

THE SO-CALLED HELLINIZATION OF GANDHARA:
AN ANALYSIS ON INDO-GREEK PERIOD NUMISMATICS AND ACCULTURATION

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ABSTRACT

This thesis attempts to examine the acculturation process in an ancient Indian territory known as Gandhāra, during the rule of the so-called Indo-Greeks. The latter of whom were Greek rulers that were said to have adopted Indian practices, such as Buddhism, during the 2nd and 1st centuries BCE. This research attempts to discover if such historical events, and modern assumptions, are indeed correct. The prior research attempts to discover this mystery about Indo-Greek society has ended with extremely biased results, resulting in two varying opinions within Indo-Greek studies. In the attempt to overrule such biases, this research has attempted to answer these questions via the use of anthropological methodologies and theories; namely the seriation method, acculturation theory, and schema theory. Through the process of assessing coinage, the primary artifact of research, this study also possesses the byproduct of having created a new methodology known as ‘Anthropological Numismatics’. Through the assessment of both the Indo-Greek economic and cultural adoptions, this new methodology has been successful in the answering of both topics. The Indo-Greek’s economic adaptation of prior Indian standards of coinage, for instance, has found that the induction of the Silk Road within the 2nd century BCE is the most probable reasoning for the Greeks’ adoption of the Indian weight standard. While the Indo-Greek’s cultural adaptation is admittedly less straight forward; however, it does appear that after two Indo-Greek generations, an estimated 50 years, that the Greeks did indeed adopt Buddhism. Despite such findings, it is with this newly founded methodology that one can find the greatest contribution of this thesis’s research. As the many variables of assessment used within this research (e.g. coin shape, weight, etc.) can be used to study a vast variety of cultures, ranging from ancient to modern times.

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CHAPTER 1: INTRODUCTION

OVERVIEW OF STUDY

Alexander the Great's conquest, one of the most ambitious campaigns known in human history, created a massive empire that stretched from the Macedonian homeland in the west to the ancient Indian territory of Gandhāra in the Far East (see **Figure 1.1**). Due to the vast expanse of Alexander's Empire, most of the territorial areas in the Far East were lost shortly after Alexander's death in 323 BCE. The territory of Gandhāra ranks as the first of these territorial

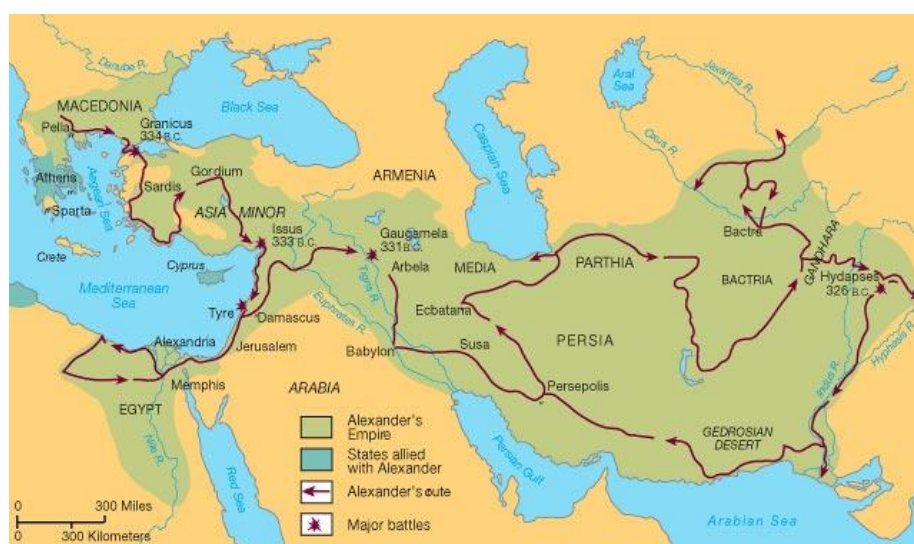


FIGURE 1.1: A MAP DETAILING THE EXTENT OF ALEXANDER'S EMPIRE AND CAMPAIGN. (ADAPTED FROM PEARSON LONGMAN, 1995-2005)

losses, and was formally acquired by the Mauryan Empire (See **Figure 1.2**) in the last decade of the 4th century BCE via a political exchange between the Greek King – Seleucus I and the Mauryan ruler –

Chandragupta, in which Chandragupta was estimated to have given 500 war elephants in exchange for the Greek territories south of the Hindu Kush mountain range (Bopearachchi, 1998:7). After a century of Mauryan rule, within the first two decades of the 2nd century BCE, the region of Gandhāra once again fell into Greek hands. This time, however, the Greeks' hold on the territory was strong, and for over a century these Greeks ruled a great expanse of territories south of the Hindu Kush, located primarily in modern day Pakistan (Bopearachchi,

1998:7). These Greek rulers today are collectively known as Indo-Greeks, and it is within their period of rule that this study concentrates.

