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The measure of Egypt

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If modern readers know of Claude-Étienne Savary's account of travel in Egypt, most likely it is by way of Immanuel Kant's citation. In his 'Seventeenth Letter on Egypt', Savary writes of the difficulty he encountered while viewing the pyramids in Giza:

> Arrived at the foot of the pyramid, we made a tour of it, contemplating it with a sort of horror. When viewed close, it seems to be made of masses of rocks; but at a hundred paces distance, the largeness of the stones is lost in the immensity of the whole, and they appear very small.[1]

In the *Third Critique*, Kant refers to Savary's remarks to illustrate the cognitive conflict between apprehension and comprehension that occurs in the experience of the sublime. In Kant's text, Savary's text is reduced to a description of how travellers should position themselves so as to experience the object as a totality, that is, both in terms of the impressions it creates when viewed *closely* and those when viewed from a *distance*:

> Hence can be explained what Savary remarks, in his account of Egypt, viz. that we must keep from going very near the Pyramids just as much as we keep from going too far from them, in order to get the full emotional effect of their size. For if we are too far away, the parts to be apprehended (the stones lying one over the other) are only obscurely represented, and the representation of them produces no effect upon the aesthetical judgment of the subject. But if we are very near, the eye requires some time to complete the apprehension of the tiers from the bottom up to the apex, and then the first tiers are always partly forgotten before the imagination has taken in the last, and so the comprehension of them is never complete.[2]

Following Kant, readers of Savary[3] have tended to confine their observations to the first section of his description of the pyramids, the section in which he describes the experience of his journey from 'Grand Cairo': the slow approach toward the Giza plateau when the masses suddenly loom in the moonlight 'like two points of rock crowned by the clouds'; his descent into the suffocating interior passages of the pyramids; and, finally, from the summit, the prospect of the sun rising over the eastern bank of the Nile. It is this last spectacle, the view from (not of) the pyramid, that is the climax of Savary's description of the pyramid and, arguably, the moment closest to what Kant would later describe as the sublime. Savary exclaims, 'There is not in the universe a more varied, a more magnificent, and more awful spectacle. It elevates the mind, and forces it to contemplation.'[4]

Kant's citation of Savary has led readers to look for evidence for the way that aesthetic categories informed travel writing of the period. But the focus on aesthetics marginalizes the tradition of travel writing on Egypt with which

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Savary's text converses. In this tradition there is no object so often described as the Great Pyramid of Giza. At the same time, there is no object so often described as indescribable. Just as all travel accounts about Egypt depict the pyramid, most also discuss the problems the object posed for understanding, experience and writing. Savary and many of his contemporaries address the historical problems posed by the pyramid, since it was older than classical antiquity and its origins unknown until the mid-nineteenth century. Savary and others also discuss the phenomenological problems posed by the pyramid's massive size: it was difficult to apprehend, let alone comprehend, in a single experience. But above all, Savary and others mention the question of representation: how were they to describe the object, or their experience, in mere words or images? The truthfulness of an eighteenth-century account like Savary's was based in the direct experience and observation. This was a shift from earlier styles of writing in which it was deemed more authoritative to cite the accounts of classical authorities than to present the description of one's own experience. Empirical theory demanded that knowledge be direct rather than received and that it be presented with as little mediation as possible. If mediation was the intractable problem for this theory of knowledge, transparency was the best metaphor for describing the ideal form by which an object should be represented. Beneath the language of eighteenth-century travel accounts there is a recurring desire to elide the process of writing with that of experience. Or, to put it differently, to render visible to readers the direct experience of the traveller. Ideally, nothing would intervene between the objects originally experienced and the gaze of European audiences who read travel descriptions.

This model of travel writing was rooted in an essential distinction between clarity and obscurity, transparency and distortion—a distinction which fully permeated the writing but which also proved untenable, at least insofar as writers recognized mediation to be the condition of all representation. Within travel writing, the desire for unmediated representation was also tied to the technique of verifiability. Most travel accounts were voiced in the first-person, with the authority of the writer serving to ground the actuality of the observations described. The voice of the individual author might lend a sense of immediacy to the empirical description, but it also had the unfortunate effect of highlighting the partial and merely relative nature of the experience asserted. Another technique of verification, measurement, had an advantage over this subject-intensive narrative technique in that it seemed to allow the observer to transcend her own partial experience by rendering descriptions which were as 'immediately material' as the objects themselves. Verifiability through measurement promised that the descriptions of objects could be compared with the objects measured. It also promised that others could repeat the process and arrive at the same descriptions or correct them, a ritual in which most travellers participated. However, this technique did not necessarily transcend the problem of relativity: for measurements to describe in a stable or 'objective' way, they needed a standard that was absolute, or at least one agreed upon by all participants. For Europeans of the eighteenth century, there was no consensus on such a standard.

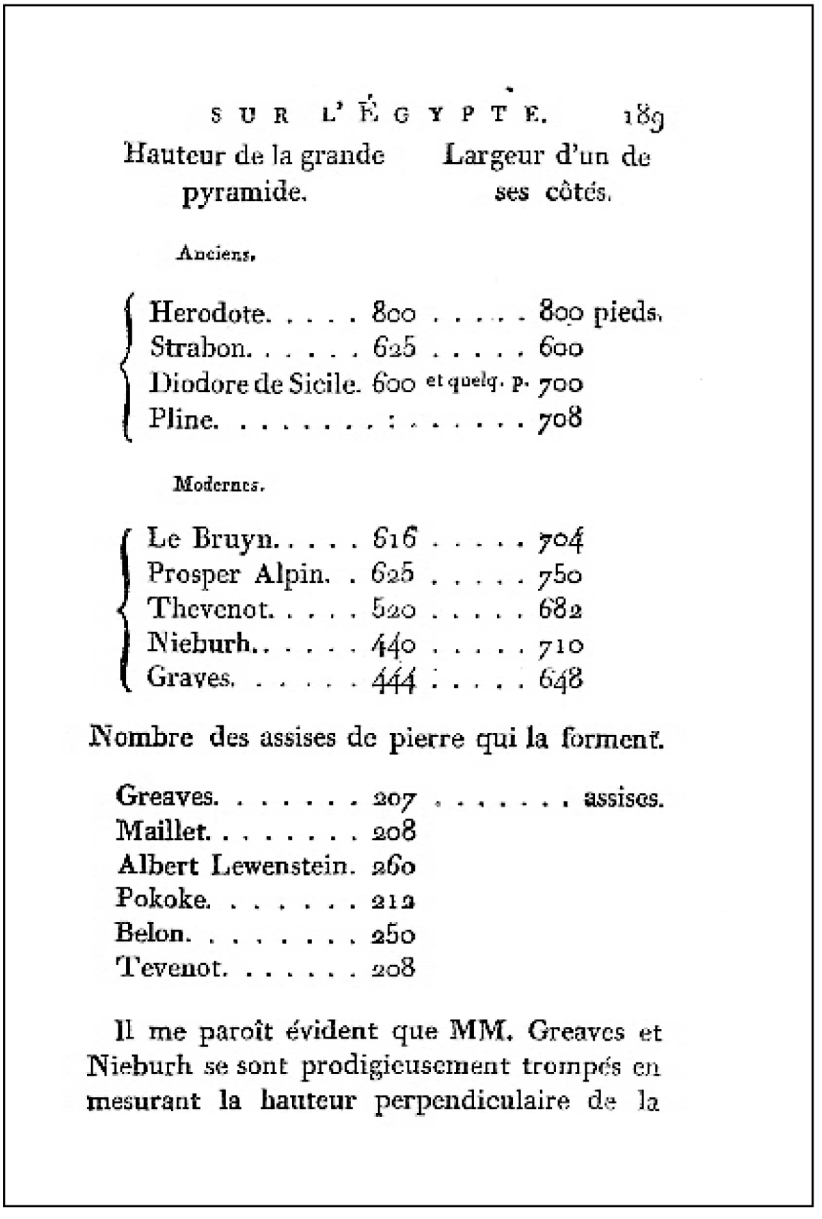
The apotheosis of transparent description was to transcend verbal and narrative forms of representation, to render the lens of the traveller invisible, and to transmit

the objects observed in travel to readers so as to make it appear that they were experiencing them directly. As the metaphors of clarity and transparency tell us, travel writing's desire to transcend mediation was figured largely in terms of visuality. In practice, most of the bent for visual objectivity entailed methods of observation and an education in drafting techniques. But part of it also entailed the mechanization of observation, the use of the camera obscura and measuring instruments, which sought to transcend the sources of relativity and distortion in perception and representation, the organs and the limbs of the body. These techniques and methods sought to skirt the anxieties raised by the partiality of corporeal knowledge, and render instead subjectless, 'unmediated' representations of its object.

