Among the major themes in the emerging historiography of New World slavery, the intraregional comparison of variants of slavery has long been a favorite. Initially “idealistic” interpretations held sway, linking presumed variations in systems of slavery to differences in metropolitan cultures. Such constructions often were colored by nationalistic interests or by domestic concerns. Later, “materialistic” readings of slavery came to dominate the debate, convincingly urging cross-colonial analyses dealing with fixed time periods.

At the same time, the debate became far more sophisticated. As scholars started to untangle the various dimensions of slavery, it became increasingly evident that there was no necessary link between the distinct parameters of slavery in any given slave colony. Working and living conditions, demography, levels of repression, opportunities for manumission, limits to cultural autonomy, etc., all formed dimensions of a matrix in which crucial relationships are anything but straightforward. The more sophisticated the analyses became, the less useful a ranking of variants of slavery on a harsh-to-mild continuum seemed. Consequently the question—perhaps posed less clearly in recent scholarly writings—arises as to whether we may still interpret the distinct dimensions of any given slave system in terms of one “unified field theory.” Should we simply accept the elusiveness of some posited hidden crucible and interpret the various dimensions of a given slave system each in its own right, without imposing the rigidity of a presumed encompassing theoretical model?

Perhaps surprisingly, in view of this somewhat rhetorical question,
we *do* advocate analyzing variants of New World slavery from a unifying perspective. Neither elusive nor hidden, the crucible put forward in this case study is quite an obvious one: ecology, and, more precisely, the physical environment shaping a particular plantation economy. This choice of perspective is informed by the down-to-earth conviction that, rather than comparing systems of slavery at an abstract level, one should begin by coming to grips with the immediate material world surrounding the slaves and so shaping their lives. In describing this material world, one has to take a series of variables into account, including the availability of natural sources of energy, climatic conditions, natural vegetation, type and wetness of soils, geographical relief, and specific crop-related labor regimes. A few scholars of Caribbean slavery, notably Higman (1984) and Watts (1987), have recognized the importance of ecology; yet, so far, no attempt has been made to use ecology as the main frame of reference. This essay attempts to place ecology at the center, by discussing the impact of one particular ecological factor: water.

The place is Suriname, a Dutch plantation colony in the Caribbean, to which both contemporary observers and subsequent scholarship have attributed particularly harsh conditions of slavery. Analyzing the emergence and perpetuation of the disgraceful fame of Suriname slavery is not our concern here. Suffice it to state that much of the traditional argument suffered from a poor grasp of the dynamics of Suriname slavery and, moreover, from sheer ignorance and inconsistency (Oostindie 1993b). Remarkably, virtually no authors on Suriname slavery have probed the one crucible which we think gave slavery in Suriname (and in the Guyanas in general) a measure of uniqueness: the omnipresence of water, both free-flowing and harnessed for the plantation economy. Readers may suspect a Wittfogelian inspiration in our attempt to reflect on the importance of “water” in the emergence of specific conditions of slavery and of a distinct slave culture (Wittfogel 1957). Rather than suggesting an encompassing model, however, we highlight the heuristic gains to be made by taking seriously the “hydraulic” qualities of Suriname slavery.

**Working and Living Conditions**

“How is it possible that the human body can endure this [hardship]? [Even] the strongest are undermined” (quoted in Siwpersad 1979: 90). This observation by G. S. de Veer, an official discussing slavery conditions on Suriname sugar plantations in 1838, was anything but unique. Over the previous century and a half, the demanding regime of the
Suriname slave plantation had exacted a high toll in human lives. This sad fact had not gone unnoticed. The chronically negative demographic growth rates of the slave population had induced observers—without benefit of intraregional comparisons or a grasp of the gradual improvement over time—to portray the colony’s system as an extremely harsh variant of New World slavery. Contemporary authors overestimated the annual natural decrease to be a staggering fifty per thousand. Hence John Gabriel Stedman’s chilling observation in the 1770s that in Suriname “the Compleat number of negro Slaves consisting in 50,000 Healthy people is Exactly Extinct one every 20 Years Which is truly Shocking to Human Nature” (Stedman 1988 [1796]: 533).

Another author commenting on Suriname in this period was fascinated by other features of the colony. According to Raynal, “Les Hollandais ont eu la gloire de dompter l’Océan dans le nouveau monde comme dans l’ancien [The Dutch have had the glory to tame the ocean in the New World just like in the Old]” (Raynal 1774: vol. 4, p. 336). Indeed, with its neighboring, lesser Dutch colonies in the Guyana’s (Berbice, Demerara, and Essequibo), Suriname stood out for its sophisticated technology adapted from the Dutch polder (a tract of low land reclaimed from water by means of high embankments) system.