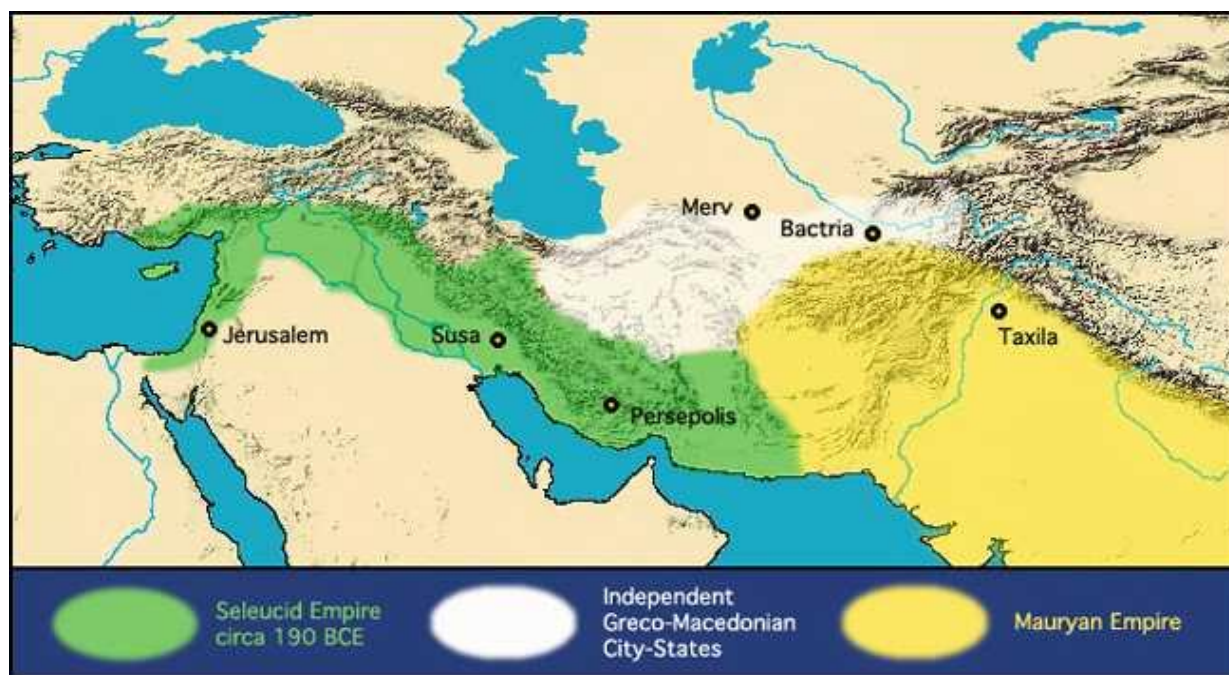


FIGURE 1.2: A MAP DISPLAYING THE THREE KINGDOMS OF IMPORTANCE, LESS THAN A DECADE BEFORE THE INDO-GREEK PERIOD OF STUDY.

NOTE THAT THE WHITE PORTION ON THE MAP DETAILS THE EXTENT OF THE GRECO-BACTRIAN EMPIRE DURING THE FIRST DECADE OF THE 2ND CENTURY BCE; IT WAS FROM THIS GREEK KINGDOM THAT THE INDO-GREEK ONE ORIGINATED. (ADAPTED FROM SILK ROAD SEATTLE :: MAPS, N.D.)

Research Questions

This study attempts to assess if the seriation of coinage can further contribute to ancient history, especially in the case of Hellenized Gandhāra. With two primary questions of this thesis being:

- Why would the Indo-Greeks adopt a local economic system of coin weight?
- Did the Indo-Greeks truly adapt to Buddhism, and thereby assimilate into the local Gandharan culture?

Summary of Study

The primary reason behind this study's concentration of Gandhāra during the Indo-Greek period is due to the period's unique opportunity of accessing acculturation solely through a culture's coinage. Acculturation, to phrase in but a brief sentence is an anthropological concept used to describe the usage of cultural traits, as well as items, from an original group to an 'outside' group (Redfield, 1936:149). Moreover, a crude sense of the acculturation process can be described as one group 'borrowing' and 'learning,' cultural elements from the other.

