

The 1619 Imperative: The Placement of Eyes at the Source

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Key-Words: The need is Placement. The method is Cartography. The result is Connection.

Life occurs in paths.

As such, History demands a way to propel our eyes onto a spatial platform; to cross the barriers of time and space, and retrieve the untold presence of a place like Africa: a continent now with the largest proportion of youth, and truly momentous migrations (past & present).¹

To open a path of engagement, our case introduces the texture of a Cartographic-Library focused on Africa, to serve as a sustainable Lesson-Companion.

“Education, then, is the great equalizer; the balance-wheel of the social machinery” Horace Mann.² Following John Dewey’s experiential teaching, Jerome Bruner formulated a *Process of Education* where learning is scaffolded as a construction of knowledge, (interactive and discoverable). It teaches to revisit ideas, incrementally with connections in a spiral curriculum. Then a transformative process occurs as learners occupy many different frames of reference.³

In 2016, UNESCO emphasized *Sustainable Development Goal-4*, where education is a human right for all throughout life, and that access must be matched by quality. This forms the Global Education Agenda 2030, which stands as an historic commitment to transform lives by a new vision for education, with bold and innovative actions.⁴

A key thrust for such engagement is Geography (the space where all histories and cultures unfold). The need is glaring, in the poor outcomes on the National NAEP report-card, revealing only 25% scored above a proficient level.⁵

- The Institutional-need is to provide both content and context.
- The Individual-need is for historical connection to current-events.

Now teachers everywhere can merge the mechanics of S.T.E.M with a grounding in Humanities. Historical-Cartography stands at the interface of art and science, closing distances, contacting the past, and lending an aesthetic experience to learning.⁶ Digital-access works by gathering the eyes and expanding the immediate senses. Indeed, the sense of connection begins with awareness, (‘where-ness’).

Placement: The Case of *Ndongo*:

In Angola, a Mbundu society (speaking Kimbundu Bantu languages, and residing between the Congo and Cuanza/Quanza Rivers), endured a long ambivalent relationship with Portugal in various economic, religious, and military pursuits dating back to the late 1400s. Many battles and agreements produced advantages for both agents until Paulo Dias de Novais in 1576 established the coastal port of Luanda Sao Paul near the Cuanza River.⁷ It would become the busiest continuous chattel depot ever recorded and thoroughly documented on the Trans-Atlantic Slave Voyage Database, logging over 5 million captives (nearly half of the entire Atlantic slave-trade).⁸ During a span of 300 years, the demand from Sao Thome and Brazil quickly expanded to the entire Caribbean. In 1619, there were 36 vessels embarking from Luanda (each often exceeded 350 captives); when a pirated vessel, *White-Lion* intercepted a Portuguese vessel, *Sao Joao Bautista*, sailing from Luanda. They bound the captives into their own hulls (after a great proportion had perished); yet delivering '20 and odd' slaves remanded on the shore of Point Comfort, Jamestown Colony of Virginia; marking the advent of a 400-year legacy in the development of North America and finally acknowledged around the world.⁹

Yet recognition has often evaded the where; From where exactly did the '20 and odd' souls reside? The 'Placement' is a formative piece of the 1619 story. Several cloistered archives mention a Kingdom of *Ndongo* along the Cuanza River.¹⁰ But there is so much more in the station and positions of such a noble name. If we want to make the world a better place, we have to think about the world as a 'place'.¹¹ As with other imperatives, this demand launches a necessary pursuit: Placement re-claimed by any and all digital means, to bring that space into proximity.¹²

Our study applies such a method, by locating the geographic imprint of *Dongo* in each fully magnified field (300-dots-per-inch), on 100 original cartographic engravings (the sample size being a preponderance of the spatial evidence available during the time frame of 1500-1699). Here we identify a spatial alignment in the earliest Capuchin manuscript. Then we geo-referenced a contemporary Dutch map using known digital satellite pins, matching historically noted landmarks at the coast and four durable interior forts at precise archeological coordinates.¹³

This illustrative case springs from one word, *Ndongo*, buried within the noted historical texts; but now realized as an actual in-land inhabited 'place', [there ->] in these 7 exemplary specimens:

