl. He also made an excellent choice in appointing J. E. de Vrij – a fellow freethinker – as his chief chemist, and asked him to come over from the Netherlands and head the quinine laboratory in Bandung.⁶⁸ The introduction of the plants was a success, but the trees, as mentioned above, did not yield much quinine, and Junghuhn was criticized and even ridiculed for having widely disseminated a strong but unproductive variety that had been given the name *C. Pahudiana* in honour of his patron.⁶⁹

Although Junghuhn's successors would experiment with different varieties, it was eventually a matter of chance that in 1864 the right high-yielding variant was found, thanks to seeds obtained from an obscure animal trader, Charles Ledger. The end of the story is that by 1930 about 97 percent of all the world's quinine supplies came from Java, produced from the *C. Ledgeriana*.⁷⁰ As far as Junghuhn's method, or rather lack of method, is concerned, the idea of experimental selection to find the best varieties had not yet been developed in the 1850s, and Mendel conducted his famous experiments precisely in the years when Junghuhn was director of the cinchona project. While Junghuhn's insights into acclimatization and ecological conditions were correct, his lack of experimental skills would turn the cinchona cultivation project into his Waterloo. At least that is how it has been remembered. The universal mind, writer, natural historian, topographer and ethnographer was brought to his knees for not applying the quite simple procedures of experimental botany that would become the norm in the course of the 19th century. Should we interpret this as a defeat for the intuitional epistemology of the *Aufklärung* by the probabilistic model of the mechanistic world view, as Goss has suggested?

I would suggest not. In spite of his tribulations with quinine production in the final two years of his life, Junghuhn was still at that time a widely acclaimed expert in the field of cinchona cultivation. Clements Markham,

who himself had collected cinchona seeds in Peru, visited Junghuhn in 1862, and though he was adamant that the wrong trees had been planted, he was full of praise for Junghuhn as a botanist. Furthermore, in the course of 1863, Junghuhn was visited by Thomas Anderson, the Director of the Calcutta Botanical Gardens, who would take cinchona trees back with him to India from Bandung. The most important limitation on Junghuhn's fame was not his epistemological position, but the fact that he had only published in German and Dutch. Sternagel describes how Wallace and Junghuhn climbed the same volcano in Java within the same month, but that Wallace did not bother to visit Junghuhn simply because like Darwin he was not aware of his work - and not able to reading German or Dutch for that matter.⁷¹

Conversely, scholars from Germany and Austria readily found their way to Junghuhn's house in Lembang, just a few miles from Bandung.⁷² Junghuhn developed a warm friendship with the Bandung medical practitioner Dr Isaac Groneman, who became well known for his many publications on Javanese culture and craftsmanship, and whom Junghuhn had envisaged as his successor as inspector of cinchona. Junghuhn had expected to return to the Netherlands in the course of 1864 to recover his health, but this did not happen as he died from dysentery just a few months before his intended departure - in spite of desperate attempts by Groneman to save his life. In Lembang there still stands Junghuhn's obelisk tomb, one of the few colonial places of remembrance of Java. The question of Junghuhn's intellectual legacy for Java, probably mainly through his friendship with Groneman, might deserve a separate study; here I want to pursue the legacy of Junghuhn for the Netherlands.

Did Java change Junghuhn?

Throughout the 19th and early 20th centuries, religious tolerance, or even indifference, was one of the features of European colonial society. There are many personal accounts that reveal how Java was a place to breathe for those who were fed up with the bigotries of Dutch society.⁷³ This was part of a process of natural selection: migrants to the Dutch East Indies were overwhelmingly urban and not all that God-fearing, whereas the orthodox Calvinists went to the United States.⁷⁴ Junghuhn was one of the many men, and few women, that left for the Indies convinced that their destiny rested in their own hands, and who hoped for the fulfilment of their aspirations in the colony. What we have seen from Junghuhn's biography is that he had encountered people, from his father to Carl Blume, who had done everything in their power to stop him on his journey to academic fame. In

the Netherlands Indies he found enemies but also powerful protectors, and last but not least many unconventional minds. Freemasonry was strongly represented in colonial Indonesia, in fact not only among Europeans but also among Indonesians who were in frequent contact with Europeans. In the 19th century there was even Masonic lodge in the *kraton* of the Sultan of Yogyakarta. While on the one hand Christian bigotry was alien to European society in Java, on the other hand the small European enclaves were extremely suspicious, if not in constant fear, of Islamic fanaticism. When Junghuhn wrote that the Javanese sought peace of mind, but that once incensed through insult or deceit they were easily inflammable into running *amok*, he simply conformed to the general view or prejudice of European colonial society.⁷⁵

