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Half Fish, Half Monster: Shakespeare's Caliban and the Performance of Natural History

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*Starting around the time of Shakespeare's birth, a group of naturalists engaged in a collective enterprise to enumerate and distinguish strange varieties in the new world, including what were thought to be monsters and supernatural beings. Although this controversy would lead to the idea that human races were distinct species in the nineteenth century, considering *The Tempest* in the context of natural history demonstrates that the development of scientific racism was far from inevitable.*

When Trinculo, one of the stranded mariners in *The Tempest*, encounters Caliban, he does not know what to make of him:

What have we here? a man or a fish? dead or alive? A fish: he smells like a fish; a very ancient and fish-like smell; a kind of not of the newest Poor-John. A strange fish! Were I in England now (as once I was) and had but this fish painted, not a holiday fool there but would give a piece of silver. There would this monster make a man; any strange beast there makes a man. When they will not give a doit to relieve a lame beggar, they will lazy out ten to see a dead Indian. Legg'd like a man; and his fins like arms! (2.2.24–34)

On further reflection a few lines later, Trinculo decides, "This is no fish, but an islander" (2.2.36). In Act 3, Trinculo turns away from his initial conclusion that Caliban is human and call him "half a fish and half a monster" (3.2.29). Given his uncertainty, Trinculo's comments bear further examination. Trinculo's prevarication about how to classify Caliban – and particularly his oscillation between the categories of monster, human, and fish from the early days of natural history – creates an opportunity to approach the play as more than a simple allegory about the colonial encounter.

It is now commonplace to assume that Shakespeare's Caliban is a native inhabitant of the Americas, but deciding where Caliban fits into the scheme of nature is drawn out in the text. In the critical literature, however, the debate regards whether the play operates as a validation of the colonial order or whether the play offers a dissenting voice.¹ The colonial readings of the play have produced rich scholarship and classroom discussion; as noted in a comprehensive survey by Emily Bartels, the 1986 publication of Peter Hulme's *Colonial Encounters: Europe and the Native Caribbean, 1492–1797* represents a catalysing moment when the play was seen to reflect colonialist discourse. In the wake of Hulme's work *Colonial Encounters*, studies that investigate the colonial encounter "fostered increasingly nuanced and inclusive conceptions of racial and cultural representation," Bartels writes ("Shakespeare's 'Other' Worlds," 1124). Therefore, one does not wish to discount colonialist readings entirely, but the dissonance regarding whether the play reflects or challenges colonial discourse can be

considered an opportunity for further examination. One way to resolve this debate is to think of the play in the context of the history of science.

A double issue of *South Central Review* in 2009 sought to rectify the “relative neglect” of the history of science in the study of Shakespeare (Mazzio 1). This paper adds to the ways the history of science is relevant to Shakespeare by applying insights from critical race theory. Social constructivists state that the historical record demonstrates a proliferation of possible solutions to any particular scientific or technological controversy. Although one solution will emerge through a process of stabilisation, that solution is marked by the socio-political context that made it seem to be the best. To uncover this process, constructivists look for controversies, or periods of instability. Bruno Latour, for instance, suggests we should look at what he calls “construction sites” to understand how “things *could be different*, or at least *they could still fail*” (188–9; emphases in original). Critical race theorists have used insights from constructivism to advance the proposition that biological definitions of a limited number of human races are not rooted in scientific facts but are advanced to bulwark an economic or political agenda. Considering *The Tempest* as a construction site of natural history – an area where racialised discourse will be built – helps us awaken that there was an alternative to the notion that humanity is neatly divisible into four or five distinct biological races.

One way of reading *The Tempest*, therefore, is to gain an understanding of how notions of difference are culturally constructed. Steve Garner has written that the study of “racialisation” offers us an opportunity to move beyond racist/anti-racist binaries, drawing attention “to the *process* of making ‘race’ relevant to a particular situation or context” (21; emphasis in original). As pointed out by Dorothy Roberts, considering the social construction of race is not just a matter of understanding a society’s definition of race. Because the notion that there are four or five distinct biological races is an invented classification, one must ask to what use the division is put. “Race is not a biological category that is politically charged,” she writes. “It is a political category that has been disguised as a biological one” (4). Looking back on *The Tempest* from the vantage point of the twenty-first century, one can imagine that struggle against scientific racism and the fight for racial equality were waged against oppression that increased in intensity the farther one looks back. However, when considering *The Tempest* in its historical context looking forward, one sees an instance of an author wrestling with competing notions of difference.