- Filippo Pigafetta, first to be published in 1591 from multi-lingual renditions written down by envoy Duarte Lopes, [*Engase*]. [MapID3804](#) **Fig I-a**.¹⁴
- Capuchin Missionary manuscript on-site c.1645, [*Dongo*] [Map#4454](#) **Fig. I-b**.¹⁵
- Joannas Jansson, d.1645: Dutch invasion [*Dongo*, *Engaze*] [Map#814](#)¹⁶
- Thomas Astley, d.1745 [*Kabasa* = *Dongo*] [Map#1391](#)¹⁷
- Nicolas Sanson, d.1680: [*Engaze* = *Dongo*] [Map#4234](#)¹⁸
- Luis Furtada, d. 1790 [*Dongo* and eastern Kindonga-Islands] [Map #4172](#)¹⁹
- J. Lopes da Lima, d.1846 [*Dongo*/Matambe] [Map#321](#)²⁰

The Function of Toponyms:

‘AWARENESS’

Aqualunda
Engase
Dongo
Kabasa
Ambacca
Queima-Mons
Matamba

**‘WHERE-NESS’
?**

COASTAL

INLAND

PLACEMENT

Luanda/Ft.Miguel

Ft.Mols Ft.Muxama *Ft.Massengano Ft.Kambambe

Ft. Ambacca

NDONGO

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The Kingdom of *Ndongo* existed as countless *marinds* or mobile-clusters; but a global ecumenical awareness often lagged twenty years behind the original linguistic and transcript accounts. Yet seven identifiable toponyms begin to circulate on maps from 1591 to 1699, tabulated here in these proportions: see **Figure I and Figure II**

- *Dongo* (on 23% of maps), *Engase* (43%), *Kabasa* (2%), *Ambaca* (2%), appearing closely within a triangle east of the Lucala-branch [14.2E] to the Capanda-Flood-Plain [15.7E]. However, in 1618 a crucial battle occurred where *Engase/Kabasa* (as one) was abandoned. But *Ambaca* was annexed to become a permanent Portuguese-Station along with *Fort Massangano* being the actual site where most inland captives were held down-stream at the Cuanza-Lucala junction.,²¹ See **Figure II**
- *Aqualunda* (on 75% of maps), *Queima-Mons/Burnt-Rocks* (2%), and *Matamba* (2%) remained on maps as Easterly surviving *Dongo* retreats (each showing 2-3 degrees distortion in Longitude subject to variably crude measurement of time and distance easterly from the supply line).²²

The symbolic-lake '*Aqualunda*' fits certain historical, physical and linguistic notes:²³ **Fig. I-d**

- '*Kindonga-Islands*' in historical accounts noting island locales of more easterly defenses.²⁴
- Inland-Delta pattern of a braided 'Marais/Lake' as seen also for the Inland-Niger-Delta.²⁵
- Land-Surveys and Satellite maps upstream on the Coanza River delineate the varied braids, lagoons, sand-bars, and marshes existing in that midland flood-plain even before 3 hydro-dams were constructed.²⁶
- Hydrology of the Cuanza River and its Lucala tributary hold a catchment of ~146,000 km² in descent to their junction; where a laterite plateau flattens, slows and spreads the sediment in a flood-plain of shifting mounds, tracts of spongy-peat, and marshy-vegetation.²⁷

These noted Portuguese-Forts still stand as physical locations for inland geo-reference.

- Ft. Kambambe-Cuanza R. [-9,75; 14.48E,]; Ambaca-Lucala R. d.1618, [15.5 East most fort].²⁸
- Ft. Massengano, [-9.6; 14.25E], junction Cuanza-&-Lucala-Rivers, d, 1583 longest inland.²⁹
- Ft. Mols, San Miguel/Croix/Luanda Sao Paulo, [-8.8; 13.2E], d.1576 as coastal depots].³⁰

The 1745 map marks *Dongo* as 'destroyed by the Portuguese' after defeats in 1618 and 1671.³¹ However, *Dongo/Matamba* continues on other maps (to 1900s) in northeast Lunda highlands.³²

So now for us, a phenomenal question remains: Why does placement matter?