Most of the colony’s plantation area was located on the shores of mighty rivers and subsidiaries linked to the Atlantic. Over time, the plantation area continued to spread across the colony’s territory; and in most locations polder technology provided the backbone for the plantation sector. The application of hydraulic technology had made possible the construction of hundreds of polder plantations whose irrigation and drainage systems were effectively linked to the rivers. Moreover, on the large sugar plantations, a second system of waterworks provided a relatively easy means of transporting sugar cane to the mill, which in turn was propelled by tidal energy. Most of the surface of an “impoldered” plantation—to use the anglicized Dutch term—initially was left uncultivated. Only the parcels nearest the river were utilized for growing the tropical staples and foodstuffs and for the location of industrial buildings, planter’s house, and slave huts. Over time, in response to (temporary) soil exhaustion, the area effectively in use within the impoldered plantation tended to recede from the river.

Without this technology, the natural conditions of Suriname were not suitable for plantation agriculture; with it, the colony’s competitive powers were enviable. In our calculations, eighteenth-century Suriname emerges as one of the most productive areas within the Caribbean. Sugar
output per unit of labor or land compare favorably to results obtained elsewhere, as does productivity of the other major plantation product, coffee. For a number of reasons, some of them technological and agricultural in character, nineteenth-century figures are slightly less impressive. But even as the colony’s technological edge eroded, the technical feasibility of the Suriname polder plantation was not endangered (Oostindie 1993a, van Stipriaan 1993a: 128–44).

What were the links between the particular polder technology of the Suriname plantation and its conditions of slavery? Hypothesizing that the implications of the polder regime went beyond mere efficacy of the agricultural system, we first probe the implications of “hydraulic slavery” for material life, particularly for working and living conditions.

The very construction of a polder demanded an enormous investment of hard labor. A typical plantation might stretch for half a mile along the river and extend up to three miles or more inward. This area had to be fenced off by dikes. Within these dikes, the system of irrigation and drainage channels easily covered five to ten miles. On sugar plantations, the waterworks for transport and tidal energy for the mill added a second set of channels. And this was only the beginning. The polder area itself was divided by miles and miles of smaller trenches, cutting the plantation domain into hundreds of small rectangular plots. This construction required an enormous amount of manual labor. For example, by the third quarter of the eighteenth century, the length of the two major waterworks on a sugar plantation averaged ten miles. Departing from average norms for width and depth, the construction of these canals would have entailed moving some 150 metric tons of heavy alluvial clay. And then, of course, digging the narrower trenches remained to be done.

Once the initial infrastructure had been put in place, the polder complex called for continuous labor to keep the dikes from caving in and the canals and trenches from silting up. Naturally, the fact that the area effectively under cultivation tended to move inland implied extra work, particularly the extension of extant waterworks, and thus more digging for the slaves.

It is not difficult to see—although it is impossible fully to grasp—the implications of this particular technology for the slavery regime. Digging and keeping up the dikes, waterworks, sluices, etc., with nothing but manual labor must have been formidable tasks. One is hard pressed to find comparable labor demands on plantations in other parts of the Americas. Not surprisingly, the number of slaves required for the
average polder plantation was considerable. By the late-eighteenth century, the average sugar plantation had some 120 to 140 slaves, which by Caribbean standards was a high but not extraordinary figure.

The coffee sector, which in this period dominated the Suriname economy, offers a useful contrast to the sugar sector. As the coffee plantations were equally polders, they could not do with a much smaller labor force than the sugar plantations. The polder, rather than the requirements of the crop, dictated the organization of the estate. In the last decades of the eighteenth century, the average Suriname coffee plantation had 110 to 120 slaves. This situation was is striking contrast to that of the then-dominant Caribbean coffee producer, St. Domingue, a French colony. Of over three thousand coffee estates there, the bulk were situated on hills and mountain slopes and employed no more than 40 slaves each.²

On the typical eighteenth-century sugar plantation, the management of the polder system imposed extreme labor demands. As the sugar mill was propelled by tidal energy, milling schedules were dictated by the calendar of the Atlantic Ocean. The period in which milling was feasible varied with the location and efficiency of a plantation. On average, milling with tidal energy was possible during approximately half the month, in periods around the new moon and the full moon. In contrast to those in other parts of the Americas, the particular ecological conditions of Suriname allowed for harvesting virtually all year long. While periodic peaks in production and therefore in demand for labor characterized sugar production elsewhere, here sugar production was nearly continuous. The presumed “dead season” may well be an erroneous or at least an exaggerated construction for other areas of sugar production; but it is evident that the Suriname sugar plantation’s operation allowed its slaves no “break.” On the contrary, at high tide, planters tried to maximize the use of tidal energy by operating the mill day and night. This implied that gangs of slaves, in alternation, were supposed to work continuously for thirty-six hours.