Shakespeare’s study of natural history is embedded in a crisis of scientific knowledge when reports from the New World were challenging accepted beliefs about organisms. In studying a controversy in the history of science, however, the goal should not be to decide who was right. As Steven Shapin and Simon Schaffer have shown, the goal of studying the conflict between Boyle and Hobbes regarding the air pump is to unpack the scope of the debate to see what it reveals about the culture of science.² It is a mistake to ignore Hobbes in the belief that he was in “error” (11), they write; the only reason to do so would be to create a false continuity between this supposedly ordinary moment and the present day. When readers of Shakespeare anachronistically apply modern notions of race and interpretations of political and economic history to readings of Shakespeare’s plays,

similarly, they are using the discourse that reflects the victor's interpretation of a debate concerning the nature of difference. By looking at the traces of scientific discourse in the play, one can reopen the moment of transition to realise startling discontinuities. From this, one gains an understanding that the definitions of race and difference that follow Shakespeare were far from inevitable.

The Traffic in Monsters

The period in which Shakespeare lived and worked was teeming with the first instances of a discipline that would come to be known as natural history. The suggestion that wondrous human beings – what Trinculo calls “monsters” – populate the outer reaches of the world was not an isolated comment by Shakespeare. Starting around the time of Shakespeare's birth in 1564, a textual traffic in images of purported monsters was augmented by the display of live individuals of unusual provenance, what Bernth Lindfors calls “ethnological show business” (207).³ Trinculo's speech reminds us that public spectacles were more commonplace than theatre in Shakespeare's time. Alden T. Vaughan notes in his discussion of *The Tempest* that the most familiar forms of Jacobean popular culture were parades, fairs, masques, and wonder cabinets – not to mention bear baitings and exhibits of exotic human and animal specimens – which were much more accessible to the people of the time than theatre. Thus, Vaughan concludes, “the body of a dead Indian, properly preserved, may have been a more plausible showpiece” (“Trinculo's Indian” 59). Indeed, Ronald Takaki documents the fact that, starting with Columbus's first voyage, part of the age of exploration involved bringing native people back to Europe as prisoners for the purposes of display (896–7). Trinculo's dream of selling admission to an exhibition featuring Caliban is therefore not a throwaway comment, but a portrayal of the opportunity for mariners to display strange beings. This helps to understand his prevarication about what Caliban is and, by extension, provides a window onto a contemporary practice. As a work of art, however, one can assume that *The Tempest* offers commentary on this cultural practice rather than mirroring it unthinkingly.

Outside the theatre, audiences witnessed humans used as live specimens for display. According to Alden T. Vaughan, the first records of the traffic in monsters from the New World to England appear shortly after Columbus's first voyage, when exotic strangers attained celebrity status as “persistent and accessible wonders.” In 1501, three men speaking no known language came before Henry VII. These men, when they first arrived, were considered amazing for their “animal-skin garments and decorated faces,” yet after a few years of life in England, they wore English clothing and could scarcely be identified as foreigners (Vaughan, “Trinculo's Indian” 57). In the 1580s, a pair of native Americans were also displayed, dressed in “outlandish” costumes. Vaughan reports that these Americans were perceived as fascinating when they first arrived, but as less interesting the longer they stayed because they “acquired the outward trappings of Englishmen” (58). The changing impression of the observers echoes the difficulty Trinculo has trying to determine the essential nature of the observed, indicating that the play is not a static portrait of cultural attitudes but a dynamic simulation of the way new information about the natural world challenged notions of difference.

The display of these individuals was not, however, the only way that ideas about them circulated. In the early years of the print revolution, Europe had seen an increase in discourse about monsters. As Lorraine Daston and Katharine Park point out, one of the first uses of the printing press in the early 1500s was to produce broadsides and pamphlets concerning unusual phenomena, when texts on local and exotic natural phenomena, “became a fixture in the broader market for large and lavishly printed books” (149). Some of these were simply printed descriptions with illustrations, yet others were more elaborate treatises that speculated on issues of morality. In both cases, the purpose of the publications was to shock and frighten their readers (181). Daston and Park write that there was a “multiplication of monsters” and curiosities in this cataloguing phase of the early naturalists (180). The naturalists before Shakespeare’s time who exploited the new printing technology to disseminate their work, however, appreciated wondrous and curious beings as marvels that represented God’s mysterious ways or signified strange events.