Junghuhn being known for his opposition to Christian missionary activity in Java, it is remarkable to read his advocacy of the Christianization of the Batak lands. This anomaly cannot be explained by the fact that he considered the Batak to be primitive heathens. Even though Junghuhn more than once came pretty close to being served up as a meal, he was quite positive about Batak civilization. His appreciation was shared by the famous linguist Hermann Neubronner van der Tuuk, who would live in the Batak lands a decade later. Both scholars described cannibalism as a part of the legal system, and praised the Batak as a literate civilization with books and well-crafted houses.⁷⁶ They knew that the Batak had once lived closer to the coast but had fled into the interior to be safer from pirates preying on their shores. That explained their deep suspicion of strangers, whom they considered primarily to be dangerous intruders.⁷⁷ Junghuhn's suggestion to send missionaries was therefore not part of a civilizing mission, but was because he feared that Islamization would be more detrimental to the autonomy of the Batak people than Christianization.⁷⁸ He noted how the Sultanate of Aceh was extending its sphere of influence southwards across Sumatra. Moreover, Junghuhn had seen with his own eyes the ravages of the Padri War, which had been fuelled by religious fervour.⁷⁹ And thus Junghuhn became partly responsible for the fact that the *Nederlandsch Bijbelgenootschap* (Dutch Bible Society) hired Hermann Neubronner van der Tuuk, who apart from being a gifted linguist was a committed atheist, to undertake the translation of the Bible into the Batak languages to pave the way for conversion. Van der Tuuk would travel these lands between 1851 and 1857.⁸⁰

On his way back to Europe in 1848, Junghuhn noted the cosmopolitan appearance of Penang, where mosques and churches are seen alongside each other. "Nowhere one can find a better opportunity to convince oneself how little it matters of which religion one is, than in a big trading

city in the Indies, where one can often see the adherents of twelve or more so-called religions living together.”⁸¹ Religious tolerance, based upon the recognition of important ethical communalities, was an important theme in the *Aufklärung*, and it was central to Junghuhn's *Images of Light and Shadow (Licht- en schaduwbeelden)* in which his ideas about natural religion are presented.

Images of Light and Shadow opens with a panegyric on Javanese nature, the kindness and hospitality of the Javanese and the benign common sense of the colonial civil service. This book holds some important autobiographical elements, since Junghuhn's lyrical descriptions of the landscapes in *Images of Light and Shadow* were derived from the tour he made with Dr Fritze in the late 1830s, which included the Pelabuan Ratu beach, the tigers, the failed coffee cultivation at the village and a new coffee plantation.⁸² It is not for nothing that the Resident who appears in the book bears the name Praktischman (Practicalman). This civil servant may have been modelled on one of Junghuhn's travelling companions. Once in a while Residents or assistant Residents went with him when he explored parts of their administrative units. This brings us to the question as to how much Junghuhn conversed with Javanese. While travelling extensively with Javanese porters, he probably hardly conversed with them beyond the purely practical issues. Yet he may also have exchanged views with educated Javanese. They were definitely part of his envisaged audience for his treatise on natural religion.

In his *Images of Light and Shadow* there are four protagonists representing different European belief systems: Brother Night is an enlightened Christian, Brother Day more or less the alter ego of Junghuhn, Brother *Avondrood* (evening glow) the pantheist for whom everything is God, and finally Brother *Morgenrood* (dawn glow) for whom nothing exists beyond the material world. But while their views are treated as being intellectually on a par with each other, Brother Day enjoys an advantaged position in three important respects. Firstly, this brother is the alter ego of the author, secondly he finds a formidable ally in the awesome power of Java's nature, and last but not least the debate between Brother Day and Brother Night takes place in a Javanese village, where they ask the local *penghulu* to act as umpire. The *penghulu* is quickly convinced by Brother Day that what the Europeans consider to be their most precious gift to mankind, namely Christianity, is actually a decrepit building that is already crumbling in Europe. Both the belief in Jesus as the son of God and belief in miracles were unbearable to Junghuhn, because he deemed them to be interventions incompatible with God's perfection that had shaped the best of all possible worlds. Junghuhn denounced the institution

of the church, and the Catholic Church in particular, for its manifold systems of mediation between man and God and its massive power structure and economy, as anti-religious. He considered the ecclesiastical mediation economy, which in his view was a crucial aspect of the Catholic Church, to be utterly incompatible with the exigencies of the 19th century.

That Junghuhn invokes Islam in support of his ideas about natural religion is because he found that in contrast to Christianity its teachings were clear and self-evident and therefore exerted more appeal. Actually, Junghuhn treats Islam in Java with more respect than Christiaan Snouck Hurgronje and the latter's early 20th-century contemporaries would do in considering Islam to be a thin layer over earlier belief systems and seeing the 'true civilization' of Java as resting in Buddhism and Hinduism. It appears from *Images of Light and Shadow* that Junghuhn was aware of the fact that within Islam – as in Christianity and Hinduism – tendencies existed to make the religion fit the modern age by ridding the belief system of superstition. It is possible that Junghuhn's rather positive judgement of Islam was directly or indirectly derived from Spinoza, who was known for his appreciation of Islam.⁸³ We cannot be sure, however, because Junghuhn's treatise lacks the necessary depth, being primarily a popular text. The scene in *Images of Light and Shadow* where Brother Day gives the *penghulu* a set of instruments for cartography, geology and botany, which the latter receives gratefully, is nonetheless of crucial symbolic interest. The inconvenient truth Junghuhn evades is that a Muslim is no more inclined to embrace natural religion than a Christian; neither would ever relinquish the Quran or the Bible.