A connection just happened; this very act of 'placement' hurls a vector with force and direction. At once [there >] becomes a capacity: a space to supply context, filled with intersecting paths (origins, migrations, and encounters) spanning 400 years, etched among 4000 maps, and itemized in 10,000 other placenames. With a ready tap, every point has surroundings; orbits to take notice of others in history.

Next, we examine: How it all happens..., in the excitement of eye-movements.

A Basis in Neuro-Science:

A recent Nobel-Prize in Neuro-Science honored a discovery that began early in 1564, during the same year that the idea of a mysterious far-away place called *Angolia* could be first pin-pointed in a world etched on a wall by Abraham Ortelius, *Nova Totius Terrarum Orbis*.³³ At that same time in 1564, the idea of a mysterious tiny inner-place called the ‘Hippocampus’ was first being pin-pointed deep within a thin slice of human brain by Julius Arantius in his anatomy book, *De Humano Foetu Liber*.³⁴ It would take many years to understand *Angolia* as an actual inhabited place on earth; and many more years to understand that the ‘Hippocampus’ was the precise location in the human mind where such cognitive abilities form to navigate and realize that greater world.³⁵

In recent years, several labs created a method to insert thin wires into exact locations in the brain of animals and humans (and follow them actively moving on a platform). This enabled a record of electrical firing within specific single-cells, but surprisingly heard only at the moment of specific locations in the roaming grid; and those cells remained silent when travelling to other locations. After many repetitions by independent confirming laboratories, there was conclusive evidence that every one of the brains had certain specific ‘Place’-cells, ‘Grid’-cells, and other ‘Head-Position’ cells. It was this electrical clinking in synchronous bursts from these cells within the ‘Hippocampus’ that encodes a certain ‘place’ on a platform without any external incentives. Paramount to the whole field of History, the scientists saw how ‘Space plays a role in all behavior; we live in it, move through it, explore it, (remember it), and defend it’.³⁶

With a firm basis in this 2014 Nobel-Prize for this discovery of ‘Place-Cells’, we know tracing is deeply natural. The observation of terrain becomes a biologic ‘placement’ directly into the temporal-lobe of any curious mind.

A Basis in Philosophy:

We can plainly define a map as the point where three variables come together: a reality, a representation, and the gaze of a user. It is this multitude of users now that shape our world.

The search for what exists has been at the root of philosophy since mankind first formed symbolic thought. What we call ‘the world’ is not given as self-evident from the outset; it is apprehended..., in an ongoing crisis of spatial consciousness.³⁷

Our approach opens an Assemblage: a thorough identification of cartographic elements that furnish space and time, now digitally rendered as a re-sortable re-usable visual parade.³⁸

The ontology is more than a logical picturing-relation; but rather we see a language-game following a certain praxis of rules or methods of use. A map is a gesture. It actively points to a space, focusing attention on a state-of-affairs.³⁹ In this way Cartography serves as a performance. It replays what occurs as the human mind constructs ‘space’ in many dimensions. ‘Geometric-space’ gives direction and proximity. There is always the further dimension of time, as ‘sequential-space’, which affords a dynamic flow of forces and events that we come to know as ‘movement’ or ‘change’. The internal dimension is ‘experiential-space’. It grows in a sequence of background

attachments, and then molded as we approach, enter, interact, remember and accumulate a further view. By returning, we gain attention, familiarity, verification, understanding, and intention to reject or join or modify what is there or what is next. Thus, 'placement' opens both physical and social forces; as a consciousness experience.⁴⁰

The conscious mind maps a string of personal experiences known as 'self', to which one may add certain other virtual, reported, imagined, or suppressed experiences. In total, the impact + repetition of all these experiences, forms our very existence. Cartography brings in space, while opening more experiences to grow the 'self' as a keen absorber of spaces.