Wonders in the medieval period had been collected but not organised; gatherings of wonderful artefacts were, as Daston and Park characterise, not museums but thesauri – there was little interest in defining artefacts’ relationships to other objects and their value was their rarity. According to Daston and Park, the purpose of enumerating strange beings changed around the time of Shakespeare’s birth. By the early sixteenth century, “a new community of inquirers” throughout Europe initiated a collective enterprise to enumerate and distinguish the inhabitants of the natural world: a world that had recently become larger with the discovery of new varieties of plants and animals in the Americas (218). Thus, as described by Brian Ogilvie, a community of European naturalists arose for the “rapid and reliable” consideration of the legends, reports, and evidence of the natural world that was gathered by a network of sailors, farmers, and merchants (140). Drawing on an extensive survey of archival material in Switzerland, Germany, Poland, and the Netherlands, as well as published books from the sixteenth and seventeenth centuries, Ogilvie shows that naturalists then compared the reports with information gleaned from ancient Greek texts to write their own analyses in letters or monographs. The practice of ethnological show business, and the use of sailors as research assistants, then, is part of this early modern elaboration of knowledge about the natural world.

In contrast to this activity outside the theatre, inside the theatre *The Tempest* explores the extent of this network and the activities individuals conduct within it. When Shakespeare’s mariners come ashore in Act 2, they speak of the fact that their ship is one of many that have had difficulties; “Our hint of woe | Is common: every day some sailor’s wife, | The masters of some merchant, and some merchant | Have just our theme of woe” (2.1.3–6). The play reflects the fact that the Atlantic crossing had entered the English imagination by the time of the play’s performance in 1611. Herbert C. Kraft details the many forms of trade in place before the settlement of Virginia in 1607, especially the vogue for fur from the North American continent. As reported by Arthur F. Kinney, mariners’ tales have long been assumed to be part of the cultural tapestry that Shakespeare wove to create the play. As Kinney points out, a letter written by William Strachey in 1610 about a ship caught in a storm that lands in Bermuda, which scholars like Geoffrey Bullough (in his 1975 *Narrative and Dramatic*

Sources of Shakespeare) offered as a direct inspiration of the play, is likely to have come too late to be a direct source. Antedating this letter, as Kinney reminds us, are similar accounts that were in circulation.

One of the tales examined by Kinney, James Rosier's 1605 account of being trapped in a storm, begins much like Shakespeare's play with the discovery of fertile land (168). What is more remarkable about Rosier's account, Kinney tells us, is that the text describes the captives he returned with, whom he displayed as "proof of a dangerous and exotic voyage." These human testaments to the European exploration of the New World were transformed from individuals into "alien goods on display as a living wonder-box" (Kinney 171). In crafting a tale involving mariners travelling to the New World, Shakespeare is gesturing to the extent to which it had already been discovered, documented, and brought back to the old. With hindsight, we know that this broader story will end with the exploitation and extermination of the native population, but at the time in which Shakespeare was writing, that outcome was far from inevitable. The wonders we see in *The Tempest* represent part of a complex network that included popular amusement and also the early organisation that would form to produce natural history. Collecting examples from the natural world, in Shakespeare's time, was a construction site of scientific practice, and the process of analysing these samples caused a destabilisation of ideas about the natural world.

The New World and the Idea of Race

By considering *The Tempest* in its scientific context, other oddities become apparent. For instance, medical beliefs of the time asserted that one's environment would have an impact on one's state of mind. William Vaughan's 1600 medical text explains how four general categories of environment were considered to be responsible for good health. Of one of these, the air, Vaughan says:

A mans natiue foyle, and Countries ayre is beft. [...] Euery mans natural place preferueth him, which is placed in it. (2) (A man's native soil and country's air is best ... every man's natural place prefers him, who is placed in it)

Indeed, it was a precept of early modern medicine that an individual was a product of the climate in which he or she lived; the body was transformed by climate and nourishment. This feeling was so profound that, in the age of exploration, mariners reportedly feared "the possibility that in leaving England they might be leaving their Englishness also" (Kupperman 215). This is not hard to understand when one remembers that the theory of the humours suggested that the four must be kept in balance and that nourishment and environment could throw off the balance. Following this logic, the idea of a girl growing beautiful in an environment different from England would be questionable. Yet, as we hear from Ferdinand, in *The Tempest* Miranda has retained her charms:

Admir'd Miranda!
Indeed the top of admiration! worth
What's dearest to the world! Full many a lady

I have eyed with best regard and many a time
The harmony of their tongues hath into bondage
Brought my too diligent ear [...]. But you, O you,
So perfect and so peerless, are created
Of every creature's best! (3.1.39–48)

In the play's historical context, it would have been questionable whether someone who had left England at the age of three and lived in the Americas for a dozen years would still be beautiful. Yet Ferdinand, who apparently has known many women, still finds Miranda so beautiful that he is willing to undergo physical labour to win the approval of her father.