Seeking to render descriptions of the pyramid that were empirical and immediate travellers like Savary would 'draw' the object in visual image and, most importantly, in number. Reading Savary's description of the pyramid beyond the passage cited by Kant, we find that the description of aesthetic experience was less important compared to its concern with measurement. Rather than elaborating on the subject of sensory experience, Savary's text comments upon the problematic relationship between measure and knowledge more generally. 'To determine [the pyramid's] dimensions is still a problem', Savary writes. 'From the time of Herodotus to our days, it has been measured by a great number of travellers and learned men, and their different calculations, far from clearing up doubts, have only increased the uncertainty.'[5] Savary's words are an understatement: measurements of the pyramid, and the frustrations endured in the attempt to measure, were among the most prominent features of European travel description on Egypt. In fact, the subsequent pages in Savary's account, which far outnumber those containing descriptions of experience, are dedicated to an extensive review of metrological debates about the pyramid and begin with 'a table of them, which will serve at least to prove how difficult it is to come at the truth' (Figure 1).

Savary's table considers at great length the measurements made by others. Savary corrects the measurements of some by reference to others, as for instance when he notes that Greaves and Nieburh (sic) are 'hugely mistaken'. For the most part his participation in the debate is limited to observation and commentary. Yet Savary's intervention goes beyond this. As the form of the table suggests, his presentation gives order to the problem of measure and organizes the sum of figures within a single taxonomy.

One category of the table deserves particular attention. The table summarizes the most authoritative measures in the familiar form of the debate between the ancients and the moderns (*anciens* and *modernes*).[6] It clearly shows that travellers had long been correcting each other and revising their measurement of the height (*hauteur*) downwards. The chart also marks an innovation that had occupied modern travellers: the measurement of the pyramid's height and width (*largeur*), and also its layers of stone (*assises de pierre*). This innovation is symptomatic of a development within modern travel writing on Egypt whereby travellers describe the pyramids at Giza according to empirical observation. As Savary's table illustrates, the accuracy of the number was certainly paramount—on this point, the moderns and the ancients agreed even when their measurements diverged. The difference was that while the first set of measures (height and width) rendered the



SUR L'ÉGYPTE. 189

	Hauteur de la grande pyramide.	Largeur d'un de ses côtés.
Anciens.		
Herodote.	800	800 pieds.
Strabon.	625	600
Diodore de Sicile.	600 et quelq. p.	700
Pline.		708
Modernes.		
Le Bruyn.	616	704
Prosper Alpin.	625	750
Thevenot.	520	682
Nieburh.	440	710
Graves.	444	648

Nombre des assises de pierre qui la forment.

Greaves.	207 assises.
Maillet.	208
Albert Lewenstein.	260
Pokoke.	212
Belon.	250
Tevenot.	208

Il me paroît évident que MM. Greaves et Nieburh se sont prodigieusement trompés en mesurant la hauteur perpendiculaire de la

Figure 1 Page 189 of Savary's *Lettres sur l'Égypte*: table of comparative measurement indicating the height of the Great Pyramid and the width of one of its sides according to various authorities, ancient and modern, with modern counts of the number of layers of stone (Claude-Étienne Savary, *Lettres sur l'Égypte*, Paris: Bleuet, an VII [1798])

pyramid as if it were a geometric form, the second, modern set (the layers of stone) rendered the pyramid more as a jagged, irregular stack of rocks. This increasing attention to the irregularity and particularity of single objects has been described

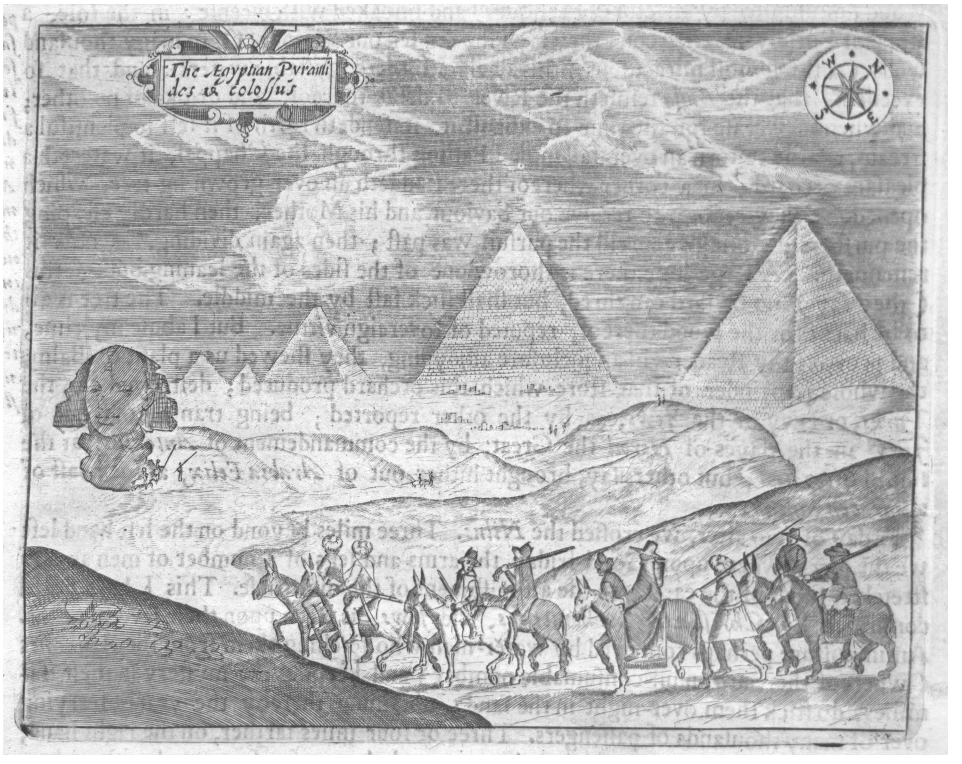


Figure 2 Page 100 of *Sandys' Travels*: an example of the early modern drawing style depicting the Giza pyramids as geometrical shapes (George Sandys, *Sandys' Travels, Containing an History of the Original and Present State of the Turkish Empire: Their Laws, Government, Policy, Military Force, Courts of Justice, and Commerce*, London: R. Clavel, 1670)

by Barbara Stafford in terms of rendering figures of 'substance'.[7] Travellers had long described the pyramid as if it were a smooth, even abstract shape (Figure 2). Yet by the eighteenth century, travellers increasingly depicted it as a particular extension in time and space (Figure 3).

The issues raised by Savary's table of measures would not be so striking if they did not mark an end of eighteenth-century travel writing on Egypt, and the beginning of a new colonial era. It is significant that Bonaparte relied heavily on Savary's travel account as he prepared to invade the country in 1798. For Bonaparte, the measure of the pyramid was not merely an issue of curiosity: to know the height of the object would help deduce the elevation of the Red Sea in relation to the Mediterranean—a useful calculation for the canal proposed during the short-lived French Occupation of Egypt (1798–1801). Moreover, if measured correctly, the pyramid could be used to determine the geographic positions of important places throughout the Egyptian landscape. Spurred on by images and figures provided by Savary and others, the pyramid became the central landmark in the French colonial survey of the Egyptian landscape.