Moreover, notwithstanding Junghuhn's sympathy for rationalist tendencies within Islam, his own belief was pre-monotheistic in the sense that he tended to personalize nature by attributing "passions" to volcanoes for example.⁸⁴ He nonetheless ignored animism, for the same reason as he denounced any belief in miracles. In his view it was only through thorough empirical work that the transcendental could be perceived. For Junghuhn, the eye was the seat of one of the five senses, and perhaps the most important one linking man to the universe. The most powerful instrument available to men's senses was the telescope, which was both a philosophical and as a highly practical device. As an explorer he had learnt the advantage of raising oneself above the landscape to obtain a bird's-eye view. The dense forests in South Java, or Sumatra for that matter, obstructed any sense of the landscape. Cutting your way a few miles through the jungle would involve a day's arduous work by a dozen porters. High altitudes and mountains were superior in Junghuhn's mind, and this also entailed a very practical aspect, as they are healthier regions, are more

sparsely covered with trees and plants and above all offering the best views. Anyway, according to Junghuhn, the telescopic perspective allows one to see that all the different movements, whether of celestial bodies or of plants and animals, are created according to one design. Through this, he could see the *cosmos*, to use the title of Alexander von Humboldt's magnum opus. In Junghuhn's own words:

All plants and animals are created according to one template, according to a single design, that has been followed throughout creation. Yes, throughout all geological eras, throughout all successive formations, one can trace in fossilized fauna and flora, commencing with the transitional mountains and proceeding towards contemporary creation, the same harmonious law. An all-embracing plan of development is visible in all the distinguishable appearances of animals and plants, where one species has developed from another, until man, the best equipped of all, in whose body all previous versions have been united into a more or less perfect unity, being animate with the sparkle of divine light, appeared on stage ... There is only one fundamental cause of all things, there is only one indivisible God.⁸⁵

The way in which he perceives the relationship between man and God is in many respects similar to that of the early Christians, who were still steeped in Neoplatonism, and the following quote from Junghuhn could have been derived from Origen: "Our spiritual nature is thus directly connected to God, is akin to him, and all endeavours throughout our lives should be directed to resembling Him."⁸⁶ On the same page of *Images of Light and Shadow*, Junghuhn takes away the last shred of doubt one may have had that he considers God to be transcendental to his creation, and in contrast to man knows the future. Time is a secret for man, but a mystery that he can unravel by two different means: through geology he can trace the successive forms of life; and by seeking higher altitudes he can discern the morphology of the earth. Junghuhn's three-dimensional Java was the result of his quest to understand, intuitively, God's plan with the world.

Junghuhn's impact on free thought in the Netherlands

Junghuhn's representation of Java's overwhelming nature is deeply religious and has become so influential that we in Europe hardly know whether we see Java through our own eyes or through his; because he was so enthralled by the spirit of Java that he was able to export it back to the Netherlands. Whatever the answer to this question may be, it would be not be an exaggeration to claim that the ascendancy of free thought in the

Netherlands was inaugurated by Junghuhn. One might even say that he helped to bring back Spinoza to the Netherlands via Weimar and Java.⁸⁷

Images of Light and Shadow originally appeared in three parts. The first part was published in 1854 by Hazenberg, who however decided to discontinue publication under pressure of public opinion. Then F. Günst stepped in, a radical freethinker. In spite of the fact that hardly any reviews of the book appeared, it was a great success, having three reprints during Junghuhn's lifetime, and was particularly popular in Java. According to one of its critics there was hardly any other publication that had spread so widely across the island.⁸⁸ The reception of the book in Java would deserve a separate study, however, and the main objective of the book was to help Freemasonry in the Netherlands to steer a new course. After he had returned to the Netherlands in 1848 Junghuhn became a member of the unrecognized Masonic Lodge, Post Nubila Lux, where he was met by a keen interest in his travel experiences on the part of his fellow members. This Lodge, initiated in 1846, aimed for a strictly scientific approach to ethical questions and rejected dogmas and revelation.⁸⁹ Five hundred copies of Junghuhn's book *Images of Light and Shadow* were distributed among the members of this lodge, though it had been published anonymously. At that time it would have been highly detrimental to Junghuhn's career if he had done otherwise.⁹⁰ *Images of Light and Shadow* was not published under Junghuhn's own name until three years after his death, when his name was disclosed by his publisher F. Günst in the 5th edition in 1867.