In an opposite trajectory to that which supposedly caused the "savage" native Americans to become civilised under the influence of the English climate, one might expect Shakespeare to have represented Prospero as altered by the new environment, perhaps becoming indolent and soft. Shakespeare's failure to depict the effect of climate on Prospero and Miranda's intellect and appearance, however, seems to suggest that he has incorporated a challenge to existing early modern beliefs into the play. Within the same belief system that would be used to postulate that different forms of humanity resulted from the four corners of the earth, to represent the constancy of human beings in whatever climate they travelled undermines a crucial aspect of what would become the science of difference.

The play's presentation of this kind of alternative is unexpected if one looks for a linear progression in the history of science. The discourse about race and gender that will be an unfortunate corollary to the Enlightenment, so amply documented by Londa Schiebinger, and the ultimate American invention of a polygenic theory of humanity, described by Stephen Jay Gould, might lead one to believe that Shakespeare's era was even less progressive in its belief about race. If the development of scientific knowledge reached a point in the nineteenth century when the human races were defined as distinct species, a belief in linear development would require one to find very strict notions of human difference in the period before and a smooth slope upward toward the more egalitarian notions of today. In this way, the development of scientific racism seems as if it were an unfortunate but necessary stage in the development of modern notions of race.

However, the resolution represented by polygenism was only one way of resolving the controversy, one that suited the political, social, and economic climate of the nineteenth century. Indeed, as documented by Siep Stuurman, the notion of a hierarchy of races comes after Shakespeare. Stuurman traces the notion of large biological groups to François Bernier's "New Division of the Earth," a travelogue posthumously published in 1684. Bernier, although a monogenist, believed that the influence of the environment was responsible for human difference. For Bernier, the Europeans – the "first" race – were simply the kind of humans that were born in the right environmental circumstances so that their bodies were in the best balance. In this way, Bernier explained human difference in a manner similar to the notion that different environments excite different humours. A continuation of this idea is found in the next century, when Linnaeus's belief that the four corners of

the Earth created four different species, each ruled by a different humour, would lead him to distinguish four variations of human species: *americanus*, *europaeus*, *asiaticus*, and *afer*. After Shakespeare's time, the idea of the humours is enlisted to support notions of biological differences among large groups of humans. Contrary to this trend, *The Tempest* presents a startling example of how a different outcome was imaginable.

In fact, the notion of distinct lines between humans did not occur to anyone until, Stuurman writes, Bernier marked a transition from "a division of the world into innumerable nations and tribes to a division of humanity into a limited number of races" (15). According to Stuurman, before Bernier, the idea of race was more tied to the notion of type, ancestry, or culture. Otherness was ascribed to cultural groups, but this does not mean that all groups were regarded as equal; Stuurman cites fifteenth century Spanish anti-Semitism, defined by kinship, which was used to transform the idea of Jewish people into Jews as a biological category. Stuurman also observes this phenomenon in the encounter with the Americas, where all native people would be linked into a single race (14). Following the same Aristotelian logic that was prominent in Shakespeare's time, Bernier argued that the divisions of humanity were marked by physical characteristics and resulted from "the water, the food, the quality of the land and the air." In one way, however, he differed, in suggesting that the semen of the particular races contributed to human differences (5–6). William Vaughan shares with Bernier and Linnaeus a theory of environmental influence, but naturalists of Shakespeare's time did not believe that humanity was neatly separable into a limited number of distinct biological species.

The way that environment and not biology was thought to explain human difference is evident in Shakespeare's sources, which also describe the variations among different species as mutable. Jean Feerick has documented the ways in which Shakespeare's history plays, in addition to their dramatisation of pivotal events, describe how people and nations are subject to a process of "making and unmaking" (48). Violence and discord, Feerick asserts, change the way in which characters act and think, leading to the conclusion that greatness of character is only possible during times of peace. Feerick even describes how the principle of environmental determinism is found in one of Shakespeare's sources, Holinshed's *Chronicles*, where the political and national constitution is affected by the climate and the maintenance of order (48). Britain's excellence, then, was thought to be built upon the temperate climate, and so stood in contrast to the decadent continent.