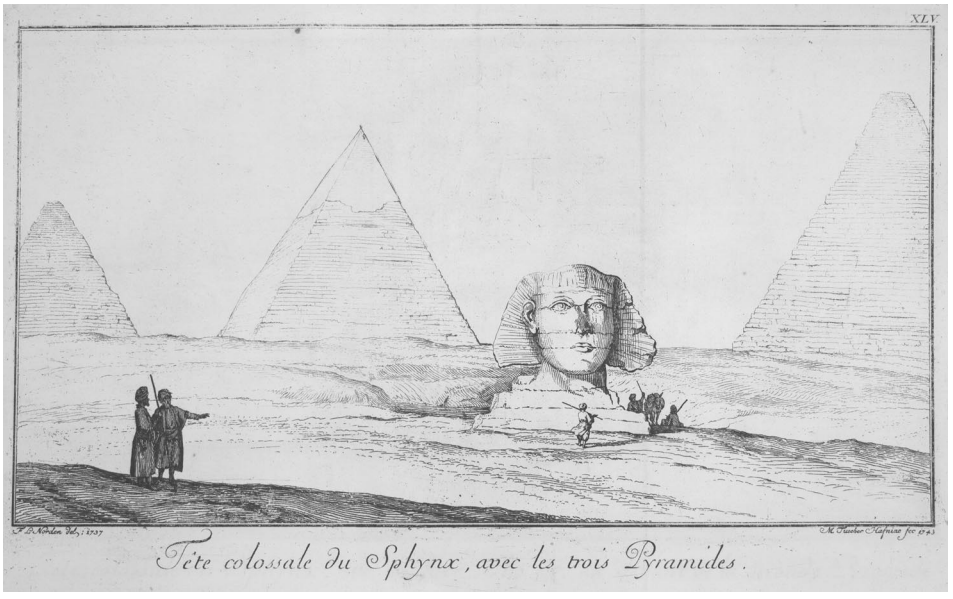


Figure 3 Plate 45 of Norden's *Travels in Egypt and Nubia*, 'Colossal head of the Sphinx, with the three pyramids'[8] (Frederick Lewis Norden, *Travels in Egypt and Nubia*, London: Lockyer Davis and Charles Reymers, 1757)

Although the measure of the pyramid remained of paramount significance during the French occupation, a sign of control over Egypt, the presentation of measure began to change. Measure in eighteenth-century travel accounts like Savary's was a self-consciously relativist practice. That is, it was part of an accumulating system of descriptions whose truths were judged with regard to one another. After 1800, a new mode of measure came to dominate in published accounts of travel in Egypt. This mode of numerical description presented claims whose truth lay in their indexical quality, that is, not in relation to previous measurements but, rather, purely to the physical matter to which they referred. It is not an exaggeration to say that in reading descriptions of the pyramid from this time, we observe a subtle, but crucial, epistemic shift in the modern European tradition of representing Egypt: from descriptions in which measurements are presented as relative (as one claim among others), to descriptions in which measurements are presented as wholly indexical (not claims, but facts, whose truth is inseparable from their referents).[9] The significance of this transformation in claims on Egypt is multiple.

First, the shift that occurred in numerical description, the shift away from a self-referential tropological system toward a purely indexical language, became the language of later colonial writing on Egypt. Yet, to trace this emergence is not to write a history of pure ideas: the new indexical claims about the pyramid, and by extension on Egypt, were themselves enabled by direct military occupation of the country.

Second, the question raised by this shift is especially topical to postcolonial theory since there is some debate (or at least ambiguity) in our field as to whether the power of colonial discourse lies in its tropological character (how it works as an imaginative system composed of metaphors), or whether its force derives from its indexical character (how it lays claim to a world of referents). To take, for the moment, only one striking (though foundational) example of this ambiguity, an example to which I will return, Edward Said's *Orientalism* presents two conflicting definitions of colonial discourse: the first is indexical and historical; the second, a synchronic, closed system of tropes. Others have noted how Said's definition is deeply conflicted. What I want to suggest is that this contradiction between the two definitions (trope versus index) might be resolved by seeing them as different moments in the development of a history of colonial representations.

Third, the question of epistemic change itself touches on another concern at the heart of postcolonial theory, namely the term 'power/knowledge'. Although our field is well informed by Foucault, we are often reluctant to disaggregate the terms 'power' and 'knowledge' from one another. For Foucault, the analytic potential of 'power/knowledge' lay in how it opened onto historical questions about epistemes. The 'forward slash' (the virgule as opposed to hyphen) separates the term into two distinct fractions, whose relation is neither one of identity nor direct causality, but rather of dynamic pressures. We will recall that Foucault never argued that knowledge is power in the abstract sense; rather, he described how knowledge can create or sustain relations of domination in specific contexts and institutions, and how such institutions produced their truths. To enquire into 'knowledge/power' is thus to ask: what kind of knowledge? What kinds of knowledge enable what kinds of power relations? And what kinds of power relations enable what kinds of knowledge?

In this essay, I will first outline the travel-writing tradition of measure and numerical description, that is, the broad discursive context in which accounts like Savary's appeared. To bring focus to this context, and how it changed, I will concentrate on how two epistemologically distinguishable authors attempted to tackle the difficulties that the pyramid posed for empirical experience and textual representation: one text was published in 1646, the other in 1800. The choice of the latter text is not accidental, since it coincides with the first European attempt to colonize Egypt and illustrates the degree to which number and measure were imbricated in colonization. I will then use the epistemic shift that took place around 1800 to address questions raised by the ambiguity that the question of indexicality has often had in postcolonial theory. Finally, I will return to another landmark figure in travel accounts of Egypt, the *Miqyas*, or Nilometer, to show how these epistemic shifts marked the physical landscape of the country.

Measuring the pyramid

> But because the judging of magnitude depends, not merely on multiplicity (number), but also on the magnitude of the unit (the measure) and since, to judge of the magnitude of this latter again requires another as measure with which it can be compared, we see that the determination of the magnitude of

> phenomena can supply no absolute concept whatever of magnitude, but only a comparative one.[10]

Lists of measurements, like Savary's table and subsequent discussion, were common in travel accounts of the pyramids of Egypt. How much was there to observe and measure? In the accounts we find an impressive, heterogeneous list: the age of the structure, the distance between it and other objects, its height, the length of each side, the length of its base, the angles of the sides to one another and to the base, the height of each step, the number of steps, the location of its entrance, the dimensions of the interior cavities, the diversity of flora and fauna thriving around the objects, the age and compounds of minerals composing the rock. Once these initial notes had been made, one could calculate: the actual height of the monument when it was first built as opposed to its present state of partial deterioration; where it stood with regard to cartographic abstractions such as latitude (and later, longitude); its elevation above sea level; how much it cost to build; the wages of the labourers; the average size of its stones; the volume of the mass; the number of stones that went into its construction; how the stones were raised; its original architectural use; the ratio of averages and sums as compared to readings of the Nilometer and the significance of any of these numbers with regard to astronomical observations or astrological systems. Though separated by 150 years, two accounts stand out in modern travel writing for the comprehensiveness of their treatment of the pyramid: John Greaves's *Pyramidographia* (1646), and Jacques Grobert's *Description des Pyramides de Ghizé* (1800).

Greaves's number-intensive account of travel in Egypt is a clear example of the anti-narrative bias in modern travel writing: besides their metrological value, lists of numbers were important because they interrupted the flow of the itinerary plot. While in many descriptions of the pyramid, estimates on height and width prattle on for so long that they overwhelm the story around them, Greaves's account does mark an extreme. Greaves relegates the narrative of travel experience to the margins of his text. The main body of the text itself consists of an extended debate on the measurement of the pyramids. Greaves's account is wholly object-focused and in this sense appears highly indexical: it first places the object in a historical and philosophical narrative by establishing when it was built, why it was built and the uses to which it was put. But eventually it moves toward the detailed description of the pyramid as an extension in space—establishing *where* it is situated and, finally, *what* its physical dimensions are. Such description relies heavily on number.

Greaves proceeds along a track familiar to other travel-authors of the period, negotiating between the received authority of ancient accounts and the new authority of empirical observation:

> But seeing the vicissitudes, and revolutions of times, have deprived us of these [ancient accounts], whilst the Pyramids have been too great to be consumed, it will be no superfluous labour to imitate the examples of the Ancients, and to supply the losse of them, by giving a distinct narration to severall dimensions, and proportions of these Pyramids. In which I shall tread in as eeven a path as I can, between truth, and the traditions of such of the Ancients, as are still extant: First, putting down those relations, which by them have been transmitted to us: and next, shewing in what manner, upon examination, I found the Pyramids in

> the yeares [1638–39] …. For I twice went to Grand Cairo from Alexandria, and from thence into the deserts, for the greater certainty to view them: carrying with me a radius of ten feet most accurately divided, besides some other instruments, for the fuller discovery of the truth.[11]

Greaves's method toward Greek and Roman travel accounts is one of conversation and dialogue. He periodically rejects their accounts in favour of his own observations, but shows no special favour towards the moderns. A declarative tone, the voice of unmediated observation, comes to dominate the description:

> The first and fairest of the three greater Pyramids is situated on the top of a rocky hill, in the sandy desert of Libya, about a quarter of a mile distant to the West, from the plaines of Aegypt: above which the rocke riseth an hundred feet, or better, with a gentle and easy ascent. Upon this advantageous rise, and upon this solid foundation the Pyramid is erected: the height of the situation adding to the beauty of the work, and the solidity of the rocke giving the superstructure a permanent, and stable support.[12]

The description of substance turns toward measurement, the division of the object into increasingly smaller—more precise—units. The description turns toward a series of debates about the difficulty of creating coherent measurement. Part of the difficulty is arithmetic, a problem of numbers. For instance, Greaves repeatedly summarizes the measurements of other authors in order to show the utter lack of consensus between their calculations:

> If we imagine upon the sides of the basis, which is perfectly square, foure equilaterall triangles mutually propending, and inclining, till they all meet on high as it were in a point (for so the top seems to them which stand below) then shall we have a true notion, of the just dimension, and figure of this Pyramid: the perimeter of each triangle comprehending two thousand seventy nine feet (besides the latitude of a little plain, or flat on the top) and the perimeter of the basis two thousand seven hundred seventy two feet. Whereby the whole area of the basis (to proportion it to our measures) conteins foure hundred eighty thousand, two hundred forty nine square feet, or eleven English acres of ground, and 1089 or 43560 parts of an acre. A proportion so monstrous, that if the Ancients did not attest as much, and some of them describe it to be more, this age would hardly be induced to give credit to it.[13]

The debate only intensifies: the measurements of Herodotus, Pliny, Diodorus Sicilus are all put on display to show contradictions and the impossibility of their arithmetic. Greaves gives his own figures, though always in conversation with those of others. What emerges is not a measure of an empirical object, but a lengthy commentary about numbers, standards, and the disagreements of authors. Certainly, the empirical measure of the pyramid depicts its object as a particular substance extending in time and space. Yet, the description constantly turns from its putative object, toward commentary on the problems associated with measure.

Greaves was not interested in measuring the pyramids for the sake of exercise. In 'Discourse on the Roman Foot', a text appended to *Pyramidographia* in its eighteenth-century editions, Greaves takes up the issue of unit of measure again, asking about how one was to measure things by English feet: 'Who shall be that

perfect and square man from whom we may take the pattern of these measures? Or if there be any such, how shall we know him? Or how shall we be certain the ancients ever made choice of any such?'[14] Such questions were of direct relevance to descriptions of Egypt. Travellers often expressed an awareness that the units (inches, feet, miles, degrees, minutes) by which they measured Egypt were neither universally accepted nor internally stable. While travelling in Egypt, authors had to contend with the problem of correspondence between Egyptian scales of measure, systems for measuring distance, heat, calendrical time, weight, economic value and so on, and those used in England, France, and elsewhere in Europe. To travel in Egypt, to communicate with or represent it, the European traveller had to convert between foreign currencies, exchanging, finding equivalences. Only by such comparisons could one make the phenomena of Egypt significant for audiences at home, or for later travellers. While travelling, not only did Europeans encounter foreign systems, but the traditions of measure and classification among Europeans often varied according to the national origin, institutional location, and even the temperament of individual travellers. Moreover, standards were themselves in flux, as rationalists created new metrological orders that competed with one another. A list of the innovations in units of measure from the eighteenth century would have to include: new calendars; the metric system; new measures for temperature and heat; new geographies and cartographies; new theories and practices of economic value and exchange.[15]

As systems for representing the world, the new metrological systems of the eighteenth century acknowledged the threat of incoherence, which would make descriptions of the world appear relative, provincial or merely self-referential. Anxieties about relativity and communicability were built into the new, rational orders: the old system of measuring by feet (or digits, palms or cubits) varied notoriously by region and historical period; moreover, it had no necessary correlation to any transcendent value, nor to the things measured or the corporeal referents from which they (at least conceptually) derived. The new metrological systems attempted to solve this problem by fixing a 'natural' identity between certain units of measure and the material quantities they measured: the temperature or weight of water in various states at sea level as in centigrade and metric weight; or, in the case of the metric system of lengths, the fixing of a unit's value as a rationally derived fraction of an unchanging whole, the globe's circumference. For the purpose of standardizing and manipulating units of measure the new systems were an improvement over pre-existing systems, although that improvement was probably the result of a rationalized internal coherence of the measuring system. As far as grounding their representational coherence in a world of empirical objects, the new systems of measure tried to find universally recognizable material elements—such as water—which could stand as empirical markers of value.

These questions, raised in Greaves's treatise on the foot and elsewhere, constantly recur in eighteenth-century travel accounts of Egypt: how was one best to measure the pyramid? What systems, standards and methods were most adequate to the task? How does one legitimate using one particular system of measure as opposed to others? How would one establish correspondences to alternative systems of measure? Could one ground the authority of measure in the

empirical world? Were there empirical objects that could guarantee the referentiality and coherence of measure?

Read in light of his reflection on units of measure, we see that Greaves's measurement of the pyramid sought to produce more than a declarative statement about an empirical thing. The significance of measuring the Great Pyramid for his account lay precisely in how it would serve as a particular object set in time and space, and also a fixed point of reference. By portraying the pyramid as sign and physical referent, he sought to bridge the gap between its existence in language and its existence outside of it. By means of this, one could begin to make equivalences among various systems of measure, modern and ancient. Greaves's description of the pyramid is also an historical enquiry into the value of various systems and units of measure. The empirical object serves as a standard by which he can begin to compare the Roman foot to the English foot. More than that, Greaves asserts that he means to measure the object in order to use it as a 'lasting monument' by which to 'transmit to posterity' the 'measures of all nations', and finally: 'Had this been formerly done by mathematicians, choosing for the purpose some proper places not exposed to the injury of time, we should not at present be so uncertain in the search after the measures of the ancients.'[16] Greaves's goal is thus not merely to 'transmit to posterity' equivalences between all systems of measure; he also seeks to establish coherent, standard equivalences for units within the contemporary English system of feet as well. Far from pinning Egypt down as the object of a unified European gaze, accounts like Greaves's tell the story of trial and error, of metrological experiments conducted in the laboratory of Egypt. Such accounts sought to establish coherent metrological systems far more than they tried to lay claim to Egypt itself.

These issues are developed in the work of Michel Foucault who linked measure to extended processes of comparison. In his account of Cartesian suspicion toward classical notions of *resemblance*, Foucault observes the centrality of *comparison* to modern modes of understanding. Citing Descartes, Foucault writes, 'all knowledge "is obtained by the comparison of two or more things with each other"'.[17] Reproducing a division made by Descartes, Foucault asserts that comparison consists of two parts, 'measurement' and 'order'.[18] The knowledge produced by 'measurement' works by disaggregating the object into units:

> One can measure sizes or multiplicities, in other words continuous sizes or discontinuous sizes; but in both cases the use of measurement presupposes that … one considers the whole first and then divides it up into parts. This division results in a number of units, of which some are merely conventional or 'borrowed' (in the case of continuous size) and others (in the case of multiplicities or discontinuous sizes) are the units of arithmetic. The comparison of two sizes or two multiplicities requires, in any case, that they both be analyzed according to a common unit; so that comparison effected according to measurement is reducible, in every case, to the arithmetical relations of equality and inequality. Measurement enables us to analyze like things according to the calculable form of identity and difference.[19]

The process of 'measurement' assumes the whole of the object, then performs a division into ever smaller units: if single objects, then the division enumerates 'conventional' units of measure; if a series of objects, then the division marks out

units of arithmetic, numbers. In Foucault's account, the coherence of 'measurement' does not derive from the figurative quality of the number, but from the 'unit' by which the measurement is made. In other words, the coherence and power of such numerical descriptions stems not from the mere use of numbers, but from the system of units to which numbers are attached as adjectives. The unit is what allows for different objects of different size to be compared to one another in a system of social meanings, and it is also an actual thing. The unit of measure is thus a special type of signifier, whose signified is supposed to be identical to its referent. In contrast to 'measure', Foucault describes 'order' thus, once more relying upon formulations from Descartes:

> Order, on the other hand, is established without reference to an exterior unit: 'I can recognize, in effect, what the order is that exists between A and B without considering anything apart from those two outer terms'; one cannot know the order of things 'in their isolated nature', but by discovering that which is the simplest, then that which is the next simplest, one can progress inevitably to the most complex things of all. Whereas comparison by measurement requires a division to begin from, then the application of a common unit, here, comparison and order are one and the same thing: comparison by means of order is a simple act which enables us to pass from one term to another, then to a third, etc., by means of an 'absolutely uninterrupted' movement. In this way we establish series in which the first term is a nature that we may intuit independently of any other nature; and in which the other terms are established according to increasing differences.[20]

Unlike measure, what Foucault calls 'order' takes the empirical object itself—not its equivalence in unit—as the term on which comparisons are made. The thing is not represented by units, nor translated into exchangeable signs, but rather stands on its own as a unique sign. Order generates a kind of figurative system where things, being also signs, converse in the intelligible language of comparison. But unlike the system of measure, whose figure—the unit—generates comparisons based on the principle of likeness (and interchangeability), the rhetorical system of order generates comparisons based on difference (and particularity).