It is remarkable that Junghuhn's authorship was not disclosed during the remaining eight years of his life, considering that the scenery in the book was derived from his excursions with Fritze in the late 1830s. Even though the travelogue of this tour had only appeared in German, the brilliant sketches of Javanese nature and the fact that the Brothers Night and Day are explorers should have been more than sufficient to link the book to Junghuhn, one is inclined to think. The explanation for the preservation of Junghuhn's anonymity could be twofold. Firstly, the members of Post Nubila Lux, who did know who the author was, held together and did not betray him.⁹¹ Secondly, there might have been suspicions among those who hated the book, but they will have kept these to themselves, as it would have been quite a step to make such an accusation against a highly esteemed scientist without any proof.⁹²

In response to and instilled by the spirit of *Images of Light and Shadow* a journal *De Dageraad* (The Morning Glow) emerged in 1855, when Junghuhn was on his way back to Java. One year later, a society also called *De Dageraad* was established alongside Post Nubila Lux.⁹³ The

society and journal were soon decried by a contemporary in the following terms:

The *Dageraad* has been launched by a worthy association of East-Indian debauchery with Amsterdam reformed Jewry, which, in a medley of Voltairean mockery and Young Hegelian phrases, jumbles up Deism and Pantheism.⁹⁴

The journal *De Dageraad* appeared between 1855 and 1867 and after that intermittently, until free thought had become more firmly rooted in Dutch soil and had also become increasingly secularist. It is important to note that the link between free thought and social reform was not that strong in the 1850s, and that much of its rhetoric was still religious in character. The minutes of the first meeting of the Dageraad society speak of it as being the bud of the church of the future. Attempts were made to link up with modern Protestant theology that was informed by the historical-critical method.⁹⁵ It was theologians who played an important role in this early movement and who were seeking a universal rational religion, fostering humanist feelings and opposing sectarianism.⁹⁶

Günst and Junghuhn kept their faith in a transcendental God, but many of their fellow Dageraad members became materialists and through figures like Ferdinand Domela Nieuwenhuys, one of the founding fathers of Dutch socialism, firmly connected to the socialist movement. That course of events is somewhat ironic bearing in mind that Junghuhn was in full agreement with the policies of forced labour that were introduced in Java in the shape of the Cultivation System. In fact, he considered this system of forced commodity production to be a temporary measure to teach the Javanese how to work and to widen their consumption patterns. At this point Junghuhn was still a son of the *Aufklärung* who had missed out on Marx. Meanwhile, the Dutch government followed the activities of the Dageraad group with great suspicion and it was not until 1878 that the statutes of this society obtained official approval.⁹⁷

Junghuhn's enduring legacy resides in opening the eyes of Europeans to Indonesian unity in diversity in terms of both natural habitat and of its people, cultures and beliefs. By enlarging the awareness of the idiosyncrasies of Christianity he eloquently expressed what many Europeans felt who left their continent. In the view of many 19th-century intellectuals like Junghuhn and many of his readers in Java, where Freemasonry was so widely present, religions could take on different historical forms while staying united on ethical principles, since everything on earth originates from the same source. Finally, Junghuhn's widely-read publications did their part in educating people to respect the

ancient culture of Java, and mobilising wide support in European colonial society for the restoration of Prambanan and Borubudur. Considered from this angle, there is no way of denying that Junghuhn eventually became part of the “colonial project”, but only after having put his own highly personal stamp upon it.

Notes

¹ Oliver Lubrich, “Alexander von Humboldt: Revolutionizing Travel Literature,” *Monatshefte*, 96 (3) (2004): 375, 377.

² C.G.C. Reinwardt and W.H. de Vriese, *Reis naar het oostelijk gedeelte van den Indischen Archipel, in het jaar 1821 door C.G.C. Reinwardt*. (Amsterdam: Frederik Muller, 1858)

³ Hans van der Kemp, who passed away in 2005, put together an inventory of relevant publications and archival sources. See: KITLV inventaris 174,S. http://www.kitlv.nl/pdf_documents/174_KAMP_Junghuhn.pdf, accessed November 14, 2015.

⁴ See R. Sternagel, *Der Humboldt von Java: Leben und Werk des Naturforschers Franz Wilhelm Junghuhn 1809-1864*. (Halle a. d. Saale: Mitteldeutscher Verlag, 2011).

⁵ S. P. Fullinwider, “Darwin faces Kant; a study in nineteenth-century physiology,” *British Journal for the History of Science* 24 (1): 24.

⁶ See Peter Hanns Reill, “Science and the Construction of the Cultural Sciences in Late Enlightenment Germany: The Case of Wilhelm von Humboldt,” *History and Theory*, 33 (3) (1994): 34-366.

⁷ Wilhelm von Humboldt, “Über die Aufgabe des Geschichtschreibers,” in *Wilhelm Humboldt's gesammelte Werke*, I (Berlin: G. Reimer, 1841), 4-5.