Unfurling an original chart, is to join the eyes of those before us. Every inch is a storage of names; an encounter with the 'other' in the wider world that always existed. By accruing diverse spatial visits, Cartography opens an easement to other stories and external realities. It serves as an instrument to re-cycle a narrative-identity (diffusion, foreclosure, moratorium, achievement), and make-over the lingering roots of prejudice, with ample support to eclipse an intolerant view.⁴¹

Cartography remains highly attractive in how it makes one feel. The emotional center of the Hippocampus is imprinted with the contoured lines of nature. This is precisely how connecting dots allows a 'transport & zooming' immersion to take hold. Like tapping into oil-reserves, maps hold historical-energy. They can fuel hours of curiosity about what was or is relatable. Here is a platform where any hand can repeatedly refresh a user-experience (a UX-journey), where diversity is etched in the soil, where a space can be joined, where viewers imagine themselves differently, where fresh fountains of identity flow.

Reconciling Doubts:

We find errors to exist in differing proportions (not, all-or-none). Whether intentional or natural, they can eventually be sorted, confirmed, modified or definitively corrected by further observation (verification). Individuals often doubt their own abilities to navigate themselves by reckoning or trial-and-error. Thus, a collective communication developed in language, gesture, and a variety of indigenous instruments.⁴² However local needs and external forces imposed other arbitrary practices. Yet still we stand mostly on a world of mathematics (triangulation, trigonometry, topology) in widespread use from velum, to paper, to silicon.

While exercising scale in any leap across time and space, abstractions are intrinsic; so, we de-construct the map, to untangle original omissions, emphasis, motives and methods embedded.⁴³ Over centuries, any knot of deception was quantitatively eclipsed by the burgeoning advantages of accuracy, refined and rewarded for exploitation (especially if secretly held). The advantage was mostly in the secrecy, (from competitors and victims). When later disseminated, the process rather favors equalization.⁴⁴ Beyond past agendas, the maps fully contain countless measurements laid-down, and hundreds of focused positions recorded by a variety of authors widely separated from authorities in motive, time. distance, language, and talent.

Nowadays, the digital ability to count and read large samples can settle most disputes. The analysis of raw data can hold spatial patterns.⁴⁵ Recognition requires display. Verification requires comparison. While always capable of both insight and deception, cartography now emphatically stands on a multi-disciplinary platform to test, connect, and visualize all the aspects of physical, historical, archeological, political, economic, social, and cultural paths into our present lives. Maps can now be interrogated in batches; examining who, why, where, when, and how. These sequences take history into a kinesthetic experience, tracking along vital avenues where users match symbols and make measurements as an intense form of focus. Such activity refreshes history and gains social justice, either by verifying or challenging a degree of reality, and by building discourses on how events came to be, or be changed.⁴⁶

As noted, the journey to verify and modify requires repeated comparisons. With full access to sort through certain historical deceptions, anyone with a pan & zoom hotspot can now take the full measure of a space; noting the vast register of time, distance, positions, angles, contours, and toponyms previously unknown in local classrooms. These kinetics are what distinguish spatial activities from other learning methods. Viewers engage, both outside the representation and enveloped by it. The enduring innovation is the 'arc': the experience per se, (expansive and repetitive), bridging the gaps (or doubts) in a world of constantly changing horizons.

Doubts, then, can be corrective or be dismissive; when unresolved they lead to erasure. If we had only myths, then only doubts exist. As demonstrated here in Angola, the old maps held easterly distortions at *Aqualunda* and a northerly distortion of the *Pungo-Andongo*/Burnt-Rocks. Although imprecise, it does summon us to see those places as existent, rather than mythic. Here an approximation can bring some order to the scrambled echoes of mere words. More-over, when finding the firm accuracy evident at *Ft. Massengano* within 0.1 degree of -9.63° 14.25°E, (standing as the in-land headquarters processing up to 50,000 +/- 20-odd slaves), it places a vivid point to the events that happened [→there] in 1619.⁴⁷

Indeed, global-eyes are now in reach, using the enhanced speed and precision of all 3 of the following technologies together to complete why and how a space becomes a place with meaning:

- OCR/Optical-Character-Recognition can learn and find a mass of fonts scattered in all directions on an unlimited cache of digitized map-sheets).⁴⁸
- GIS/Geo-referenced Information Systems can turn lists into plots, to dis-ambiguate placename variations over time and position as it layers the vital game of matching.⁴⁹
- Precision Oculometry can map the intensity of thought revealed in eye-movements; measuring and tracking each milli-second of time spent at exact spots on a screen-scape (what is salient, what is ignored, what is repeated, re-enforced, learned or automatic).⁵⁰

The Conclusion:

A proof-of-concept becomes a call-to-action. Digital-Humanities can activate eye-movements, register experiences, collaborate disciplines, and finally achieve outcomes that reach all the way from aptitude to attitude; marking a memorable path that thoroughly embodies Africa.