These characteristics have given the Suriname sugar plantation a particularly bad reputation. Actually, the Dutch official’s judgment quoted above was correct in regard to the labor regime on those sugar plantations that used tidal energy. It seems telling that, whereas elsewhere—e.g., in Cuba (Moreno Friginals 1978: vol. 1, p. 214, and vol. 2, pp. 27–29)—the introduction of steam engines ostensibly increased labor exploitation, the same innovation was welcomed by virtually all contemporaries in Suriname as a major step toward ameliorating the slaves’ working conditions. The omnipresent hydraulic technology indeed must have been a major factor shaping Suriname slavery.
Some further data may serve at once to underscore this conclusion and to propose some nuance. First, what about the demographic record? Contemporaries thought of Suriname as the nadir in New World slave demography. In fact, the demographic performance of the Suriname slave population over time was less unfavorable than had been believed. It was long thought that annual growth deficits were around 50 per thousand, and total slave imports to the colony about 300,000 to 350,000. Recent research, however, has reduced these figures significantly. Demographic growth was indeed negative, standing at 50 per thousand in the mid-eighteenth century. But this figure improved over time, coming down to around 23 in the period 1775–1830 and to only 3.5 in the 1850s. Moreover, the total number of slaves imported into Suriname probably should be seen as about 215,000 (Postma 1990: 186–212, van Stipriaan 1993a: 313–14). These figures are anything but indications of a mild slavery regime, but they do serve to place Suriname in a more usual Caribbean context.

Insofar as we should still place Suriname demographics in a relatively grim category, we should look beyond the stereotypes of overexploitive and brutal planters and reckon more seriously with the colony’s unfavorable ecological conditions and disease environment. This, of course, returns us to the weight of the ecological factor, including the omnipresence of water, in the slaves’ lives.

There is a convincing method of substantiating the claim that material conditions, and particularly the hydraulic factor, determined slave demography. Our calculations pinpoint significant contrasts in demographic performance between slave populations on sugar plantations and those working in other sectors (see table 7.1). Up to the last decades of slavery, Suriname slave populations in all sectors experienced negative demographic growth rates. Yet, on sugar plantations, demographic decrease was consistently higher than in other sectors. These hard figures substantiate the eighteenth-century planters’ wisdom that, in comparison to a coffee plantation, working conditions on a sugar plantation “are infinitely more demanding” and that therefore “these slaves are worn out at a higher pace.”

Here we have firm grounds for a “hard” conclusion. Yet we do face a methodological conundrum. From the 1760s to 1820, most Suriname slaves worked in the less dramatically “hydraulic” coffee sector, rather than on sugar plantations. As particularly the first part of this period witnessed high rates of demographic decrease, the “hydraulic” explanation does not seem to hold. Closer inspection, however, solves the puzzle. Whereas most sugar plantations were established in the earlier part of
### Table 7.1

**Plantation Type, Work on Canals, and Demographic Performance**

<table>
<thead>
<tr>
<th>Plantation Type</th>
<th>% of Total Slave Population (1830–39)</th>
<th>Transport Canals Dug and to Be Maintained (ca. 1810)</th>
<th>Frequency of Night Labor after Full Day Shift</th>
<th>Mortality per Thousand Slaves (1830–39)</th>
<th>Fertility per Thousand Slaves (1830–39)</th>
<th>Natural Growth per Thousand Slaves (1830–39)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>38</td>
<td>10 km</td>
<td>Often</td>
<td>42.5</td>
<td>25.9</td>
<td>-16.6</td>
</tr>
<tr>
<td>Coffee</td>
<td>28</td>
<td>3 km&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Sometimes</td>
<td>36.8</td>
<td>25.3</td>
<td>-11.5</td>
</tr>
<tr>
<td>Cotton</td>
<td>14</td>
<td>—</td>
<td>Almost never</td>
<td>20.8</td>
<td>20.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Timber</td>
<td>5</td>
<td>—</td>
<td>Never</td>
<td>28.0</td>
<td>36.3</td>
<td>+8.3&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Sources:** Van Stipriaan 1993a; CBBS & Lands Archive: Slave Registers.

<sup>a</sup>Average length for coffee plantations with canals for transportation; few coffee plantations possessed such canals, however.

<sup>b</sup>1839-42, n = 5 plantations with a total of approximately 700 slaves.
the century, most coffee estates were laid out in 1740–70. The expansion of the area under cultivation on these coffee plantations continued even into the 1780s. Therefore, in this period, hundreds and hundreds of completely new polders were laid out, taking a heavy toll on the slaves. As the expansion of the coffee sector came to a halt in the last quarter of the eighteenth century, demographic performance of the slaves in this sector immediately improved. At that stage, the demographic contrast between average sugar and coffee plantations became evident once more and continued so afterward.

At the risk of undermining the proposed linkage of “hydraulic slavery” with the conditions of Suriname slavery, we do propose a few ca-veats. First, even if the polder complex was extremely demanding in terms of labor, this in itself does not prove that the Suriname slave was particularly overworked. Short of systematic analyses of the typical labor force on plantations elsewhere in the region, it remains impossible to substantiate any significant differences in average workload, particularly since everywhere planters had a vested interest in getting as much as possible out of each slave during a variable lifespan. Next, in exploring possible links between the hydraulic complex and slave life, we should distinguish between working and living conditions. For instance, digging and keeping up the waterworks were strenuous tasks, implying a need for enormous caloric intake. Yet the same vast and remarkably fertile polder that dictated these workloads also allowed for relatively ample and rich provision plots, possibly securing for the Suriname slave more and better food than her or his contemporaries on many Caribbean islands. The surrounding waters provided another source (fish) with which slaves might upgrade their food supply. Moreover, the use of plantains (“coffee mamas”) to shade coffee trees provided the slaves on these plantations with an important caloric asset. Indeed, there is very little report of famines during the period of slavery in Suriname. Ironically, archival sources do suggest frequent shortages of drinkable water (van Stipriaan 1993a: 356–57).