⁸ A. W. Kroon, *Levensschets van Franz Wilhelm Junghuhn*. Overgedrukt uit het Tijdschrift De Dageraad Aflevering van Augustus 1964, 4.

⁹ There is a whole library on the subject of Spinoza's influence on Goethe. For a brief exposé see Jonathan I. Israel, *Democratic Enlightenment: Philosophy, Revolution, and Human Rights 1750-1790*. (New York: Oxford University Press, 2011), 698-699. See also Nicholas Boyle, *Goethe. The Poet and the Age Vol. 1. The Poetry of Desire*. (Oxford: Oxford University Press, 1992), 384 and Siebe Thissen, “Images of Light and Shadow: Spinozism Burst Forth into Dutch Cultural Life (1854),” in *Disguised and overt Spinozism around 1700*. Papers presented at the International Colloquium, held at Rotterdam 5-8 October 1994, ed. Wiep van Bunge and Wim Klever (Leyden: Brill, 1995), 117.

¹⁰ R. K. Das Gupta, “Schopenhauer and Indian Thought,” *East and West*, 13 (1) (1962): 36-37.

¹¹ Michael Dettelbach, “Alexander von Humboldt between Enlightenment and Romanticism,” *Northeastern Naturalist* 8 (1) (2001): 11, 17, 19.

¹² Aaron Sachs, "The Ultimate 'Other': Post-colonialism and Alexander von Humboldt's Ecological Relationship with Nature," *History and Theory* 42 (4) (2003): 121-122; Andreas Weber, "Der Humboldt von Java: Leben und Werk des Naturforschers Franz Wilhelm Junghuhn 1809-1864," *Bijdragen tot de Taal-, Land- en Volkenkunde* 168 (1) (2012): 152.

¹³ See James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998)

¹⁴ See Franz Wilhelm Junghuhn, "De gematigde en koude streken van Java, met aldaar voorkomene warme bronnen: uit een natuur-, aardrijks- en geneeskundig oogpunt beschouwd, als stellende een middel daar ter voorkoming en genezing van die ziekten, waaraan Europeanen, ten gevolge van hun lang verblijf in heete luchtstreken, gewoonlijk lijden," *Tijdschrift voor Neerland's Indië*, 4 (2) (1841): pp. 81-121 and Franz Wilhelm Junghuhn, *Licht- en schaduwbeelden: uit de binnenlanden van Java ; over het karakter, de mate van beschaving, de zeden en gebruiken der Javanen; over de invoering van het Christendom op Java, het bezigen van vrijen arbeid en andere vragen van den dag.* (Amsterdam: Günst, 1867)

¹⁵ Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation.* (London: Routledge, 1992)

¹⁶ E. M. Beekman, "Junghuhn's Perception of Javanese Nature," *Canadian Journal of Netherlandic Studies*, 12 (1991): 136.

Beekman, "Junghuhn's Perception," 136.

¹⁷ See Junghuhn, *Licht- en Schaduwbeelden.*

¹⁸ See Arthur Schopenhauer, *Die Welt als Wille und Vorstellung*, Vol. II, ed. Eduard Grisebach. (Leipzig: Philip Reklam, 1891), 416-418. And see Robert Wicks, *Schopenhauer's The World As Will and Representation: A Reader's Guide* (London: Continuum, 2011), 9.

¹⁹ See Junghuhn, *Licht- en Schaduwbeelden.*

²⁰ Paul Tschackert, "Thilo, Johann Karl," in: *Allgemeine Deutsche Biographie* (1894), S. [Online version]; <http://www.deutsche-biographie.de/pnd100647235.html?anchor=adb>, accessed November 14, 2015.

²¹ Franz Junghuhn, *Gedenkboek Franz Junghuhn. 1809-1909.* (The Hague: M. Nijhoff, 1910), 13.

²² Sternagel, *Der Humboldt von Java*, 30.

²³ Franz Wilhelm Junghuhn, "Observationes Mycologicae in Species Fungorum Tam Novas Tam Male Cognitas," *Linnae* 5 (1830): 388-410.

²⁴ Junghuhn, *Licht- en Schaduwbeelden* [1867], 7-9. See also Sternagel, *Der Humboldt von Java*, 32.

²⁵ Sternagel, *Der Humboldt von Java*, 51.

²⁶ Sternagel, *Der Humboldt von Java*, 333n24 and 334n42.

²⁷ Kroon, "Levensschets," 10-11.

²⁸ Junghuhn, Franz Wilhelm, "Flucht nach Afrika. Beschrieben von Franz Junghuhn," in: *Biographische Beiträge zur 100. Wiederkehr seines Geburtstages*, ed. Max. C.P. Schmidt, (Leipzig: Verlag der Dürr'schen Buchhandlung, 1909), 163.

²⁹ Sternagel, *Der Humboldt von Java*, 60.