Before the further discussion of this particular study, it becomes crucial to understand the general nature of Indo-Greek studies, and thereby giving one of the reasons for this study. The most important aspect of the Indo-Greek kings is that they are known almost exclusively from their coinage, with very little surviving historical records accounting information for the Indo-Greek period, or culture. As such, Indo-Greek coinage, due to its grand abundance, has often been utilized in prior publications for the establishment of a historical chronology, and little else, apart from a recently formed methodology termed '*Cognitive Numismatics*' (Holt, 2012:160-210). Regardless, due to this large former issue, an Indo-Greek king's area of rule, reign time, and even existence is continually debated to this very day (Jakobsson, 2010). Such a degree of uncertainty is a result of Indo-Greek chronology mostly being comprised of educated guesswork, though variables such as coin overstrikes and monograms help make the 'guesswork' more of a scientific process (Senior, 1998). This paper has sought to overcome many of the Indo-Greek field's issues, most notably the heavily debated Indo-Greek chronology, the latter of which shall be described in more detail below.

On a much larger front, this study has also sought to establish a new methodology for numismatics: the study of coins. Wherein the foremost goal has been to establish a new route of

accessing anthropological notions, like acculturation, through coinage. For this study, there has been a significant amount of influence from previous archaeological acculturation studies, of which a grand majority of prior acculturation studies have used ceramics, in layman's terms pottery, to properly access a past society's acculturation process (Uziel, 2007; Vogelsang, 1988). Therefore, the two preliminary questions of this study have been: can coinage offer the same degree of information that ceramics have offered in past acculturation studies? Furthermore, can coinage be used to properly assess anthropological notions and ideas, if used in a similar framework of previous ceramic studies?

Before the further assessment of such questions, it remains critical to briefly establish how ceramics, as an archaeological artifact, have offered an unparalleled amount of information for archaeologists for well over a century (Sinopoli, 1991:2). On a general basis, ceramics possess various incentives for the modern archaeologist. Firstly, ceramic sherds are numerous to the point of being a 'nuisance', while also possessing both physical characteristics of analytical measurement (e.g. sediment composition, shape, and size), in addition to having artistic features that offer a glimpse of a society's culture (Sinopoli, 1991). It is with these two previously given categories of a ceramic, that one can find this study's overarching outlook on coinage. As the aspects of a ceramics' physical characteristics and artistic design offer information on a past society's socioeconomic environment and culture respectively.

Likewise, the anthropological assessment of coinage offers a very similar degree of information. As even today, coins remain both an economic item, in addition to being a cultural artifact as well; which is an idea that will be explained with a modern American example below. Due to the similar outlooks both artifacts offer, this study has divided coin traits into the two categories of economy and culture. An act that has proven to be a fundamental requirement for

the proper assessment of the acculturation process through coinage, as one shall soon see below. The reasoning for this last statement would be due to the subsequent division offering two separate acculturation patterns displayed upon a society's coinage, as the two subjects often have little to do with each other. Therefore the answers to the two preliminary questions are most certainly yes, as with some minor modifications, and with a general understanding of coinage, one can easily achieve similar results to past ceramic acculturation studies. In fact, coins arguably offer more information to an archaeologist than ceramics do, though due to certain field differences, between numismatics and archaeology there has been little attempt to develop a methodology such as the one this paper has both used and developed.

Such an issue can be blatantly seen in field excavations, as although ceramics are indeed plentiful in site excavations, so too are coins, at least within societies that possessed coinage. However, despite the high frequency of coin findings during excavations, archaeologist often refuse to analyze coins themselves (Casey, 1986:7). This outcome is ultimately a result of the early 20th century schism between the study of coins (numismatics) and modern archaeology; and is why coins are often deemed 'less important' when compared to other artifacts found by the average field archaeologist (Holt, 2012:69; Casey, 1986:7).

Database Overview

Despite the previous obstacles, the way in which this study has researched its selected coin traits would be through a combination of both disciplines: numismatics and archaeology. Of which this studies usage of coin catalogs, remains a direct adaption from numismatics. Coin catalogs are books that contain large quantities of coinage, either from a single museum or in some cases multiple collections, from both the public and the private sector. The main catalog of importance for this study has been Bopearachchi's 1991 catalog: *Monnaies Gréco-Bactriennes et*

Indo-Grecques. Catalogue Raisonné. Moreover, while there have been multiple advancements and discoveries in Indo-Greek chronology since its publication in 1991, the catalog has proven to be invaluable, due to its inclusion of monogram classifications, and to a lesser degree its information of individual coin weights and dimensions, when provided (Bopearachchi, 1991). The information of a coin's monogram has been of particular help, due to the information effectively allowing this study to possess a clear view of the acculturation pattern, as it allows one a display of popularity on the 278 coin types found within this study. While the latter information of individual coin measurements has also been of significance for this study, in particular, the bronze economic variables found within *Appendix A*.

At this time there are an estimated 26 Indo-Greek kings of Gandhāra, all of whom can be found in the 1991 catalog, with 709 coins types and monograms being found in total within the respected catalog (Hoover, 2013:18-166; Bopearachchi, 1991). Therefore, while there are indeed newer catalogs available for this study, most notably Bopearachchi's 1998 catalog, none were able to offer the same amount of detail needed to analyze the variables of this study properly.