A detailed historical map of the region around Engase. The map shows the Rio Coanza flowing through the landscape. To the north of the river are the Montes Quemados. To the east of the river is the Lago Aguilveda. The town of Engase is located on the river. The map is a woodcut-style illustration with various geographical features labeled in Spanish.

A historical map of the Congo region, showing the Rio Coanze, Mochima Fortezza, Mapavango Fortezza, and the Regno di Dongo. The map is oriented horizontally, with the river flowing from left to right. The Rio Coanze is labeled on the left. The Mochima Fortezza is marked with a small fort icon and labeled. The Mapavango Fortezza is also marked with a fort icon and labeled. The Regno di Dongo is circled in the top right corner. The map is titled 'PROVINCIA DE ILAMBA' at the top and 'STATO DI ENBACA' on the right. The bottom left is labeled 'QVIZAMA PROVINCIA' and 'luogo de Portoghesi'.

Furtado d.1790 <https://catalog.afriterra.org/map/4172>

Figure II GEO-REFERENCED “Dongo Regn.” (rotated)



Endnote Ref. 13; Georeferenced satellite overlay: ‘Dongo Regn.’ (Rotated); and Forts at Luanda, Mols, Massengano, Ambaca; Longitude error ~1-2 degrees East-distortion; prime Baovista Cape Verde Isls), [Map#814](#) d.1645 J. Jansson. [Adam Cox, Senior Research Software Engineer, University of Illinois]

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⁵ NAEP, National Assessment of Educational Programs (2018) <https://www.nationsreportcard.gov/highlights/geography/2018/>

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¹³ Afriterrra Library, Boston; Excel-Spreadsheet vertical Dates 1500-1699 x 8 horizontal toponyms; and Geo-reference Map: Jansson d. 1645 <https://catalog.afriterrra.org/map/814> ; the Prime Meridian is Baovista, Cape Verde Isls; QGIS control-pins, Congo River coast [-6.01; 12.37E], Luanda coast [-8-80; 13.23E], and inland easterly monuments at Ft. Massangano [-9.6; 14.25E], Aft. Cambambe [-9.7; 14.5E], Ft. Ambacca [-9.27; 15.15E], Pungo-Andongo/black-rocks/burnt-rocks or “Mons Queima” [-9.65; 15.59E] as the historical site of Dongo battle in 1671; Cox, Adam (Senior Research Software Engineer, University of Illinois). www.afriterrra.org

¹⁴ Pigafetta, Philippo (1591) ‘Tavola Del'Regno Di Congo...’, *Relatione del reame del Congo*. (See Fig. I.) <https://catalog.afriterrra.org/map/3804>; In this Pigafetta account of Duarte Lopes travels in 1578, the East-longitudinal distance inland measured from the Coastal-mouth of Cuanza River is poorly estimated upstream to Engase as being ~4 degrees; but most later coordinates estimated ~2 degrees Longitude from the coast x 110Km per degree = 220 Km inland-distance; The actual site of Engase and/or Kabasa has never been determined; see also Thornton, John K. (2020) *A History of West Central Africa to 1850* pp. 22, 23 and 56-58; and Vansina, Jan (2004) *How Societies Are Born: West Central Africa before 1600*, pp.186-189, University of Virginia Press; and see also Bodenstein, Wolf; (2017) *Exploring Africa with Ancient Maps*. Tervuren, Belgium: Royal Museum for Central Africa; and Chen, Xuejiao (2022) ‘Angola In Old Maps: Exploring Angola through European maps’ Dresden; and Universidade Kimpa Vita Angola; <https://storymaps.arcgis.com/stories/9e8baee13e354ba292269a90e46b754c> and Sanson, N. (1656) *Royaume De Congo* <https://catalog.afriterrra.org/map/4234> indicating the principal town (of the Kingdom of Angola) is Cabazze or Engaze, also called (als) Dongo;

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