Finally, it may be worthwhile to ponder for a moment the effects of the polder technology on social relations, both during and after slavery. The hydraulic complex was at once sophisticated, costly, and vulnerable to both neglect and sabotage. Its maintenance therefore required strict supervision, but at the same time must have given prudent planters incentive to entrust essential tasks to elite slaves. The same, of course, happened with the sugar mill. Some scholars have linked the early modern emergence of democracy in the Netherlands to the need for all social classes jointly to participate in the preservation of the es-
sential Dutch *polder* landscape. It may not be farfetched to think of the Suriname *polder* complex likewise as an institution tending to stimulate compromise rather than excessively violent rule. Obviously, here we are very much at odds with Wittfogel’s “oriental despotism” and more in tune with the findings of, say, Joyner on slavery in South Carolina (Joyner 1984).

The complexity of the Suriname *polder* plantation also may have been a major factor in the abortive history of an Afro-Suriname peasantry. The late abolition of slavery (1863) and the following decade of apprenticeship culminated in the virtual withdrawal of the freed population from a declining plantation sector. The importation of some seventy thousand indentured laborers from British India and Java substituted Asian labor for the former slaves. This period of transition, and particularly the vicissitudes of the black peasantry, have been largely neglected in modern historiography. Perhaps future scholarship may uncover another direct link to the prevailing ecology. It may well have been nigh impossible to subdivide deserted *polder* plantations into technically and administratively manageable clusters of viable provision plots. After all, as soon as this *morcellement* had been institutionalized, the problem arose of how to insure the maintenance of the previously centrally supervised infrastructure. The failure to establish procedures to make up for the collapse of the plantation’s mechanisms well may help to explain the faltering development of the black peasantry. In fact, a successful peasant transition was made in the Para and Coronie districts, where, because of atypical ecological circumstances, the *polder* technology was of lesser importance.

**Social Relations**

Evidently “water” in the broadest sense played a prominent role in slaves’ lives. After the traumatic experience of the Middle Passage, African slaves brought to Suriname would pass their lifetimes in a physical milieu dominated by water. How did slaves experience this predominance of water in their lives? Our initial hypothesis is that water formed an important element in the process of creolization and in the formation of slave culture. We test this hypothesis through an analysis of social relations along with several cultural institutions: language, oral tradition, music, dance, and religion.

The implications for social relations of the physical milieu and its technological domestication in the hydraulic system were manifold.
First, because of the *polder* system, almost every plantation formed an island, with the river on one side and trenches along the other sides. A watershed literally separated the slaves from the rest of society. If a slave wanted to have contact with slaves on other plantations, or attempted to run away, he or she always had to cross water and/or use water as his means of transportation. Water therefore signified both isolation and an escape route.

The hardships imposed by the *polder* plantation system, particularly on sugar estates, was a prime factor stimulating slave resistance. Both small-scale uprisings and marronage posed constant threats from the first to the last days of slavery. Water continued to play a prominent part therein. Oral tradition, for example, suggests that the arduous digging of *polder* canals and trenches in the heavy sea clay of the coastal plains provoked deep resentment and overt slave resistance. More than two centuries *post hoc*, Saramaka and Ndjuka Maroons still recall abhorrence of this work as a prime factor motivating their forebears to escape from the plantations to the hazardous environment of the tropical forest. Likewise, recollections of broken sluices and dikes surface in recorded oral traditions of the freed slaves' descendants (*De slaventijd in odo's* 1960). The negative impact of water-related labor is also underlined by the fact that, during the second half of the eighteenth century, the number of slaves running away from sugar plantations was two to four times as high as that from coffee estates (van Stipriaan 1992: 128–29).

Furthermore, without agreeing on the underlying causes, several historians have observed that eighteenth-century plantation uprisings in Suriname nearly always occurred during the dry season. Maroon raids on plantations, in contrast, most often took place during the rainy season, which provided perfect conditions for guerrilla tactics (de Beet 1984: 29–31). Maroons also made ingenious strategic use of rivers, creeks, and especially swamps to evade pursuers and/or to protect their villages. Indeed, during the Suriname civil war of the 1980s, thousands of Maroons fled from Bouterse's army to the protection of the Marowijne River in French territory.