This would not be the only time that Shakespeare had used theatre to demonstrate conflicting worldviews. In the context of Shakespeare's *Othello*, Emily Bartels has demonstrated how looking back on the play with the memory of colonialism can lead to a mistaken impression. In *Othello*, Bartels writes, Shakespeare supports the idea that ethnic stereotypes are an "obstacle to survival in the imperialist world" ("*Othello*" 62; emphasis in original). In her reading of the play, Shakespeare recognises the potential for racism and imperialism to enhance each other "enough to set the two side by side and explore what happens" ("*Othello*," 64). Similarly, *The Tempest* challenges the incipient racial discourse by posing a situation that could have resulted in essentialised difference but refusing to portray characters who reflect this difference.

Because of the way the discourse regarding race would develop in the Enlightenment, it is tempting to think that Shakespeare's contemporaries held an even more repressive, more ignorant notion of race. The whiggish vision of the science of difference would suggest that racial theories exist on a linear scale from the origin of total separation of biological race sloping steadily upward toward an egalitarian understanding in the present day. This notion of progressive understanding, however, is not matched in the historical record. In science and technology studies, the notion of social constructivism is used to counter the linear interpretation of technical development or scientific knowledge. As scholars of the social construction of scientific knowledge would remind us, in the midst of a scientific controversy there are many alternative proposals that are presented, only one of which will move forward – and the one that moves forward is the one that fits in best with the social, political, and economic context. In reading *The Tempest* as a marker of an alternative to this discourse, one can see that a different solution was possible to comprehend the multiplicity of human traits.

Performing Natural History

Even though the methodological insights from Ancient Greek texts like Theophrastus's *Enquiry into Plants* and Aristotle's *Historia Animalium* were still being studied in Shakespeare's time – and would continue to be studied in the eighteenth century by natural historians like Linnaeus (Koerner 34) – the classics were limited by the understandable fact that they did not list varieties found in the new world, causing a controversy when naturalists attempted to correlate mariners' reports with existing knowledge. While the first naturalists were content with identifying and cataloguing monsters at the same time as other forms of life, the proliferation of information along with greater awareness of the classics caused a shift in the field; by 1590, as Ogilvie notes, the descriptive techniques used by the naturalists depended upon "a system of differences" (191). This methodology was intended to help other naturalists find continuity in the natural world and distinguish between types, rather than representing a rare plant or animal as a unique object for contemplation. We can then see how Shakespeare's dramatisation of the process of natural history has a place within the burgeoning of what might be called this science of difference at the start of the seventeenth century.

The uncertainty of Caliban's nature and the constancy of Miranda's indicate Shakespeare's awareness of a scientific controversy that can be best understood with the principles of natural history at the start of the modern era. This awareness helps to explain the bizarre fates that befall the characters in *The Tempest*. Why would Shakespeare have chosen this particular set of unlikely circumstances? If the goal were to create an encounter between Caliban and the Europeans, why must there be a previously stranded man and daughter on the island with him? Why must there be magic in the play, and why must magic then vanish at the end? Why is there a love story? There were plenty of narrative possibilities in writing a play about the New World, including tales about riches, adventures of mariners, and encounters with monsters.⁴ The choices Shakespeare made demonstrate the connection to natural history.

In an essay that skilfully extends Daston and Park's arguments about the monstrous to *The Tempest*, Elizabeth Spiller explains that one should not disregard the strangeness of the events on the island. Miranda "lives almost entirely in a world composed of singularities," she writes, making the play "distinctively early modern in its epistemological assumptions" (30). Building on Daston and Park, Spiller explains how a natural historian – using a methodology that is built upon peculiar instances, instead of universal truths – would have been interested in creating a setting infused with wonders. Before the development of natural history, as described by Daston and Park, monstrosities and aberrations were thought to be manifestations of divine will or the work of evil forces because they showed how natural laws failed to operate in specific instance. The first natural historians, however, became interested in these discrepancies because they might lead to a fuller understanding of the processes that brought about the natural world.