As Greaves's texts indicate, the coherence of the foot system could not be accomplished solely through what Foucault calls measure. On the contrary, all that measure could do was to divide the object according to units of exchange, units whose values were by no means always stable, intelligible, or even exchangeable. Indeed, the resemblances (such as that between the Roman and English 'foot') that permeated through the units of measure were the site of ongoing slippages, exchanges that produced internal inconsistencies and also worked against authoritative claims about external reference. Greaves's account takes this into consideration by appending a claim about the unique iconic status of the pyramid, thus linking it to Foucault's other mode of comparison, order. In one place, Greaves describes the measurement he makes upon a small part of the rock of the pyramid—marking the thing itself so that its particularity would become an empirical standard for measure. Elsewhere, he describes setting up a series of Mediterranean landmarks, by comparing portions of the pyramid to other unique monuments and 'permanent' markers: part of Pompey's Pillar in Alexandria, 'the

rock at Terracina on the Via Appia', 'the Gate at the Pantheon', and 'the Porta Sancta of St. Peter's Church'.[21] Greaves's method for dealing with the figurative instability of the unit of measure—its unlimited exchangeability, its inability to refer consistently to a single object, and its inability to cohere within a system of convention—is to tie it to a single object, such as the pyramid, whose figurative difference would be the ground of its referential capacities—to other texts, to his text, to other objects. By representing the pyramid as both empirical thing and iconic sign, Greaves's discourse suggests that the categories of measure and order might be put to use together so as to guarantee the grounds of indexical representation. By describing the pyramid in terms that invoke the comparison of measure and also that of order, Greaves strives to create an absolute, rather than comparative, system of representation. Each extra-textual indexical gesture is secured by a complementary nod toward the interior of textual representation. In this sense, this form of indexicality does not point merely outward from the text to a world of things, but also back to the discursive foundations which make representation possible. It is not that Greaves's text is merely self-referential, but rather that it conveys an understanding that indexical gestures to extra-textual referents happen within the rhetoric of accounts and within a growing tradition of representations of the same objects.

In contrast, Jacques Grobert's *Description des Pyramides de Ghizé* (1800) is far more confident about the ability of his figures to cling to the things he describes. For Greaves, measuring the pyramid would pin together two forms of metrology, Foucault's 'measure' and 'order', so as to render both coherent and stable. In Grobert there is little, if any, anxiety about the coherence of measure. Indeed, as we shall see, what he calls 'difficulty' is not a sign of anxiety so much as its opposite.

As *Chef de Brigade d'artellerie*, Jacques Grobert's talents for measure and calculation were put to use often during the three-year French occupation. During a 1799 state function in Cairo, he was in charge of the fireworks spectacle that terrified the city's inhabitants.[22] Most likely, he also played a key role in the violent suppression of the Cairo uprisings, in which the superior firepower of French artillery proved decisive against the Egyptian barricades, and which resulted in the destruction of large parts of old Cairo and the looting of al-Azhar.[23] Grobert's *Description* was one of the first works from the French occupation to be published, appearing before the French army itself was evacuated. It remained the authoritative account of the pyramids until the appearance of the encyclopedic work, *La Description de l'Égypte*. There are good reasons to link these two texts, mostly because the style of Grobert's text prefigures that of the later work. In many ways, Grobert's text is the first of a new style of travel writing which, after its systematic codification in *La Description de l'Égypte*, comes to dominate nineteenth-century 'scientific' travel writing on Egypt.

'Difficulty' is a key word in Grobert's text, and appears often in his description of the method, instruments and circumstances of measure. He flaunts the difficulty of the task of measuring the pyramids as confirmation of his text's veracity. Grobert describes at great length the special difficulties he had as a member of an occupying army fighting the resistance of Egyptians:

> It is useful to inform readers that the desert approach [to the pyramid] is never free from danger, especially that part where the Bahariyya Bedouins make their frequent incursions. They are the most numerous, and the most intractable enemies of Christians, the most obstinate foes of the other tribes who run along the Nile from Saqqara to Beni Soueif. They frequently fire upon river boats on the Nile. I was attacked by them twice while going to Rosetta. On our first march, they kidnapped a young and worthy officer, the aide-de-camp of the Chief General. They killed General Donmartin. It is they who ravage the fertile fields which surround Giza, who carry off farm animals and spare not even the native inhabitants themselves. This is what motivated the precautions, which were more or less at all times necessary, for visiting the pyramids and for staying in that spot.[24]

Despite troop shortages due to ongoing clashes, Grobert's survey of the pyramid was taken seriously enough to warrant military escorts. Grobert's account is noteworthy for the way in which Egyptians appear in the representation of the pyramid. Or rather, for the way they appear as obstructions to European representation. This theme becomes central in later European travel accounts of the pyramids. Alongside the difficulty of these conditions, Grobert discusses difficulties associated with instruments and methods of measure. For instance, the method of employing a length of cord is dismissed by the sceptical Grobert:

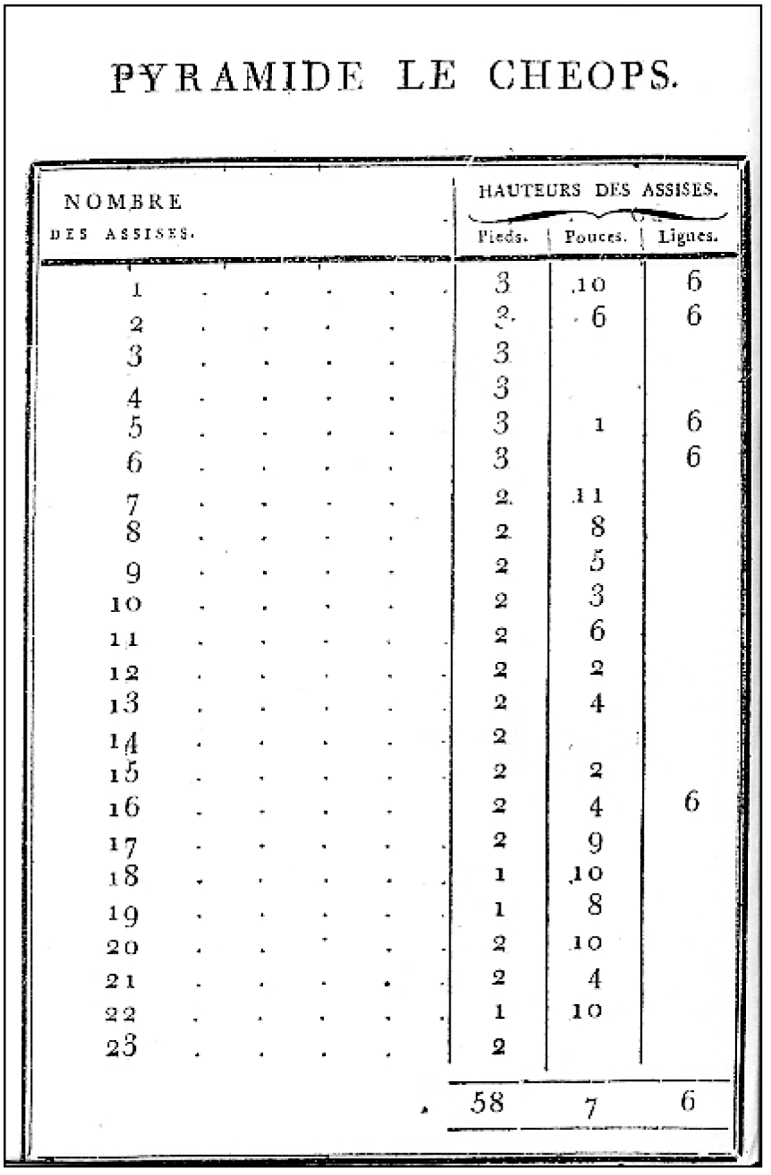
> It is as important and difficult to measure the base of the pyramids as it is the height, because every geometric method becomes impossible without their measure. If one were to measure [the pyramid] in its actual condition, one would come up with false results: first, because a rope, or similar means, when stretched, breaks and bows in the angles of the layers ….[25]

Throughout these passages, Grobert describes a growing conundrum: he can either measure the pyramid as an actually existing substance (whose size is too large to measure by conventional means) or he can measure the pyramid as a pure form (whose existing shape is not a geometrical abstraction) by trigonometry. The empirical method is as impossible as the trigonometrical method is false. Furthermore, the instruments of measure he would like to have used are also rendered useless by the difficulties posed by the object's size and its environment:

> Without attaining the base, the gramomètre will not render a precise measure. The frequent and exaggerated movements of the sun make necessary other precautions, precautions which are possible, but far-fetched and thus very difficult in this place. Finally, the use of a barometer or any other such instrument, is very unreliable in [such] a climate where the heat fluctuates so noticeably and [with it] the metals and glass tubes.[26]

Grobert's solution to this difficulty was an ingenious one: 'These reasons compelled me to employ a slow, heavy but reliable method carrying out, as much as I could, a measure of the surfaces.'[27] Rather than measuring the entirety of the object at one time, a labour he admits to be beyond his instruments and ability, Grobert first measures the size of each step. He does this quite precisely, compiling a table recording the vertical dimension of the steps (*hauteurs des assises*) in feet, inches and fractions (Figure 4).