³⁰ In 1825 Ernst Gottlieb Steudel had founded, with Christian Ferdinand Hochstetter (1787-1860) the Württembergischer botanische Reiseverein. The purpose of this society was to send young botanists out into the world to discover and collect plants of all varieties, thus promoting and expanding botanical studies and herbaria throughout the Kingdom and beyond. See Robert F. Erickson, “Steudel, Ernst Gottlieb, (1783-1856)” in www.botanicus.org/creator/558., accessed February 24, 2016.

³¹ De Zeeuw, “Notes on the Life of Persoon,” *Mycologia* 31 (1) (1939): 370.

³² So far, I have not found any further details or references with respect to this expedition.

³³ Justus Karl Hasskarl, in: P.C. Molhuysen and P.J. Blok (red.), *Nieuw Nederlandsch biografisch woordenboek*. Deel 3. (Leyden: Sijthoff, 1914), 9.

³⁴ See Junghuhn’s diary in Franz Junghuhn, *Topographische und naturwissenschaftliche Reisen durch Java. Für die Kaiserl. Leopold.- Carol. Akademie der Naturforscher in Druk befördert und bevorwortet durch Dr. C.G. Nees von Esenbeck Präsidenten der Akademie*. (Magdeburg : E. Baensch [et al], 1845)

³⁵ Ulbe Bosma, *Indiëgangers. Verhalen van Nederlanders die naar Indië trokken*. (Amsterdam: Bert Bakker, 2010), 53.

³⁶ Letter from Junghuhn to Nees von Esenbeck, Yogyakarta 13 July 1836, in: C. P. Max Schmidt, and Franz Wilhelm Junghuhn, *Franz Junghuhn; biographische Beiträge zur 100. Wiederkehr seines Geburtstages*. (Leipzig: Dürr, 1909), 330-332, and here 331.

³⁷ Ernst Albert Fritze (b. Herborn, 22 July 1791, d. Batavia (Jakarta), 13 May 1839) studied medicine in Göttingen, entered the Dutch colonial service in 1817 and was stationed in Batavia. From 1825 onwards he sent many stuffed animals, including a Java Tiger and about 120 birds, together with ethnographic artefacts to the Wiesbaden Museum.

³⁸ Letter in inventaris Van der Kamp

³⁹ GB 29 September 1839, no. 12; The text of the decision, actually a ploy by Blume, was as follows: “que sa commission soit prolongée jusqu’en février 1841, époque à la quelle il devra, assisté pour les frais de passage d’une indemnité de f 1500, s’embarquer pour la Hollande, afin de faire la remise au musée de Leide de toutes les collections, de toutes les notes, de tous les dessins et de tous les objets en un mot, qui auront été la fruit de ses recherches et de ses travaux depuis l’époque de sa première arrivée à Java jusqu’à celle de son départ et de son arrivée en Europe” in: C.L. Blume, “Antwoord aan den heer W.H. de Vriese,” 116. According to Junghuhn this was not a Royal Decision (*Koninklijk Besluit*) but just a proposal by the Science Committee that was not honoured by the Minister for the Colonies. See Franz Junghuhn, *Inlichtingen aangeboden aan het publiek over zeker geschrift van den heer C. L. Blume, en antwoord aan dien heer, Band 1* (Amsterdam: University of Amsterdam) 14.

⁴⁰ Sternagel, *Der Humboldt von Java* and see also Hasskarl, “Antwoord aan den Heer C.L. Blume,” 9.

⁴¹ Inventaris Van der Kamp, 15. See also Junghuhn, *Topographische und naturwissenschaftliche Reisen durch Java*.

⁴² Hasskarl, *Antwoord aan den Heer C.L. Blume*, 8-11.

⁴³ H. Rochussen, "Levensbericht van F.W. Junghuhn," *Tijdschrift voor Nederlandsch-Indië*, 4, 1 (1866): 209.

⁴⁴ There is the book by Marsden of course, namely William Marsden's *The History of Sumatra*. (Kuala Lumpur: Oxford University Press, 1966); first edition 1784; but that is not based on first-hand knowledge.

⁴⁵ Blume, "Antwoord aan den heer W.H. de Vriese," 102, 118; Junghuhn, *Inlichtingen aangeboden aan het publiek*, 13.

⁴⁶ Sternagel, *Der Humboldt von Java*, 167; See also Junghuhn, *Inlichtingen aangeboden aan het publiek*," 17.

⁴⁷ See for the subsidy of 6,000 guilders GB 17 January 1844.

⁴⁸ Introduction by F. Günst in Junghuhn, *Licht- en Schaduwbelden*, [1867], p. 31.

⁴⁹ We can see this on p. 92 of volume I of the *Tijdschrift voor Neêrland's Indië* of 1845: the text stops in the middle of a sentence, followed by three lines of dots and a "to be continued". Franz Junghuhn, "Schetsen ontworpen op eene nieuwe reis over Java voor topografische en natuurkundige navorschingen aan het einde van het jaar 1844", *Tijdschrift voor Nederlandsch-Indië*, 7, I, (1845) 69-92 and here p. 92.