One of the most frequent causes of rebellion among nineteenth-century slave groups in Suriname was owners' attempts to move slaves to another plantation. Most of the time, slaves simply refused to leave "their" plantation. Earlier examples indicate that, as creolization progressed, a slave's loyalty became tied ever more closely to her or his home plantation, and this last phenomenon too harks back to differences in the material milieu. Attempts to move slave populations invariably involved relocating slaves from coffee or timber estates to sugar
plantations (van Stipriaan 1993a: 389–92). The fact—shown by our demographic analysis—that the hydraulic sugar plantation imposed the harshest conditions for the slaves assumes direct relevance here.

Like slaves elsewhere in the Americas, the Suriname slaves struggled to improve their lots through a range of more subtle strategies. As creolization progressed, their bargaining position improved. This is shown by—to quote just two examples—the increasing number of work strikes and the expansion of subsistence-related versus plantation-related activities. Increasingly, slaves supplemented their plantation rations with food produced on their own time. They also entered economic activities by trading their surpluses. Again, water was of vital importance, as part of the slaves’ produce was fish. The plantation provided nets, as well as large quantities of salt to preserve the fish. The planters therefore actively contributed to the growing slave self-sufficiency. Fish became a vital element in Afro-Suriname culinary tradition.

Geography also helped to shape regional loyalties. Even today, one finds a sense of oneness among people from the same district in Suriname, i.e., from along the same river or seashore. People from the same river share a common history and culture dating back to slavery, and this common identity created bonds that transcend the solidarity of all Afro-Surinamers, not to mention national identification.

On a more personal level, the impact of water may not be traced directly, but it did serve as a significant contextual factor in the articulation of Afro-Suriname social relations. In one sense, this is true for New World slavery generally; for example, two terms still used today to symbolize kinship and/or friendship refer to the bonds that developed between two persons of the same sex on the same slave ship sailing across the Atlantic (Mintz and Price 1992 [1976]: 43–44). One variant, sippi (ship), is adopted by two people who have had similar misfortunes or traumatic experiences; the other, mati (mate), may refer to a special friend or a homosexual relationship. It remains a puzzle whether the word mati is a creolization of shipmate or of mate more generally.

Water played a prominent role in the love lives of the many slaves who, despite strict prohibitions, had partners on other plantations. To arrange meetings, slaves probably had to wade through water for long periods of time before reaching their loved ones, an obstacle they must have resented. If, however, they had a canoe at their disposal, they surely welcomed the water that made the trip so much shorter. The latter situation probably was observed by a nineteenth-century colonist who drew this almost idyllic scene (Focke 1858: 95–96): “Being on a plantation, one may often hear at night some negro,—passing alone in
his canoe, probably on his way to one of his wives on a far-off plantation,—
bawling a song with all his heart alternated by whistling the melody.”

**Slave Culture**

Not surprisingly, the vocabulary of the slaves’ creole language, *Sranan Tongo*, evinces the influence of the physical milieu. Water is the most frequently used noun in multiple constructed words, covering a variety of facets typical of Suriname. For example, *watra* (water) may be found in descriptions of natural phenomena such as *draywatra* (whirlpool) or *farawatra* (ebb or low tide); and of flora and fauna such as *watraguyaba* (*Psidium actuanangulum*), *switwatrakrarun* (*Hydrolea spinosa*), *swampuwatradagu* (*Lutra enmudis*, a small swamp otter typical of Suriname), or *watra-ubahna* (*Eunectes murinus*, anaconda). *Watra* is heard in the kitchen, as in *peprewatra* (pepper soup) or *fayawatra* (hot water as well as coffee or tea); and on the human body, as, for instance, in *sturuwatra* (diarrhea) and *watray* (tears); and in religion, as in *watramama* (water goddess), *watrawenu* (water spirits), *switwatra* (magic liquid for purification bath), and *seygriwatra* (holy water) (cf. *Sordam and Eersel 1985*).

Of course, vocabulary alone is no sufficient criterion. A crucial part of spoken Sranan consists of *odos*, i.e., sayings, proverbs, or aphorisms, many of which were recorded during slavery. Water and water-related phenomena make a frequent appearance, e.g., in the collection of *odos* compiled by Teenstra:

*Boko boko tjari en masra na fotoko*—“a leaking boat [also] brings the master to town”: anyone can do it
*Solu laga ju no pasa liba, ju no kosi kayman*—“so long as you have not been on the river do not curse the cayman”
*Ala de alen fadon gi liba, oten liba sa fadon na alen?*—“everyday the rain falls into the river, when will the river fall into the rain?”: you always call on me, when can I call on you? (1835: vol. 2, pp. 210–42)

However, despite such examples taken from a nineteenth-century collection of several hundred *odos*, and in contradiction to our hypothesis, less than 10 percent of these *odos* refer to water, whereas, for example, 20 to 30 percent relate to the animal world. Similar collections compiled in the 1930s suggest the same conclusion (Herskovits and Herskovits 1969 [1936]: 151–490). Water apparently had a stronger impact on the *description* than on the *interpretation* of slave life.
The same observation may be made regarding oral history. In stories handed down from slavery times, water is frequently present, but seldom in a leading role. There is, for example, a story about an extremely cruel planter on the Cottica River who, time after time, was confronted with broken sluices and leaking dikes. This was the warning of the gods that he had to change his ways. As he did not obey, the gods retaliated. He almost drowned near his own plantation’s sluice, then ran as a madman into the woods to find his death there (Guda 1985: 39–48). Even in this tale, and in oral traditions more generally, water is little more than a scene in which a story is enacted. In oral history, the only exceptions to this rule are the Maroon tales regarding the excruciating labor demands of the polder complex.