Research Theories and Method

Now that the data for this study has been mentioned, as well as the general way of its assessment, it is now necessary to detail the two theoretical viewpoints that have instigated this study's unique methodology.

The first theory of importance is acculturation, and while the theory has already been described above, its influence on this study is unequal. To briefly define acculturation again, the process is the adoption of cultural practices between two different culture groups, and by effect ranges with three ending processes, all three of which fall in accordance to the widely-used

model by Redfield. The first outcome of acculturation is assimilation, which is the formal integration of an outside group into the more ‘dominant’ local one; and is an act commonly seen in modern immigration studies (Berry, 1997). The second outcome of acculturation is, in a cultural sense, a ‘meeting point’ between the two interacting cultures, due to aspects of both cultures combining, and by doing so, effectively create a new culture (Redfield, 1936:152). These culture types are often termed as a ‘hybrid’ culture informally, though there are notable issues with such a term, as one shall soon see below. Nevertheless, the last outcome of acculturation is effectively the opposite of assimilation and is classified by Redfield as the outside culture’s ‘resistance’ to the dominant culture, and by effect results in the outside population’s ‘reversion’ back to their original culture (Redfield, 1936:152). These three outcomes of acculturation were crucial to this study, as they represent the three possible cultural patterns that Indo-Greek coins displayed upon this study’s data assessments.

Acculturation theory has helped address one of the main debates in Indo-Greek studies, which is focused on whether the Greek invaders, within this study, termed Indo-Greeks, acculturated to the native Gandhāran society, or if there was a different outcome entirely. In fact, due to the ongoing popularity of the Greeks having ‘converted’ to Buddhism, this study found it pertinent that the cultural hypothesis should be directional, which thereby seeks to affirm or disprove such past suspicions. Therefore, the cultural hypothesis for this study, was that the Indo-Greeks did indeed acculturate, and by the end ultimately assimilated themselves into the Gandhāran society. As for the economic hypothesis a similar concept was used, as the notion of the Indo-Greeks having adopted the so-called Indian Standard is well known and can be attested in multiple publications, of which some will be mentioned below.

Therefore, while hybrid theory could indeed be applied to a study of this type, there is a tremendous lack of flexibility within hybrid theory when compared to the theory of acculturation. Hybrid theory also presents a large amount of issues upon its implementation within this study, as there are varying degrees of hybrid cultures in existence, with no proper way of assessing the degree of hybridity within Indo-Greek coinage (Stockhammer, 2012:48). So, while Redfield's model of acculturation is admittedly quite 'old', for this study, it was highly favored as it does not limit the multiple data outcomes this research has found.

The second theory of importance for this thesis was schema theory, which in effect sets a culture's idea of what an object should be (Hill, 1995). An example in our society of schema theory can be found in the shape of a modern book, where the object is often rectangular in shape, despite ancient societies having recorded texts in the form of scrolls. While this previous example is 'straight forward', coinage is more complex without proper explanation; however, there is still without question a cultural schema for what a coin should be in a society. As it happens, both the Greeks and the natives of Gandhāra possessed prescribed notions of what a coin was, before the period of Indo-Greek rule, both of which were radically different. It is due to the existence of two vastly different notions of coinage that schema theory is of great use for this study, as the theory aids in the obtainment of strong variables; which in a crude sense displays the Greek and the Local 'Gandhāran' cultures. A notable example of schema theory in practice, can be viewed in how both societies' coinage was shaped prior to the Indo-Greek era of rule; wherein 'native' Indian coinage often appears to be 'square' in shape, while Greek coinage, on the other hand, is primarily circular in shape (Cunningham, 1891:54).

The last major implementation utilized in this study can be found in this thesis's methodology, which archaeologically is known as the seriation method. The concept of the

seriation method is to access change through a set artifact type, in this study's case coinage. Through the conduction of the seriation methodology, the end assessments' goal is to create a rough chronology for the said artifacts, and thereby create an outline of cultural development; which in this study, has already been established by historical numismatist. Therefore, the method of seriation has instead been utilized to assess the acculturation process, via the already established chronology of Indo-Greek kings; an act that will be elaborated in further detail below.

Overall, the grand desire of this thesis project was to bring Indo-Greek coinage under a new light, while also offering a new methodology in numismatics, of which offers potential insight to periods of protohistoric periods. To better display how coinage can be used to obtain these goals described above, the rest of this introduction has been dedicated to explicitly explaining the basics of coinage; both in the sense of discipline terminology and the arguably reflective nature of a society's coinage.