Thinking back to Trinculo's speech, one starts to realise that Shakespeare was in fact dramatising the process by which natural history came to be known. Mariners' reports, as discussed by Ogilvie, were compared by scholars with accepted authorities from ancient Greek and classical Latin sources. In this case, Shakespeare imitates Aristotle. Looking closely, one sees a clear allusion to Aristotle in Trinculo's speech. In Book I of *Historia Animalium*, Aristotle initiates his dialogue of difference similarly:

Εἰσὶ δὲ διαφραὶ κατὰ μὲν τοὺς βίους καὶ τὰ ἦθη καὶ τὰς πράξεις αἱ τοιαῖδε, ἧ τὰ μὲν ἔνυδρα αὐτῶν ἐστὶ τὰ δὲ χερσαῖα (8). (There are the following differences: in manner of living, in abode, and in actions. Some are living in water, and some living on dry land)

Aristotle goes on to group animals that are unable to live without water and those that live in the water but breathe air; Trinculo, in the passage quoted at the start of this essay, makes an effort to classify Caliban based on his smell with comic result. The purpose of the Aristotelian method of distinguishing different types of animals is to understand their means of life, their niche in the environment (their ἔθος, which can also mean temperament or character), and their deeds or their business. Although decisions made by some costume directors mentioned by A. T. Vaughan suggest otherwise, Trinculo is not simply confused by Caliban's appearance as to whether he is a human or a fish. Instead, he can be understood to be engaging in a scientific endeavour informed by Aristotelian principles that aims to accommodate an unknown being into the framework of existing knowledge.

Seeing Aristotelian analysis performed helps today's readers understand how Aristotle had been used before Linnaeus's system became ubiquitous. Pierre Pellegrin has suggested that readings of Aristotle are anachronistic and teleological; an historian of science would say that we read Aristotle from a whiggish perspective. It might seem as if Aristotle's notion of taxonomy were similar to the present day, Pellegrin writes; modern thinkers who suggest that Aristotle proposed to divide living creatures into ones that used blood and ones that were bloodless manufacture a tradition of dividing organisms into vertebrae and invertebrate. However, Pellegrin says, Aristotle really had many different schemes for different occasions. It was not so much an effort to create a uniform taxonomy of

difference in order to classify living organisms – as if Aristotle and Linnaeus shared the same goals – but instead, Aristotle sought to save time in study. The “grouping of animals into families does not in itself constitute a theoretical advance,” Pellegrin writes; instead, Aristotle wanted to study sleep, locomotion, or other common features among common organisms, and so it was helpful to have the animals grouped in a way that allowed generalisations about a species to be made easily (116). Because Aristotle sought a “multiplicity of viewpoints” by which he could find similarities among anatomical, physiological, behavioural characteristics of organisms, one should not read into his work a goal of those who came later, which was to make distinct zoological differences based on biological differences (1120). Shakespeare could not know what would become of this Aristotelian methodology in the nineteenth century, but in Trinculo’s encounter with difference, it is clear that Shakespeare was aware of how the growing sphere of naturalists could develop a science of difference.

The Tempest, then, represents a unique opportunity to understand that the pre-Enlightenment vision of deductive thinking based on Aristotle did not necessarily promote racial hierarchy, even though later systems would be used to assert that there were distinct lines between races. Although the play explores the methodology for understanding difference, it differs from the simple allegory of colonial encounter that it is sometimes purported to be. It is true that Prospero refers to Caliban as “my slave” (1.2.309, and thereafter), and Miranda reports that Caliban is a member of a “vild [vile] race” (1.2.358). What is more, Caliban reports that Prospero has “cheated me of the island” (3.2.44). However, the fact that Caliban is forced into servitude is less relevant than the way in which he is used to promote a sense of difference, just as other captives of the Americas were. Complicating the colonialist reading is the fact that bringing Caliban from the Americas to England would not be the correct leg in what historians call the triangle of trade. Manufactured items were brought to Africa to barter for individuals to enslave, Africans were taken to the Americas on what was euphemistically called the middle passage to produce raw materials, and raw materials were brought to Europe to create more manufactured goods for barter (Williams 150). Bringing Caliban from the Americas to England does not fit directly with the institution of slavery and only makes sense in the context of the ideological work to make slavery acceptable.