Music was essential to slave culture, and part of the Afro-Suriname musical tradition was directly related to water—if not spiritually, at least materially. Until quite recently, for example, a prominent percussion instrument in a Suriname orchestra was the “water drum,” beaten with two sticks (ondro–watra–agida/godo). It consisted of one or two big hollow calabashes filled with water, inside which a much smaller calabash floated upside down. Calabashes were used in daily life for practical purposes such as fetching water from the creek and storing it. The instrument was probably played during death ceremonies; contemporary authors maintained that the slaves believed that man was created out of water (van Breugel 1842: 53, Wooding 1972: 267, IJzermans 1987: 57). Slaves reputedly also blew a “water horn” (Focke 1855: 139).

Of more importance than these water-related instruments were the botosingi and streboto, boat songs and boat races respectively. As water was the predominant means of transportation in the colony, boat traffic on the rivers was intense. Slaves rowed these boats, and, much like gang labor in fields and factories, rowers sang songs while working. The rhythm was beaten on the water with their oars. Through structured call-and-response songs, slaves commented on plantation life and also ridiculed the masters’ behavior. In contrast to field songs, these call-and-response songs also served as means of cross-plantation communication. The songs were sung while passing plantations and other boats rowed by slaves; social commentary, news, and messages therefore were woven into the songs (van Stipriaan 1993b: 160–61).

Boating entailed competition, testing strength. Rowing matches between boats going in the same direction were taken so seriously that slaves reputedly sometimes died of exhaustion. Joining and, most important, winning a race were means of showing off masculine strength. At the same time, rowers defended the honor of their home plantation, because a race was always between one plantation and another. All this well
illustrates the paradoxes of slave life. During the boat trip, the slaves were exploited for the transport of plantation products. At the same time, their behavior during the trip undermined the system in several ways: through the slaves’ open or covert criticism, through their communication with other slaves about their situation, and through their voluntary display of combined physical power. This masculine strength, however, was inspired by defending “their” plantation’s name—the symbol of their subjugated status.

Likewise, as time passed, the plantation itself, although it was the property of whites, was appropriated culturally and emotionally by the slaves. They were the ones who were born there, knew every hidden corner of the estate, and used every possibility it offered to generate some income of their own; their umbilical cords were buried in plantation ground, and their forebears still lived there as part of the local spirit world. In short, the plantation had come to symbolize their growing rootedness as Afro-Surinamers.

A decisive part of this cultural creolization was inspired and stimulated by, or coincided with, the growth of Afro-Suriname religion. Religion probably was the most important cultural institution in slave society, and water seems to have played a prominent role in slave religion. In some cases, such as in the use of libations and ritual bathing, there is little to suggest that Suriname religious practices were decisively influenced by the natural environment. After all, such rituals are characteristic of a wide range of religions. Yet for other elements of Afro-Suriname religion, a link with the omnipresence of water may be made. This is particularly the case with the so-called Watramana cult, which was most likely established fairly early from various West African elements.

A short digression on the ethnic composition of the Suriname slave population seems appropriate here. As in most Caribbean plantation colonies, the Suriname slave population was composed of all the major West African peoples between Senegal and Angola. As the mixture of different ethnic groups varied by colony and over time, the cultural outcome of creolization in these societies depended on both the development of the ethnic and cultural mixture over time, and on the specific local circumstances to which slaves had to adapt, such as, in Suriname, the dominance of water.

During the first half-century of Dutch slave importation, about 55 percent of slaves were so-called Papa (a generic name for slaves shipped between West Nigeria and Togo), 30 percent Luangu (from the Congo-Angola area), and 15 percent Cormantin/Kromanti (from present-day Ghana). Only after this period did Kromanti and, increasingly, Mandingo slaves (the latter shipped between Senegambia and the
Ivory Coast) come to dominate. Papa slaves were hardly imported anymore, while the Luangu share remained stable (van Stipriaan 1993b: 145). By that time, however, much of Afro-Suriname religion, or winti as it came to be known, already had been established. A crucial element in this religion, and perhaps even the basis of winti itself during slavery, was the Watramama cult, with its inflammatory watramama dance.