DISCIPLINARY BASICS

Cultural Aspects of Coinage

Coins, like any other artifact, represent a reflection of human culture. The ways in which coins reflect culture can be seen in the various physical characteristics of coinage (e.g. size, shape, metal type, etc.), in addition to the cultural memes, etched onto coinage. Despite such promise, a coin's cultural capability, at the end of the day, is still a mere reflection of a culture, and should, therefore, be treated with extreme caution. An example of why such a caution should be enforced, can be found in the instance of both Latin and Italian mottos being inscribed on the American Nickel of the 20th to 21st century CE. As neither of these two languages inscriptions being an accurate representation of the American population, due to neither being

spoken, or even known, by the average American citizen (Holt, 2014). Regardless of this previous matter, the study of coins and other pieces of currency, known again by the disciplinary name of numismatics, is a highly-valued field with an extremely rich history dating back to ancient Greek coinage itself (Carradice, 1995:20-21). To explain more on the basic terminology of numismatics, in addition to providing a modern example for easy in comprehension, the 20th to 21st century American quarter has been detailed below. Moreover, within the American quarter's discussion, concepts will emerge that directly relate to the study at hand; most notably the notion of a coin's ability to reflect a culture. This is not to state that a coin is a direct indicator of what a culture is, but that a coin's characteristics and style reflect that of its culture of origin. Therefore, in a light sense the discussion on the American quarter, which should be readily accessible to everyone for general reference, is a prelude to the study ahead.

Now to begin, two numismatic terms one no doubt is already familiar with are 'heads' and 'tails', and while these two informal terms remain fine for laymen descriptions. For the formal discussion at hand, the technical terms of obverse ('heads') and reverse ('tails') are much more preferred, and shall be used instead for the remainder of this study. Despite the two terms simplicity, obverse, and reverse remain extremely important, due to both terms' ability to properly detail the basic anatomy of a coin in an extremely simplistic fashion. The two terms also detail one of the main unifiers of all coinage, that being the possession of both an obverse and reverse, regardless of a coin's size or origin (Cribb, 1990).

American Quarter Obverse Example

With the most basic coinage terminology/anatomy established, the discussion of the American quarter shall begin with the feature that gives the obverse's side its informal name ('heads'), which would be George Washington's portrait, at least for Americans. This attribute

of Washington's portrait has for many Americans, become the intrinsic detail, defining the American quarter. In fact, if one were to ask an American child or even most American citizens for that matter, '*what is the most important cultural aspect on the quarter?*' many would state George Washington's portrait without hesitation. While this question is ultimately subjective in nature and therefore has no 'true' answer, it does aid in the task of analyzing the general views of American coinage in the modern era. Furthermore, when the statement is given that American quarters before 1932 were without the iconic George Washington portrait, many go into a state of shock, or disbelief; many more adults than children have done so, at least in my personal experience which was unexpected. Nevertheless, what this reaction entails, on a sociological basis at least, is a society bent on honoring its (American) 'Founding Fathers', as we so often state as American citizens. Moreover, this modern cultural sentiment gives little regard to the noted issues of George Washington, and the other 'Fathers'. All of whom notoriously opposed the idea of historic individual portraits being minted on American currency, as there was a grand desire to step away from the monarchic coinage style (Vermeule, 1971:8). In fact, it was due to the Founding Father's strong anti-monarchic views, that early American coinage displayed only Lady Liberty as an obverse figure (Vermeule, 1971:8). This usage of Lady Liberty on the obverse, implemented on all American coinage up until the 20th century, when portraiture of American historical figures became common place (Yeoman, 2016:752-758). Such a divergence in obverse imagery on American coinage seemingly denotes the subsequent change in the ideology of American historical figures now being treated in a similar fashion of monarchic rulers. Evidence for such a change can be seen quite vividly in the material evidence, due to the 1930's quarter possessing a Standing Liberty on the obverse, while on a 1932 quarter George Washington's portrait is displayed; there were no quarters minted in 1931 (Yeoman, 2016:752-

758). Though this was a relatively straight forward example and was in many ways commonsensical, the method by which these results were obtained were through the archaeological methodology known as seriation. The seriation method, while ultimately simple in approach, is an extremely powerful tool, especially when used in conjunction with anthropological theories.

Although there is much more that could be explained about the obverse of a quarter, and the briefly mentioned seriation methodology, for now, let us flip to the other side of the coin.