In this context, it is interesting that in the larger drama of the play, Caliban moves away from being a freak on display until, at the end, he is similar to the other sailors. His position does not change – at the end, he fears that “I shall be pinch’d to death” (5.1.277) – but the way other characters respond to Caliban does. In the first act we are told that Caliban lacks human shape and was born of a witch. Prospero describes his first encounter with Caliban, calling him a “freckled whelp hag-born-- not honour’d with | A human shape” (1.2.183–4). Through summary characterisation we are told that Caliban seemed to Prospero to be one of the monsters. Almost immediately, however, Caliban expresses that he had been changed by the encounter; the play suggests that his character is not constant. His first words are a curse of Prospero, which Caliban elaborates by relating the history of his transformation:

When thou cam’st first,

Thou strok'st me and made much of me, wouldst give me
 Water with berries in't, and teach me how
 To name the bigger light, and how the less,
 That burn by day and night; and then I loved thee. (1.2.332–336)

Thus, it becomes clear that Caliban has entered into the world of European culture. Mirroring the experience of the native Americans brought to Europe and displayed as monsters, he learns the captor's language. As Prospero's servant, the difference in the play is that these changes are the result of tutelage, and not removal to a different climate. When Prospero brings this to Caliban's attention, of course, he curses Prospero, stating:

You taught me language; and my profit on't
 Is, I know how to curse. The red-plague rid you
 For learning me your language! (Tmp. 1.2.363–365)

While this exchange brings attention to Caliban's status as a colonial subject, one could add to the postcolonial reading of Caliban a reading that places Caliban into the context of the ethnological show business of the sixteenth century. Notwithstanding Trinculo's first impression, Caliban acts in concert with European conspirators, pledging allegiance to Stephano and Trinculo. After getting drunk with them in Act 3, Scene 2, Stephano vows to kill Prospero, make Miranda his wife, and promote Trinculo and Caliban to "viceroys" (3.2.108). Prospero defeats the conspiracy, which suggests that order has won over disorder; colonial power seems to have asserted itself over the rabble. However, it is important to recognise that Caliban has moved from a position of absolute otherness, as evinced by Trinculo's first encounter with him, to be included as one of the conspirators.

At the end of the play, Prospero vows to give up magic, and his effort takes on a new meaning in the context of the early modern transition to natural history. His closing speech includes these lines:

Ye elves of hills, brooks, standing lakes and groves,
 And ye that on the sands with printless foot
 Do chase the ebbing Neptune and do fly him
 When he comes back; you demi-puppets that
 By moonshine do the green sour ringlets make,
 Whereof the ewe not bites, [...]; by whose aid
 (Weak masters though ye be) I have bedimm'd
 The noontide sun, call'd forth the mutinous winds,
 And 'twixt the green sea and the azur'd vault
 Set roaring war [...]. But this rough magic
 I here abjure [...]. I'll break my staff,
 Bury it certain fathoms in the earth,
 And deeper than did ever plummet sound

I'll drown my book. (5.1.33–57).

Prospero recalls the wonders he has observed on the island, cataloguing the mysterious beings that allowed him to perform such miracles as controlling the winds. The stage directions call for “solemn music” as Prospero throws away his magic books (5.1.57); part of what has been observed on the island is the end of an era. Returning to Europe, where a new form of learning is being developed, seems to be the only course of action, but at the same time, he mourns the loss of the age of wonder.

Conclusion

Interestingly, early modern scientists metaphorically joined Prospero in drowning their books. The naturalists of Shakespeare's time were slowly weeding away fanciful accounts that amounted to hearsay and beginning to organise themselves in new ways. By the middle of the seventeenth century, the scientific academy would supplant the court and the university as the primary organisation of natural historians. In his 1605 treatise *The Advancement of Learning*, Francis Bacon, Lord Chancellor of England under James I, developed a new program for the conduct of natural history. As part of his reformed science, he inspired an effort to document and then explain natural wonders. His intention was to find instances of nature operating successfully as well as instances of nature that had gone off course. As mentioned by Daston and Park, this collection of anomalies would first unseat classical myths and then reveal the hidden operations of nature (239). Caliban's path in the play is remarkable in light of this shift. From the vantage point of the present, one might assume that Prospero's move toward modern science would be accompanied by Caliban's placement into a racialised category of biological difference, but the play demonstrates that it was not inevitable that these two ideas would develop in parallel. The science of difference as described by Shakespeare was poised to move in a direction away from the notion of distinct species, even though by the time of Bernier, the development of the idea of distinct species was well underway.