According to a 1775 manuscript written by Nepveu, the Watramama cult, which he equates with winti, was introduced by the “Papa, Nago, Arada and other slaves commonly shipped under the name of Ouidah slaves [Fidase Slaaven,] [who] have introduced certain devilish practices in their dancing, which they have transferred to all other slaves” (Nepveu 1775: 232). Apparently, by the time importation of the Papas declined and Cormantins and Mandingos became the overwhelming majority, Watramama already held a central position in slave religion. This at least is suggested by the fact that it is the most frequently mentioned cult and/or religious dance in both eighteenth- and nineteenth-century reports, and the only one explicitly forbidden in the colonial laws because of its “dangerous effects on the slaves” (Nepveu 1775: 235; West Indisch Plakaatboek 1973: 896; Blom 1787: 389).

The Watramama lived in the rivers, from whence she often appeared before the people, ordering them to bring her sacrifices, such as the blood of a white hen. If such persons did not obey, she quickly would bring about their death, or the death of one or more of their family members (Ontwerp 1744: 317). In the course of the nineteenth century, the picture of this horrific goddess changed into a more lovely one, according to the descriptions of some slaves, who envisioned her “as a beautiful [Amer]Indian woman with a child wreathed with water-lilies, humming-birds fluttering around her, their feathers glittering in the setting sun like gem stones” (Iets over Suriname 1854: 156).

It can hardly be a coincidence that this Suriname Watramama has much in common with the today’s Mammy Wata cult in West Africa (Brain 1980: 48). The latter cult is found mostly along the sea and river shores from what is now the Ivory Coast to Cameroon. Its center, however, is between Togo and southwestern Nigeria, i.e., former Papa country. In this region, a beautiful, long-haired [East] Indian-type goddess, who lives in the water, is held responsible for accidents that happen to people. The present cult is still quite young but is said to have centuries-old roots. One explanation advanced for the existence of this cult is the presence of seacows (Trichechus senegalensis) in some West African waters. The females of this mammal have pronounced breasts, which make a humanlike impression. The presence of this intriguing
animal could have been the basis for the old-time Mammy Wata cult (Salmons 1979: 125).

As seacows (*Trichechus manatus*) also occur in Suriname waters, one can imagine Papa slaves introducing the Watramama in Suriname and adapting it to local circumstances and other culture groups. Indeed, in Suriname oral tradition and especially in the *Anansi-tori*, Watramama frequently makes her appearance; and although Anansi is one of her best friends, she also punishes him severely for his greediness (Helman 1978: 96–99).

Trustworthy observers recently have noted that the most powerful gods in Afro-Suriname religion today are the earth gods and the Kromanti or air gods (see, e.g., Woolding 1972: 308–10, Voorhoeve and Lichtveld 1975: 51–52, Stephen 1983: 43–47). We may have to take into account the possibility that this already was the case during slavery. Watramama may only have been practiced when whites were around, as a kind of decoy to attract attention and so protect the more secret and powerful elements of winti culture, such as *Kromanti* or *Gron winti*. Perhaps in this way whites came to view Watramama and slave religion as identical, labeling every religious dance a Watramama dance and forbidding the category, rather than making separate laws against every single religious dance or “dangerous” ceremony. This interpretation, however, points to another methodological problem. If whites indeed used the term *Watramama* to describe any manifestation of slave religion, there is little chance of charting the development of the Watramama cult from their reports.

Even with this caveat in mind, we do find some ground for attributing a dominant position to the Watramama in the formation of Afro-Suriname religion. During most of the first half-century of Dutch presence in Suriname, Papas were the numerically dominant ethnic group. They probably introduced Watramama, a religious cult fitting in well with the general plantation experience of the slaves, as well as the specific ecology of Suriname. Of course the emergence of Watramama coincided with the massive expansion of the *polder* complex, which made the hydraulic factor of dominant importance in the slaves’ lives. Particularly after the initial stages, cultural influences of other ethnic groups who became numerically dominant added new elements to the cult, which slowly became a full-blown religious complex known by the name of *winti*. An increasing part of this acculturation and creolization process was hidden from white observers, who, to say the least, were not very interested in these developments. Therefore, Watramama and slave religion became synonymous and for a long time would remain so.
During the nineteenth century, land was of growing importance to the slaves and became especially important for the ex-slaves after Emancipation. In the final decades of slavery, the slaves were transforming into a proto-peasantry, increasingly producing agricultural products for themselves as well as for the market. Over the next decades, large segments of the former proto-peasantry settled in and around the capital of Paramaribo. A disproportionate share of the permanent Afro-Suriname ("creole") peasantry settled in the Para and Coronie districts, where the polder complex was not as dominant as elsewhere. Consequently, the influence of "water" in the slave world diminished, and that of "earth" increased. This transformation may have augmented the power of the earth gods at the expense of the water gods. Today, Watramama is no longer the most powerful god. Neither is she marginalized. In the hierarchy of appearances during a winti ceremony, Watramama holds a middle position. Moreover, water spirits, or watra winti, still are very popular with the now urbanized creole population, the direct descendants of the majority of the former slaves. Therefore, in Afro-Suriname religion the hydraulic factor has lost its dominance, but not its influence.