American Quarter Reverse Example

Like the quarter's obverse above, the reverse's nickname comes from the grand imagery inscribed upon it; that being the American eagle, which has a noted 'tail', hence the informal name of a tail's side. The selection of the eagle as a reverse feature for Colonial America dates back before the first federal American currency in 1792 (Vermeule, 1971:11-12). In fact, the eagle's usage on American coinage can be contributed mostly, to a French artist by the name of Augustin Dupré. One of Dupré's works include a commemorative medallion, which honored the signing of the Declaration of Independence during the nascent years of the American Revolution; and on this medal, there was engraved the now iconic heraldic Eagle (Vermeule, 1971:11-12). Due to the well-received Dupré medallion, the eagle has since become a grand part of the American "*scheme*" of currency. The word *scheme* was used previously in quotations as a way of informally representing the concept of schema theory through coinage. Schema theory, to phrase rather simply in material context, is what constitutes an item or idea within a society's culture (Hill, 1995). Furthermore, the eagle on the American Quarter is a great example of a cultural schema and has remained a vital part of the American quarter up until the year 1999 CE. The year 1999 is notable, due to it being the year the heraldic eagle reverse type was

successively replaced by the “*50 State Quarters Program*”, which was a program that minted a unique reverse type for each of the 50 States of America, up until 2008 (Noles, 2008).

Despite the change of reverse type, ‘type’ being a numismatic term for style, the Washington Quarter (1932- Present) still exemplifies this thesis’s methodology and theory. Such a feat is due to a culture’s schema changing over time, as no culture truly remains static after all, and some degree of change is to be expected (Strauss, 1997). This noted material change also prompts the previously mentioned seriation methodology to come into play, as such a change should in ‘theory’ indicate a sociological change in the respected society as well. Moreover, due to the 50 States Program being a relatively recent collection, it makes for the perfect example to provide evidence for these previous statements. Sufficient evidence for this previous statement can alone be found in the form of an entire book detailing the ‘noteworthy’ impact of the 50 State Quarters Program (Noles, 2008). The book also describes the overall purpose of the program, which was to promote a sense of “*cultural heritage*” via the form of displaying each state’s proud heritage and “*unique*” personality (Noles, 2008:XII). The term unique was used in quotations previously due to the 50 State’s Program’s success in replicating a definite cultural change in America, that change being America’s now infamous individualistic oriented culture. While most of the book’s statements are almost overwhelmingly patriotic, they are regardless factual in the matter of how the 50 States Program imitation represents a change in American society, in which the coinage notably reflects. Moreover, it appears that the program’s cultural heritage, and individualism, appealed rather highly to the average American, as the collection remains the most successful one in American history (Healey, 2007). Therefore, one can conclude that the American quarter’s reverse change in 1999, does indeed reflect a change which has occurred within American society, and thus, in the American schema as well.

This is not to state that the American quarter example above directly displays American society or even its full culture ideology, as these examples above have admittedly provided a mere glimpse of American culture and political ideology. Despite coinages' limitations in this previous matter, the fact remains that the culturally engraved items on a coin are a direct result of a selective process by members of the culture. Therefore, while a coin's cultural outlook is, without doubt, limited, there is still a cultural process of implementing motifs onto coinage, and therefore the changing of such motif theoretically displays a reflected change in the culture of study. The word 'reflect' being the ultimate word of understanding in the previous sentence, as with any reflection, one only sees hints of what the actuality truly is; which is why coinage remains an adequate artifact 'reflecting' its society of origin.

Other Terms of a Coin

Moving on from the obverse and reverse terminology, there remain other terms that require explanation within this introductory, due to their relevance in the study below. As done in the section above, the Washington quarter shall continue to be used to provide further clarity on the subject matter.

1. DIE AXIS ORIENTATION

A die axis orientation of a coin is how the orientation of the obverse side of a coin is in relation to the reverse side of the same coin. In other words, how the 'front' side of the coin is orientated compared to the 'back'. This variable can be described in terms of either clock positions (e.g. 12 o'clock, 6 o'clock, etc.), or in angle degrees (e.g. 360, 180, etc.), and for this study, the former is the preferred description. In the instance of the American Washington quarter, the die axis orientation is 6 o'clock, due to the reverse orientation being 'upside down', when the obverse side is upward. One can easily see this orientation on a quarter due to George Washington's

portrait being upward, while the American eagle on the reverse side is ‘upside-down’. As for the coins of the ancient world, the same idea applies, and for a great majority of Greek coinage, there is a 12 o’clock axis orientation (Bopearachchi, 1998:5). Though there are some notable exceptions, such as in the case of the Greco-Bactrian King: Euthydemus, whose coinage implemented a 6 o’clock orientation (Guillaume, 1990a:30). Despite the previously noted exception, within Indo-Greek coinage, the 12 o’clock axis trait is still far more popular, and thus can be viewed as a part of the Greek coinage schema, and shall be used as such in this study’s research. One should note, however, that ‘mistakes’ did indeed occur within the ancient Greek minting process, which is the probable reasoning for the instances of 1 o’clock and 11 o’clock die axis orientations (Bopearachchi, 1991). To explain how such ‘mistakes’ were made it becomes necessary to explain the process of how a Greek coin was made in ancient times. The production of ancient Greek coinage required a person to swing a hammer onto a nail-like object, known today as a ‘die’. This prior act was done so in the attempt to inscribe both the reverse and obverse side onto a ‘flan’ in one short action, a flan is a blank circular piece of hot precious metal (Metcalf, 2012:6). The reverse details were engraved in a mirror-like fashion on the die, while the anvil was engraved with the obverse imagery, in a similar mirror-like fashion (Metcalf, 2012:6). Due to the nature of ancient coin minting, it remains likely that the conformity of a coin axis was lessened due to the necessity of minting large quantities of coinage, which doubtlessly led to various coins with ‘offset’ axis orientations because of the probable increase in productivity (Metcalf, 2012:6).