These figures, computed for each of the monument's steps (counted to be 205),



PYRAMIDE LE CHEOPS.

NOMBRE DES ASSISES.	HAUTEURS DES ASSISES. Pieds.	Pouces.	Lignes.
1	3	10	6
2	3	6	6
3	3		
4	3		
5	3	1	6
6	3		6
7	2	11	
8	2	8	
9	2	5	
10	2	3	
11	2	6	
12	2	2	
13	2	4	
14	2		
15	2	2	
16	2	4	6
17	2	9	
18	1	10	
19	1	8	
20	2	10	
21	2	4	
22	1	10	
23	2		
	58	7	6

Figure 4 Page 49 of Grobert's *Description des Pyramides*: first page of table of non-comparative style of measurement, indicating the various layers of the pyramid, with the height of each measured in feet, inches and lignes (Jacques Grobert, *Description des Pyramides de Ghizé de la Ville du Kaire et de ses Environs*, Paris: Logerot-Petiet, 1800)

could then be added to one another, or manipulated to calculate other data about the object.[28] Thus, not only did Grobert deduce the total height of the monument with exceeding accuracy, but he arrived at the average and mean height of each

step, the pyramid's middle point, its original height (calculated to be 208 steps) and so on.

Measure in Grobert has a different status than it has in Greaves, Savary or others before him. Most importantly, it has moved away from the dialogic model: measure is not an asserted point so much as a logical statement. The description of Egypt is no longer a matter of rhetoric, but of science. Throughout Grobert's account, the debate with the ancients (and even with contemporary moderns) is made irrelevant: while Grobert does criticize Maillet[29] and Volney[30] for the incorrectness of their measures, Grobert's numbers are not meant to be compared to the numbers compiled by others, but rather only to the thing to which they point. While comparison has remained the method of Grobert's measure, it is a comparison of numerical figures not to others within a tradition of travel writing, but solely to their referents. In this sense, the representation of number and that of measure cease to appear tropological, but are offered as purely indexical signs. This turning outwards is what sets apart the writing of Grobert from those who came before.

Insofar as it incorporates the complaint about difficulty as part of its new truth, Grobert's discourse continues to rest on one of the key rhetorical features of the older tradition of measure. Difficulty remains a key signal of the new procedure of measure, and thus needs to be developed with regard to conditions in which measure takes place, the instruments by which it is attained, and the method employed. Difficulty appears as an indicator of the new measure's accuracy. Yet, whereas trigonometry was the basis for most eighteenth-century measure, by the time of Grobert, the ground of measure was pure empiricism. No longer was the pyramid to be measured (or even depicted) as a geometric form, but rather as an irregular particularity. To accomplish this, the object was not measured as a totality, but rather according to a process of increasingly smaller division. In Grobert, as in most subsequent travel accounts, the table and the illustration are the privileged representational form where these issues find expression, where this division is retotalized. As such, what is articulated in the measure of the pyramid is not just a representation of the object, but also the grid under which this representation finds coherence and substance. Such grids had appeared before, but in Grobert's account, the grid has become naturalized as substance itself. The table is where the text's indexical capacity is organized and guaranteed, seemingly without narrative, without metaphors. It does not converse with the long tradition and debate about measure that came before: it now points directly toward its referents.

Number, measure, and postcolonial theory

In the critical analysis of colonial discourse, numbers have often been singled out as especially pernicious devices. As rhetorical figures, we often consider them suspicious because they turn human life into abstractions and render concrete situations into mystified concepts. The power, so the implicit theory goes, is that the numerical figure, *per se*, is what reifies complex forms of social life into homogenous equations. Yet, what the above accounts suggest is that it is wrong to think of the use of numbers in colonial discourse in the abstract, since their

significance is anything but uniform or universal. Moreover, if we seek to identify what is suspicious about the use of numerical description in types of colonial discourse, we need to recognize that such effects obtain only in specific historical contexts.

To give a foundational example, in *Orientalism*, Edward Said describes the link between number and totalizing forms of knowledge in terms of pathology. He writes, 'Rhetorically speaking, Orientalism is absolutely anatomical and *enumerative*: to use its vocabulary is to engage in the particularizing and dividing of things Oriental into manageable parts. Psychologically, Orientalism is a form of *paranoia*, knowledge of another kind, say, from ordinary historical knowledge.'[31] More recently, Arjun Appadurai has expanded on Said by focusing on how a discourse of numbers in nineteenth-century censuses shaped caste and land politics in colonial India. According to Appadurai, the rhetorical success of number derived from its ability to domesticate heterogeneous arrays of alien objects and bodies encountered in colonial settings: 'Illustrating literally the power of the textual "supplement" (in the deconstructionist usage), numerical tables, figures, and charts allowed the contingency—the sheer narrative clutter of prose descriptions of the colonial landscape—to be domesticated into the abstract, precise, complete, and cool idiom of number.'[32] As for the ability of numbers to act upon the things and human bodies to which they refer, Appadurai writes,

> [Colonial] body counts create not only types and classes … but also homogenous bodies (within categories) because number, by its nature, flattens idiosyncrasies and creates boundaries around these homogenous bodies as it performatively limits their extent. In this latter regard, statistics are to bodies and social types what maps are to territories: they flatten and enclose. The link between colonialism and orientalism, therefore, is most strongly reinforced not at the loci of classification and typification … but at the loci of enumeration, where bodies are counted, homogenized and bounded in their extent. Thus the unruly body of the colonial subject (fasting, feasting, hook swinging, abluting, burning, and bleeding) is recuperated through the language of numbers that allows these very bodies to be brought back, now counted and accounted, for the humdrum projects of taxation, sanitation, education, warfare, and loyalty.[33]

As Appadurai suggests, the census text gestures towards its referents in a performative way: the numerical language of statistics can be said to produce the very objects it claims merely to describe. But the language suggests two separate operations at work: on the one hand, the census creates ideational or textual effects ('types and classes'), while on the other, it 'flattens and encloses' the things to which it refers. There is an ambiguity, to which his earlier remark on the supplement is perhaps directed, about whether the number's authority stems from being one figure producing an imperial imagination, or whether its authority stems from its capacity to act upon an extra-textual world of empirical objects. This distinction is sharpened elsewhere in Appadurai's argument:

> Numbers regarding castes, villages, religious groups, yields, distances, and wells were part of a language of policy debate, in which their referential status quickly became far less important than their discursive importance in supporting or subverting various classificatory moves and the policy arguments based on them …. It is not so much that numbers did not serve a straightforward

> referential purpose in colonial pragmatics, serving to indicate features of the Indian social worlds to bureaucrats and politicians, but that this *referential* purpose was often not as important as the *rhetorical* purpose.[34]

The essay argues that the power of numbers lies in how they circulate as representations among other representations, not in their relation to things: 'There is ample evidence that the significance of these numbers was often either nonexistent or self-fulfilling, rather than principally referential to a complex reality external to the colonial state.'[35]

This model of a bifurcation between a closed figurative system and an extra-textual realm of referents is one that runs through many descriptions of the representational business of colonial states. Said's account of Orientalist discourse begins with a list of definitions that develop a problematic relationship between signs and substances:

> [1] The most readily accepted designation for Orientalism is an academic one, and indeed the label still serves in a number of academic institutions. Anyone who teaches, writes about, or researches the Orient—and this applies whether the person is an anthropologist, sociologist, historian, or philologist—either in its specific or its general aspects, is an Orientalist, and what he or she does is Orientalism …. [2] Related to this academic tradition, whose fortunes, transmigrations, specializations, and transmissions are in part the subject of this study, is a more general meaning for Orientalism. Orientalism is a style of thought based upon the ontological and epistemological distinction made between 'the Orient' and (most of the time) 'the Occident'…. [3] Here I come to the third meaning of Orientalism, which is something more historically and materially defined than either of the other two. Taking the late eighteenth century as a very roughly defined starting point Orientalism can be discussed and analyzed as the corporate institution for dealing with the Orient—dealing with it by making statements about it, authorizing views of it, describing it, by teaching it, settling it, ruling over it: in short, Orientalism as a Western style for dominating, restructuring, and having authority over the Orient.[36]