⁵⁰ *Tijdschrift voor Nederlandsch-Indië*, 1849, 11, I, pp. 28-34; *Tijdschrift voor Nederlandsch-Indië*, 7, II, pp. 207, 208, 221-222. It still needs to be elucidated from documents in the National Archives, but my impression is that Junghuhn was punished with a complete publication prohibition; See also GB 4 July 1845; Van der Kamp, "Junghuhn's biografen".

⁵¹ Sternagel, *Der Humboldt von Java*, 236.

⁵² See reference to this letter in Humboldt's letter to Junghuhn of 30 April 1848, in Schmidt, *Junghuhn*, 334-337, and here 335.

⁵³ Letter from Alexander von Humboldt to Franz Junghuhn in Schmidt, *Franz Junghuhn*, 334-337.

⁵⁴ Junghuhn, *Inlichtingen aangeboden aan het publiek*, 15.

⁵⁵ Sternagel, *Der Humboldt von Java*, 260-262. See also Letter from Alexander von Humboldt to Junghuhn, in Schmidt, *Franz Junghuhn*, 337-338. The inventory is published under the name: *Plantae Junghuhnianae, enumeratio plantarum quas in insulis Java et Sumatra detexit F.W. Junghuhn*.

⁵⁶ Kroon, "Levensschets," 31.

⁵⁷ See letters from Alexander von Humboldt to Franz Junghuhn in Schmidt, *Junghuhn*, 338-341.

⁵⁸ C. W. Wormser, *Frans [sic] Junghuhn*. (Deventer: W. van Hoeve, 1944), 87.

⁵⁹ Junghuhn, "De gematigde en koude streken van Java."

⁶⁰ Clements R. Markham, *Travels in Peru and India. While superintending the collection of Chinchona plants and seeds in South America, and their introduction into India*. (London: John Murray, 1862), 44.

⁶¹ See Molhuysen and Blok "Hasskarl".

⁶² On the fact that Junghuhn wrote in German but tried to conceal the fact, see Kroon, “Levensschets,” 23.

⁶³ Franz Wilhelm Junghuhn; J K Hasskarl, *Java, seine gestalt, pflanzendecke und innere bauart*. (Leipzig, Arnold, 1852-54)

⁶⁴ See Markham, *Travels in Peru*.

⁶⁵ Franz Junghuhn, *Toestand der aangekweekte kinaboomen op het eiland Java tijdens het bezoek van Zijne Excellentie den gouverneur generaal Chs.F. Pahud, in het laatst der maand Julij en het begin van Augustus 1857, kort beschreven*. [Tjiniroean]: s.n, 1857, 3-5, 21. See here also Markham, *Travels in Peru*, 48.

⁶⁶ Markham, *Travels in Peru*, 51.

⁶⁷ Theye, Thomas, *Franz Wilhelm Junghuhn (1809-1864): Photographien aus Java*. Manuscript (Bremen, April 2011), 34.

⁶⁸ Andre Goss, *The Floracrats. State-Sponsored Science and the Failure of the Enlightenment in Indonesia*. (Madison: University of Wisconsin Press, 2011), 39.

⁶⁹ The point about higher vulnerability is not mentioned by Goss, nor is the fact that according to Markham Teijsmann had been totally wrong in planting the trees at Cibodas.

⁷⁰ Goss, *The Floracrats*, 52-53, 56.

⁷¹ Sternagel, *Der Humboldt von Java*, 319-320.

⁷² In 1858 the Austrian frigate *Novara* visited Batavia in the course of a scientific mission around the world. Junghuhn shared his latest geological findings from excavations in Java with the scientists Karl von Scherzer and Ferdinand von Hochstetter (the son of the Hochstetter Junghuhn had sought a position with while he was in Algeria). Being one of the first owners of a camera in Java, he helped the Austrian expedition to make photographs that were to be exhibited in Vienna. At the recommendation of Alexander von Humboldt Junghuhn received the ethnographer Fedor Jagor from Berlin. In 1862 he travelled around Java with Ferdinand von Richthofen, the founder of geomorphology.

⁷³ The word “bigot” is taken from Junghuhn; he used it to describe the Dutch. See Franz Junghuhn, *Terugreis van Java naar Europa, met de zoogenaamde Engelsche overlandpost, in de maanden september en oktober 1848*. (Zalt-Bommel: Joh. Noman en Zoon, 1851), 127.

⁷⁴ Bosma, *Indiëgangers*; on Junghuhn’s anti-papal remarks in his *Terugreis van Java* p. 125 see also Nieuwenhuys, Rob, *Oost-Indische spiegel: wat Nederlandse schrijvers en dichters over Indonesië hebben geschreven, vanaf de eerste jaren der compagnie tot op heden*. (Amsterdam : Querido, 1978); 1st print 1972, 116-117.