2. MINT MARK

A mint mark, in the modern sense at least, is a single letter or symbol used to notify the area of mint for the coin (Carlton, 1996:194). There are a small variety of mint marks on the Washington Quarter, those few being: D for Denver, P for Philadelphia, and S for San Francisco

(Yeoman, 2016:758). Like the other terms and traits above, the origins of a mint mark can be found in ancient Greece, though on ancient coinage it is commonly referred to as a 'monogram', which was often ascribed in ancient Greece by the appointed magistrate (Carradice, 1988:60-61). A magistrate was the individual who oversaw the production of coins and thus acted to ensure a coin's quality as a valid currency, and it was through a unique monogram that a magistrate would display a coin's legitimacy, at least in the Greek Classical period tradition (Carradice, 1988:60-61). Within the Indo-Greek context, there is a highly-contested debate on the purpose of the monogram on Indo-Greek coins, purposes that range from the city of origin to a symbol of trade guilds' authority (Lahiri, 1965:52-58; Bopearachchi 1991). Regardless of the prior debates of ancient significance, a coin's monogram is of great modern significance for this, as it allows one to see the popularity of a certain coin. The way in which it a monogram offers is this is due to the monogram often being located on the reverse side of a coin, and due to the limited 'life' of a reverse die, a new monogram types by effect displays a new batch of coins purposefully being produced. Therefore a coin's monogram provides a rough estimation a coin type's popularity.

3. LEGEND

A coin's legend simply refers to the inscribed words on a coin and the way in which the words are oriented (e.g. clockwise, left to right, etc.). In the instance of the Washington Quarter, multiple coin legends have been successfully used, such as the American mottos of 'In God we Trust' and 'E Pluribus Unum' (Vermeule, 1971:13). On ancient Greek coinage, the same concept yet again applies, however instead of mottos of a country being implemented, often the titles/names of the king were the only items impressed upon ancient coinage; an idea that can be seen on any Hellenistic period Greek coin (Late 3rd – 1st century BCE). Moreover, for Indo-Greek coins their legends appear in a small variety of languages, including ancient Greek,

Brahmi, and Kharosthi; with the latter two having been two of the ancient Indian writing systems of Gandhāra (Kak, 1994). For a large majority of Indo-Greek coinage, their legends are implemented in two languages, with one being inscribed on a respected side of the coin, while the other language would be implemented on the other. For Indo-Greek bilingual coinage, it is common to find the obverse side containing the Greek legend, and the reverse side having either: Brahmi or Kharosthi, which are two of the local languages. It should be noted, that this unique feature on Indo-Greek coins has made their coinage the first known bilingual coins in human history (Bopearachchi, 1998).

Monetary Aspect of Coinage

Now that the basics of coin memes and terminology have been explained, there remains one crucial aspect of coinage that has yet to be mentioned, that being a coin's economic function. To properly discuss coinages' role as a medium of exchange, it is critical to underlie the differences of three commonly confused terms for items of economic exchange. These three terms being: money, currency, and coinage. Money is a very lenient term, and refers to any item whose function is to serve as a medium of exchange, whether it be an actual coin, a bar of salt, or a cowry shell; within the right cultural context, virtually anything can be used as money (Casey, 1986:11). As for the term currency, there is a stricter definition, due to currency being a government regulated item, in which there is a need to formally create, and weight, a series of state owned pieces for economic exchange (Casey, 1986:11). For this reasoning, one can often see money being used in pre-state societies, before the development of a more powerful unified political system, or in anthropological terms, a state leveled society (Haselgrove, 2012). As for a coin, the term simply refers to the metallic object itself, and does not, in any way, state that the item can be used as a valid piece of currency (Casey, 1986:11). As in the instance of a 1923

United States silver dollar, which is unable to be used as a valid piece of currency in America today, despite it being a coin of the United States. With these three monetary terms now distinguished, the topic, and fundamental explanation, of monetary exchange can now formally begin; and like the previous discussions above, there shall be a continued use of the American coinage system for both reader context and convenience.