A final instance of "water" as a formative element in Afro-Suriname culture is of a more social- psychological nature and refers once more to the geography of the Suriname plantation complex. Conceptualizing the geographical setting of the plantations as hundreds of islands in a green sea—metaphorically, a very Caribbean image—one wonders whether this location shaped an island mentality. Whatever their communalities, island populations tend to adhere to their own cultural horizons. Considering each plantation as an island, which the slaves officially were forbidden to leave, one imagines the surrounding water as a kind of cultural barrier. Within a general slave culture, the plantations can still be conceptualized as separate cultural entities. Personal contacts and kinship ties did develop among slaves of neighboring plantations. The move beyond the immediate environment, however, was thwarted by water, more than in plantation areas where roads provided the major means of communication (e.g., Beckles 1989: 72–90, Kulikoff 1986). Easily controllable as they were, the Suriname rivers remained virtually the only means of communication all through the slavery period. This not only retarded processes of cultural homogenization across the colony, but also denied most slaves direct access to Paramaribo. Slaves' produce usually was brought to the capital's market by smugglers and professional traders rather than by the producers themselves, as became accepted practice in Caribbean islands. Such geographic immobility reproduced insularity.
Indeed, every slave community had its own village god, its own spirits, and its own interpretation of the hierarchy of the higher gods. Furthermore, every plantation probably had its own style of drumming in respect to the village winti, and this specific style was forbidden to be played by a nonvillage drummer (see, e.g., Price and Price 1980: 179, Voorhoeve and Lichtveld 1975: 51–52, Wooding 1972: 259–60). Boat races between the rowers of different plantations could underpin an “island mentality.” Maroon clans were organized principally among slaves who had belonged to the same plantation. During Maroon raids or slave uprisings on a particular plantation, slaves on neighboring plantations often chose not to join the protest. They did so for various reasons, but the point is that slaves on different plantations apparently continued to define their positions primarily as inhabitants of relatively isolated “islands,” rather than as members of one undifferentiated slave class.

**Conclusion**

How far does an emphasis on ecology, and in particular on the “hydraulics” of Suriname plantation slavery, carry us? In terms of hard demographic data, working and living conditions, etc., the evidence uncovered seems inconclusive. We have been able to demonstrate some significant variations of material conditions within the Suriname polder complex; the contrasting demography of sugar and coffee plantations is a case in point here. These contrasts do emphasize the relevance of strictly materialist interpretations at this level of analysis. Even in this sphere, however, there is little evidence to support broad generalizations. Some specific labor demands of polder plantations were extremely strenuous; but there is no conclusive evidence that these translated into harsher labor conditions across the board. There is much less hard evidence that the average workload on a Suriname plantation compared unfavorably to conditions in other Caribbean locales.

Whatever the specific consequences for workloads and hence possible slave demography, there is no doubt that ecology, and the polder environment in particular, marked the Suriname slaves’ working and living conditions. We suggest a substantial difference here with slavery in most other slave systems of the Americas. Much of this paper attempts to substantiate this claim by pointing to the many spheres of life in which the Suriname slave confronted challenges and options different from those facing her or his contemporary peers. The direct result of this analysis is to suggest some contours of a particular variant of sla-
very. Yet this outcome too is rather trivial. In a way, we merely rescue from oblivion the all-too-obvious fact that the ecological factor, and more specifically the omnipresence of water and hydraulic technology, strongly marked the material conditions and responses of Suriname slaves.

At the same time, it remains indeterminate how far we may venture beyond this somewhat commonplace conclusion. The grounds for a firm conclusion regarding the influence of “water” on slave culture remain somewhat shaky. And even if we cannot understand Afro-Suriname culture without taking into account the importance of ecology during its formative period, this does not imply that water was the only relevant ecological phenomenon. It is tempting to consider the Suriname tropical forest—to cite Fernando Ortiz’s seminal and suggestive but equally elusive model (Ortiz 1940)—as a cultural “counterpoint” to water. In this metaphor, to the Maroons the forest symbolizes freedom, and on timber estates a relatively light slave regime. It is the other home of religion (gods, holy animals, and trees). It plays a prominent role in oral tradition (Anansi and other animal stories, proverbs, etc.). It is extremely important in music (wooden instruments, woodcutter songs). And the tropical forest surrounded the plantations like a green sea that gives and takes. Again, the challenge of analyzing slave culture and creolization from an ecological point of view is evident.

**Notes**

1. This paper departs from our own previous research on Suriname slavery (e.g., Oostindie 1989, 1993b; van Stipriaan 1993a, 1993b). For comparative purposes, see Joyner (1984).

2. The figures for slave populations at Suriname sugar and coffee plantations are taken from the samples in van Stipriaan (1993a: 128, 135).

3. An administrator quoted in Oostindie (1989: 229). Indeed, on the two plantations under his administration, both owned by the same absentee Dutch family, the sugar estate had consistently higher demographic losses than the one producing coffee (Oostindie 1989: 251–59).


6. Likewise, in neighboring Guyana—a Dutch plantation colony until around 1800, and one with similar hydraulic characteristics—the “Watermama” is still an important spirit or goddess. See Reinders (1993).
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