⁷⁵ Introduction by F. Günst in Junghuhn, *Licht- en Schaduwbeelden*, [1867], 55.

⁷⁶ Wormser, *Frans [sic] Junghuhn*, 156. Later on, in his *Terugreis van Java*, p. 34, Junghuhn writes that in spite of the fact that the Batak were cannibals, they were good and loyal people. See also E. M. Beekman, *Fugitive Dreams. An Anthology of Dutch Colonial Literature*. (Amherst, Mass: University of Massachusetts Press, 1988), 145.

⁷⁷ Sternagel, *Der Humboldt von Java*, 154.

⁷⁸ Wormser, *Frans [sic] Junghuhn*, 149.

⁷⁹ Junghuhn, *Battaländer*, II, 55.

⁸⁰ Beekman, *Fugitive Dreams*, 131, 141.

⁸¹ Junghuhn, *Terugreis van Java*, 30.

⁸² See Wormser, *Frans [sic] Junghuhn*, 120-121 and also Sternagel, *Der Humboldt von Java*, 317.

⁸³ See for example Israel, *Enlightenment Contested*, 618-619.

⁸⁴ Nieuwenhuys, *Oostindische Spiegel*, 108.

⁸⁵ Junghuhn, *Licht- en Schaduwbeelden* [1867], 181. Translation by the author; the original Dutch text is: "Alle planten en dieren zijn geschapen naar één gelijkvormig type, naar één plan, dat de gansche scheppling door is gevolgd. Ja, door alle tijdperken der aardvorming, door alle op elkander gevolgde onderscheiden formation, kan men, in de fossile fauna's en flora's, aanvangende met het overgangsgebergte en voortgaande tot aan de hedendaagsche schepping, dezelfde harmonische wet naspeuren. Een alles omvattend plan van ontwikkeling is zichtbaar in al de onderscheiden plant- en diervormen, waarvan de een uit de andere is voortgesproten, totdat de mensch, het toppunt van al het bewerktuigde, in wiens lichaam al die honderd duizend andere of vroegere uitgaven van die type tot een min of meer volkomen geheel zijn vereenigd, bezield met een vonkje van het goddelijk licht, op het tooneel trad. ... Er bestaat slechts één grondoorzaak van alle dingen, slechts één ondeelbare God."

⁸⁶ Junghuhn, *Licht- en Schaduwbeelden*, [1867], 196. Translation by the author.

⁸⁷ Thissen, "Images of Light and Shadow," 117.

⁸⁸ Peter Sep, "De receptie van Licht- en schaduwbeelden uit de binnenlanden van Java van F.W. Junghuhn," *Indische Letteren* 2 (1987): 5 and J.F.G. Brumund, *Eenige opmerkingen over de licht- en schaduwbeelden, van de gebroeders dag en nacht*. (Batavia: Lange & Co., 1856), 1.

⁸⁹ M.S. Polak, *Die Loge Post Nubila Lux und die Gross-Loge der Niederlanden* (Amsterdam-Leipzig 1854), 4.

⁹⁰ Thissen, "Images of Light and Shadow," 120-122.

⁹¹ *De Dageraad*, 12.

⁹² There was also a German version of the book, first published in Leipzig in 1855 but soon prohibited. *Licht- und Schattenbilder aus dem Innern von Java : über den Charakter, den Bildungsgrad, die Sitten und Gebräuche der Javanen; über die Einführung des Christentums auf Java, die Freigebung der Arbeit und andere Fragen der Zeit : Erzählungen und Gespräche, gesammelt auf Reisen durch Berge und Wälder, durch die Wohnungen der Armen und Reichen von den Gebroedern Tag und Nacht* [Franz Wilhelm Junghuhn] (Amsterdam: Günst; Leipzig: Thomas, 1855)

⁹³ Lodder, Lodder, Frank, *De Dageraad Tussen Humanisme En Socialisme: Een Onderzoek Naar De Positie Van De Nederlandse Vrijdenkersbeweging in De Periode 1856-1876: Een Onderzoek Naar De Positie Van De Nederlandse Vrijdenkersbeweging in De Periode 1856-1876*, 7, 38.

The archive of the Vrijdenkersbeweging *Dageraad* was partly destroyed during the Second World War, but what remains is to be found at the International Institute of Social History in Amsterdam, together with the almost complete series of its journals.

⁹⁴ Translation by the author of: “De Dageraad is door een waardig verbond van Oost-Indische zedenloosheid met een Amsterdamsch hervormd Jodendom in het leven geroepen, dat in een hutsput van Volteriaanse spotternij, jong-Hegelsche frasen, deïsme en pantheïsme door elkaar haspelt”. Quoted from Lodder, *De Dageraad*, 7.

⁹⁵ Lodder, *De Dageraad*, 13.

⁹⁶ *De Dageraad*, 13-14, 16.

⁹⁷ Lodder, *De Dageraad*, 22.