As James Clifford has noted, the three definitions offered by Said diverge in suggestive ways: 'One notices that in the first and third of Said's "meanings" Orientalism is concerned with something called the Orient, while in the second the Orient exists merely as the construct of a questionable mental operation.'[37] Clifford's observations underscore this opposition between rhetoric and reference. For instance, what is at issue in Said's second definition is not the relationship between 'the Orient' and some empirical place to which it refers, but rather how it works as a coherent system of binarized signs that speak only to each other: here, Orientalist discourse is a system of tropes. In contrast, the first and third definitions suggest that part of the issue is the Orientalist text's relationship to the things to which it points, that is, its indexical quality. For example, though Said strongly asserts that his argument is not about a mimetic relationship between signs and their referents, 'he is led to argue that a text or tradition distorts, dominates, or ignores some real or authentic feature of the Orient'.[38] Moreover, he quite forcefully argues that the representations he describes, imbricated as they are in discursive institutions, come to have empirical effects not only on 'the Orient' (in scare quotes) but also on the empirical place it names. In Said, the questions raised

around the distinction between trope and indexicality remain largely unresolved: the discourse of Orientalism is both a largely self-referential system of tropes and a system of indexical signs exerting force by pointing toward things and absorbing them.

The question of indexicality remains especially crucial for the reading of many kinds of colonial texts, particularly those texts whose authority rests on numerical figures. To return to the example of eighteenth-century accounts of Egypt: whether or not they could render an adequate representation of the pyramids at Giza, they did make compelling claims about referents. However, the rhetoric of number and measure in these earlier travel accounts shows a difference in how the relation between representations and things was understood. Namely, it suggests that the categories of trope and index were not opposed but deeply imbricated in one another in the eighteenth-century travel text. Part of the travel description included an examination of the discursive traditions by which earlier and contemporary measures were made. The indexicality they offered was one that referred as much to the larger tradition of representation as it did to empirical objects. In contrast, the nineteenth-century rhetoric of indexicality, of which Grobert's is an example, is a kind that disavows its figurative status, and claims to present purely extra-textual things. Each description offers itself as pure discovery, unmediated by the experience of others. The apparent certainty of these later, more 'factual' or 'scientific', accounts is rooted in a confidence about the naturalness and transparency of the taxonomic grids and categories guiding number and measure—a confidence that simply was not assumed by earlier writers.

al-Miqyas: measure and control

I have been arguing that this confidence is manifest in the new mode of travel description whose understanding of indexicality diverged from earlier ones. In that this new confident tone emerged to dominate much nineteenth-century travel discourse on Egypt, Grobert's text was a harbinger of colonial things to come. But still, where does such confidence come from? What gave Grobert the assuredness to measure the objects and to publish his numbers without regard for the debates that had consumed Greaves, Savary and dozens of others? It is tempting to ascribe Grobert's confidence to technological progress and military dominance. Unlike previous travellers, authors like Denon, Grobert and others who were working for the French occupation enjoyed unprecedented benefits of infrastructural support for their calculations. This included institutions like the Republican army and the newly established *Institut de l'Égypte*, which authorized and supported exploration and experimentation. In short, while European travellers had long enjoyed fairly generous access to the countryside of Egypt, the new generation of observer, active during the French occupation, maintained (however tenuous) control over it, and over the objects that were being described. Thus it is crucial to recognize that the shifting attitude toward the practice of measure, and its representation in travel literature, was made possible by direct colonial intervention.

No site of colonial intervention relates more to the question of measure and number in Egypt than the Nilometer, or *al-Miqyas* (literally, 'measure'). If the pyramid was the central focus of European efforts to measure Egypt, the *Miqyas*

served this function for Egypt's Muslim rulers. The *Miqyas*, built during the first century of Arab rule, was a prominent feature in eighteenth-century descriptions of Egypt, and thus was a critical discursive locus for questions about the coherence of measure. All the most cited travel accounts of the eighteenth century—Shaw,[39] Pococke,[40] Maillet and Perry[41]—debated at length the significance of the Nilometer, a building and instrument used to measure the height of the Nile by allowing water into a chamber along which there was a series of calibrated marks.[42] The traveller James Bruce, who explored the Nile and its sources during the 1770s, devotes a long essay to the *Miqyas*, and gives tables which chart his predecessors' arguments about the Nile's height at different times, and the long history of the structure in Egyptian society.[43] For Bruce, and others, the *Miqyas* was an instrument by which one could measure all of Egypt, and for this reason its description was crucial for the description of the country. Bruce's essay begins by contesting the well-known claim, made by Herodotus, that Egypt is 'the gift of the Nile'. Reading Herodotus literally, Bruce asserts that the land mass of Egypt is the accumulated result of silt carried by the Nile. The connection between the Nile and Egypt could never be underestimated: the river was the blood of agricultural life; its rising and falling determined when and how much to plant; its flooding determined how much arable land there would be each year. These unavoidable features of the Egyptian geography, clichés of travel writing, provide some explanation for the interest that travellers had in the Nilometer. Bruce noted that the Nilometer was not established to measure the accumulation of sediment, but rather to determine the basis for taxation in Egypt.[44] The yearly flooding brought rich sediment and temporarily decreased the amount of arable land. This in turn brought greater or lesser yields of produce. A detailed calculation of these rates was possible through the measure of the rise and fall, and hence these measures served to legitimate the grounds for greater or lower taxation of farmers.

Because of its central importance, the *Miqyas* served as another important landmark for articulating more general concerns about representation. For instance, in the midst of his account, Bruce pauses to criticize the tyrannical uses to which this measure had been put by Arab rulers. According to Bruce, 'Umar ibn al-'As (the first governor after the Muslim conquest of Egypt in 641 CE) would proclaim measurements, but would not allow others, especially Christians, to inspect the *Miqyas*. Nor would he give the standard from which the measurement was taken:

> [H]e ordered the daily increase to be proclaimed, but in a manner so unintelligible, that the Egyptians in general no longer understood it, nor do they understand it now; for, beginning at a given point, which was not the bottom of the Nilometer, he went on, telling the increase by subtracting from the upper division; so that as nobody knew the lower point from which he began, although they might comprehend how much it had risen since the crier proclaimed its increase, yet they never could know the height of the water that was in the Nilometer when the proclamation began, nor what the division was to which it had ascended on the pillar.[45]

When contextualized within the larger European interest in determining the measure of the Nile and quantifying the world of Egypt, Bruce's remarks show the

larger anxieties about representation most clearly: when the standard unit of a scale appears unfixed, the resulting measures cease to cohere. In such a case, the system of measure appears despotic and its representation arbitrary. It is significant that Bruce links the topic of Oriental despotism to questions of measure: in doing so, he equates universally recognizable scales with the political liberties of enlightened Europe. Thus, problems raised by measure were not merely limited to representational and epistemological concerns, but were also associated with the wider political and ethical concerns informing Orientalist and the emerging colonial discourse on Egypt.

As a recurring trope in travel accounts, the *Miqyas* served to articulate essential colonial distinctions between East and West, rationality and irrationality and so on. Yet, the *Miqyas* was more than just a figure appearing in Orientalist claims about the difference between 'Eastern' and 'Western' systems of measure. It was also a physical landmark, a machine by which Egypt was measured, and an instrument of government, an explicit instance of Foucault's relation of 'knowledge/power'. This aspect was not lost on the managers of the French occupation. Whereas earlier travellers had merely visited and described the *Miqyas*, the French were interested in using it 'to augment the advantages of possessing Egypt'.[46] In one of the first meetings of the *Institut de l'Égypte*, Bonaparte proposed a number of tasks aimed at increasing the productivity of Egypt's land and water resources. Not surprisingly, the *Miqyas* appears prominently on the list of development projects. Proposing a research commission, Bonaparte wanted a precise description of the site in order to see if sloughing machines (*machines mues*) might be employed there.[47] Work was begun to transform the *Miqyas*, though it is unclear what results, if any, were ever obtained.[48] What did it mean to try to change the physical structure of the *Miqyas*? Among other things, it meant to transform the means by which Egypt was measured, an unambiguously colonial reconfiguration of an already potent device of 'knowledge/power', a deliberate retooling of an instrument of the Foucauldian relation. This point, though obvious, should not be forgotten, since more than anything else, it explains one source of Grobert's confidence.