The use of Shakespeare's texts to articulate modern understandings of colonialism has been useful, albeit anachronistic. Recasting this debate might forestall further discussion of colonial encounters by literature scholars, so one should only do so with a clear purpose and with an idea of what should be studied instead. The purpose of promoting the study of racialisation is quite clear. Ann Morning's research into depictions of essentialist and constructivist notions of race shows that, in the U.S., some students and professors assert that science has “overwhelmingly rejected a biological concept of race” and yet others believe that tidy categories of biological race have been “largely retained” (46). Simon M. Outram and George T. H. Ellison's study of biomedical articles that discuss constructivism in the context of race asserts that the unresolved debate leads “many geneticists and biomedical scientists” to fail to engage with lucid arguments against the use of essentialised categories (94). Although the problem of understanding racialisation is, of course, bigger than Shakespeare, studying Shakespeare can be part of the solution.

Living and working at a time before the ideologies that would coalesce in the nineteenth century to assert essential biological differences between large groups of humans, Shakespeare's art

demonstrates how notions of difference are arbitrary, not in the sense that they are random but that they are determined by a judge from equivalent possibilities. It is indisputable that they would develop into what becomes a science of difference, but elucidating the prevarication about human difference in *The Tempest* helps us to understand that the way that racialisation unfolds is far from inevitable. The play's consideration of human difference provides a startling alternative to the discourse on race that would develop over the following two hundred years. In this way, the study of literature can offer a useful corrective to the historical hindsight that is too easily coloured by simplistic notions of scientific progress. One cannot disregard the play's involvement in colonialist discourse, nor can one overlook the play's interest in what one might call a science of difference. However, in investigating these themes, one is likely to run into a quandary: today's notions of race do not fit in with the notion of race that was employed to support the colonial project. Because Shakespeare's discourse on monsters is quite different than the later discourse on the polygenic notion of separate human species, it can go a long way to support the notion that the racial science of the Enlightenment was only one of the alternatives available to the burgeoning field of natural history.

Notes

1. Critical interpretations of what Shakespeare's commentary might be have varied. Trinculo's wish to abduct and profit from what he thinks is a monster has reminded many critics of the colonial encounter. Trevor R. Griffiths demonstrates that performances of *The Tempest* after the nineteenth century seem to have paid more attention to the political aspects of the play than to the magical, so that today, "some emphasis on colonialism is now expected" (179). This could be unfortunate, as Deborah Willis suggests, because even if the play asserts a realm of possible freedom at the periphery, it seems to legitimise the status quo of power relations at the core. Some critics, however, find readings like Willis's problematic, especially when it is suggested that Shakespeare somehow resisted the colonial project. Tristan Marshall, for instance, suggests that the play is not fully implicated in colonial ideology, even if new historicist critics would like it to be, and instead suggests that the play is about the isolated island of England itself, given that there is little overt reference to the New World and no critique of the plantation system. Alden T. Vaughan also decries the reading of Caliban as native American that became dominant in the twentieth century, reminding us that earlier productions portrayed Caliban as some sort of "fishy monster" or a missing link between the human and animal kingdom ("Shakespeare's Indian" 138).

2. As detailed in *Leviathan and the Air-Pump*, Thomas Hobbes and Robert Boyle disagreed on the way in which science should be conducted. Boyle promoted an experimental procedure to gain particular facts about natural world, as epitomised by his work with air pumps used to understand a vacuum. Hobbes, characterising this as "natural history" (102), held that the only true way of understanding the world was an awareness of larger principles, or philosophy, which was more like geometry (149). Although today one might think that the difficulty was convincing Hobbes of the experimental fact that demonstrated a vacuum could exist, as Shapin and Schaffer demonstrate, the debate was more about the way one should learn about the natural world. A Whigish account of this story gives little weight to the debate because Hobbes can be easily dismissed as wrong in light of the resolved debate. Shapin and Schaffer, however, promote the use of a "stranger's account" to re-examine the controversy (4). Hobbes and Boyle did not actually argue about whether or not there was a vacuum, Shapin and Schaffer write, but about the "generation and justification of proper knowledge" (342).

3. Today, the best known of these individuals would be Saartjie Baartman, the so-called Hottentot Venus, who was abducted from South Africa in 1810 and put on display in England and France (Schiebinger 168). Although she is the most infamous of the individuals subjected to this abuse, she was not the first; the literal and textual traffic in monsters predates Baartman by some 300 years.

4. Some of the extant sixteenth century texts are documented by Douglas Allchin.

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