The seizure of the *Miqyas* might serve as a metaphor for considering the shift in indexical rhetoric and its significance for colonial discourse more widely. The military occupation of Egypt produced a degree of control over the means of measuring Egypt, which in turn produced new knowledge of the country. It is crucial to note the formal shift that occurred in the process: it was not just that Europeans were able to describe more of Egypt or in greater detail, but rather that the discursive quality of their descriptions changed. Previous generations of travellers had used the experience of travel in Egypt to experiment with the systems of 'measurement' and 'order' described in Foucault. Grobert's account, like the *Description de l'Égypte* and other subsequent texts, offered knowledge that was not relative and measurements that were not based on comparisons.

A consideration of these examples suggests that the shift in the understanding of indexicality in travel writing was part of a larger shift in European claims on Egypt, from those of observant visitation to those of high-impact colonialism. If this is true, we need to recognize that the new indexical discourse did not emerge *sui generis* but was a subtle transformation of the older mode of description

exemplified in the work of Savary and others. Indeed, the French occupation of Egypt was motivated and informed by the textual tradition exemplified by Savary's account. Still, the shift marked by Grobert's text is indelible, since it announces a form of description aimed at the production of knowledge that would enable European domination and even direct rule over Egypt. What distinguished the new kind of writing from what came before was that it presented Egypt as the object of a European knowledge that was not merely superior, but absolute.

Notes

[1] Claude-Étienne Savary, *Letters on Egypt, with a Parallel between the manners of its ancient and modern Inhabitants, the present State, the Commerce, the Agriculture, and Government of that Country*, London: G G J and J Robinson, 1786, vol. I, pp 222–223.
[2] Immanuel Kant, *Critique of Judgment*, New York: Hafner Press, 1951, p 90.
[3] See for example Paul De Man's rich reading of the passage: 'Kant's Materialism', in *Aesthetic Ideology*, Minneapolis: University of Minnesota Press, 1996, pp 119–128.
[4] Savary, *Letters on Egypt*, p 222.
[5] Savary, *Letters on Egypt*, p 223.
[6] See Jean-Marie Carré, *Voyageurs et écrivains français en Égypte, tome I: du début à fin de la domination turque*, Cairo: IFAO, 1956.
[7] See Barbara Maria Stafford, *Voyage into Substance: Art, Science, Nature and the Illustrated Travel Account, 1760–1840*, Cambridge: MIT Press, 1984. In her account of scientific and travel writing during the eighteenth century, Stafford traces the emergence of a new style, informed by 'a willed nonmetaphoric scrutiny of the particulars of this world' (p 1). This new style, designed to convey a sense of substance—the objects of discovery as they presented themselves to travellers—was characterized by an attention to detail rather than abstraction, specificity rather than generalization. See Figure 3, and note 8, below.
[8] Eighteenth-century depictions of the pyramids appear as particular and jagged objects, rather than smooth, ideal forms. This is a clear example of rendering the image of what Stafford describes as 'substance'.
[9] Mary Poovey, *A History of the Modern Fact: Problems of Knowledge in the Sciences of Wealth and Society*, Chicago: University of Chicago Press, 1998.
[10] Kant, *Critique of Judgment*, p 86.
[11] Greaves, *Pyramidographia: or a Description of the Pyramids in Aegypt*, London: George Badger, 1646, from the Preface, no pag.
[12] Greaves, *Pyramidographia*, pp 67–68.
[13] Greaves, *Pyramidographia*, p 70.
[14] Greaves, 'Discourse on the Roman Foot', in *A Collection of Voyages and Travels*, London: Churchill, 1752, vol. II, pp 653–698, p 657.
[15] On the metric system, geodesy and cartography, see A Wolf, *A History of Science Technology and Philosophy in the Eighteenth Century*, London: George Allen & Unwin, 1952, pp 416–425. On earlier metrological systems, see Alfred W Crosby, *The Measure of Reality: Quantification and Western Society, 1250–1600*, Cambridge: Cambridge University Press, 1997, and Steven Shapin, *The Scientific Revolution*, Chicago: University of Chicago Press, 1994.
[16] Greaves, 'Pyramidographia: or, a Description of the Pyramids in Egypt', in *A Collection of Voyages and Travels*, London: Churchill, 1752, vol. II, p 607.
[17] Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences*, New York: Vintage, 1970, p 52.
[18] Foucault, *The Order of Things*, p 53.
[19] Foucault, *The Order of Things*, p 53.
[20] Foucault, *The Order of Things*, p 53.
[21] Greaves, 'Discourse on the Roman Foot', p 693.
[22] *Courier* [sic] *de l'Égypte* 39, 10 vendémiaire, Year 8 [October 1, 1799], p 3.
[23] On the revolts and their suppression, see: André Raymond, *Égyptiens et Français au Caire 1798–1801*,Cairo: IFAO, 1998.
[24] Grobert, *Description des Pyramides de Ghizé de la Ville du Kaire et de ses Environs*, Paris: Logerot-Petiet, 1800, pp 62–63. All translations from this work are mine.
[25] Grobert, *Description des Pyramides*, p 61.
[26] Grobert, *Description des Pyramides*, pp 61–62.

[27] Grobert, *Description des Pyramides*, p 62.
[28] Grobert, *Description des Pyramides*, pp 49–56.
[29] Benoît de Maillet was the author of the first *Description de l'Égypte*: see *Description de l'Égypte contenant plusiers remarques curieuses sur la geographie ancienne et moderne de ce païs*, Paris: Louis Genneau, 1735.
[30] Constantin-François Chasseboeuf Comte de Volney, *Travels Through Syria and Egypt in the Years 1783, 1784, and 1785*, London: G G J and J Robinson, 1787.
[31] Edward Said, *Orientalism*, New York: Vintage Books, 1979, p 72, emphasis added.
[32] Arjun Appadurai, 'Number in the Colonial Imagination', in *Modernity at Large: Cultural Dimensions of Globalization*, Minneapolis: University of Minnesota Press, 1996, pp 114–135, p 123.
[33] Appadurai, 'Number in the Colonial Imagination', p 133.
[34] Appadurai, 'Number in the Colonial Imagination', p 120, emphasis added.
[35] Appadurai, 'Number in the Colonial Imagination', p 117.
[36] Said, *Orientalism*, pp 2–3.
[37] James Clifford, 'Review of Orientalism', *History and Theory* 19(2), February 1980, pp 204–223, p 208.
[38] Clifford, 'Review of Orientalism', p 208.
[39] Thomas Shaw, 'Shaw's Travels in Barbery', in *Voyages and Travels in All Parts of the World, vol. 15*, ed. John Pinkerton, London: Longman, Hurst, Rees, Orme and Brown, 1811.
[40] Richard Pococke, *A Description of the East, and Some Other Countries*, London: W Bowyer, 1743.
[41] Charles Perry, *A View of the Levant: Particularly of Constantinople, Syria, Egypt and Greece*, London: T Woodward and J Shukburgh, 1743.
[42] The front cover of the present issue of *Postcolonial Studies* offers a figure of the *Miqyas*: 'Cross-section of Nilometer'. The diagram depicts Cairo's Nilometer, which consists of an ornate, domed ground-level room under which sits a chamber connected to the Nile via the two underground channels to the left. During flood seasons (summers), the river's waters might completely fill the chamber. In the centre of this chamber stands a stone column, engraved with measurements, on which the rise and fall of water was measured, crop successes predicted, and taxes calculated. It was seized by the French during the Occupation of Egypt, 1798–1801. (*Description de l'Égypte, ou recueil des observations et des recherches qui ont été faites en Égypte pendant l'éxpédition de l'armée française*, Paris: L'Imprimerie Impériale, 1809, État moderne, Vol. I: Villes et sites de Haute et Basse Égypte, planche 23.)
[43] James Bruce, *Travels to Discover the Source of the Nile, in the Years 1768, 1769, 1770, 1771, 1772, and 1773: in Five Volumes*, Edinburgh: J. Ruthven, 1790, p 698.
[44] Bruce, *Travels to Discover the Source of the Nile*, p 678.
[45] Bruce, *Travels to Discover the Source of the Nile*, p 691.
[46] *La Décade Egyptienne, journal littéraire et d'économie politique* 1, 1798, p 117.
[47] *La Décade Egyptienne* 1, p 118.
[48] *La Décade Egyptienne* 2, 1799, p 127.