American Monetary Explanation

Prior to the War of Independence in 1776 CE, colonists in early America were drastically short on money, which as explained above is a technical term for any item commissioned a monetary value, be it a sea shell or an actual piece of currency, like our American quarter today (Davis, 2002:458). It was due to this overwhelming shortage of a medium of exchange that American colonists began to conduct economic experiments. One of the earliest of these experimentations can be seen with tobacco's usage as money during the 17th century, which resulted in a successive backlash due to the crop being planted far too often to be regulated as an actual economic standard, an issue that further caused harm to the colonist's economy (Massey, 1968:5). To make a long story short, American colonist saw a solution to these issues, through the implementation of foreign currency into their economy; which was done due to colonist possessing neither the governmental right nor infrastructure to produce coinage of their own (Massey, 1968:32). The foremost of these foreign pieces of currency was the Spanish dollar, which has been infamously addressed in most pirate tales as a 'piece of eight', and was used sequentially throughout the world as the first world 'trade dollar' (Massey, 1968:33). It was due to the heavy economic reliance on the Spanish dollar in early America that America's first federal coinage, minted in 1792, was based primarily on the Spanish Real system, which can be seen in the American adoption of Spanish coinages' weight and size (Massey, 1968:38).

Another note of Spanish influence can be found in the coin denomination names of early America. Denomination being a numismatic term for the abstract economical set value for a coin, an example being the American quarter that is $\frac{1}{4}$ of a USD Dollar, known to some early Americans a ‘two bit’ (Yeoman 2017:94). This latter term of a ‘bit’ came into play, due to the Spanish Real often being cut either into two or four pieces, with these smaller pieces often serving as lower value denominations; and is why some early Americans referred to the quarter dollar as a ‘two bit’ (Yeoman 2017:94).

Through the adoption of the Spanish dollar system, United States currency eventually became the world trade standard it is today; and much is owed to the Spanish monetary system, as one can see above. However despite the grand influence of the Spanish monetary system within early America, as modern Americans, one can quite clearly see that there was a fundamental lack of cultural influence; which thereby gives way to a lack of true acculturation. An overall outcome that provides evidence for the separate functions of coinage, those two being economic and culturally, which are indeed influenced separately.

Monetary Connection to Study

Overall, the same monetary thought process can be applied for ancient Greece. As the Attic standard, a weight system rooted in ancient Athens, became in a loose sense an ‘ancient world’ currency standard when it was adopted by Alexander the Great, and his Greek successors during the Hellenistic Period (Metcalf, 2012:193). In fact, in the study at hand, the Indo-Greeks, who lived approximately 100 years after Alexander, still retained the Attic standard, at least initially, which denotes the significance the Attic standard as an early ‘world’ currency (Hoover, 2013:lxix – lxxxi).

SIGNIFICANCE OF STUDY

In summary, while this introduction was admittedly rather long, its main purpose was to explicitly describe the properties that make coinage a unique material of assessing past societies in an anthropological framework; and it is for this reasoning that the relatively long length was required. Furthermore, one can no doubt see the cultural and economic factors a study on coinage presents, and as mentioned previously, the two factors, while integrated on a single coin, should be treated separately in the assessment of acculturation patterns. In addition, this introduction's example of the American quarter has offered not only an informal glimpse of the study's methodology and outlook, but by the process of explanation, has also displayed the limitations of this study's methodology; and in accordance, has allowed for a proper assessment of what coins can detail about their culture of origin.

As for the importance of this study. Recently there has appeared a great need for new developments in numismatics, due to the discipline's continued concentration of king chronology on a universal level, and as a reaction, there has been a growing interest to access coinage as an item of material culture (Kemmers, 2011; Haselgrove, 2012).

Outside of the previously mentioned need for a new numismatic methodology, this study has also sought to mend the gap between the two disciplines of numismatics and archaeology, which as mentioned above, the disciplines were formally divided during the early 20th century. The attempt of mending the gap can be seen in the name of this study's methodology, the aptly named: 'Anthropological Numismatics'. Moreover, while the methodology's title is far from original the name nevertheless, is quite adequate due to the number of anthropological thought processes incorporated within the new methodology, which by effect has allowed for the ability to overcome many of the issues that have plagued Indo-Greek studies in the past. For example,

one of the biggest drawbacks of Indo-Greek studies is the much-debated line of king succession; and though the problem continues at the historical level, this study has successively bypassed the previous issue through the adoption of a generation model, in which each generation existed in 25-year intervals. This 25-year estimate is based on recent genetic studies on ‘deep ancestry’, a term meaning any generation beyond 50 generations to the present day (Walsh, 2001).

Furthermore, through the assessment of genetic irregularities, modern geneticists have estimated the average generation length to be 20-30 years, for prehistoric humans (Walsh, 2001). This study’s incorporation of a generation model has not only caused the Indo-Greek chronological issue to be nullified but also has allowed the effects of acculturation to be seen in a more phase like fashion; which is highly complementary to modern studies that concentrate upon acculturation, especially recent studies focusing on immigration. For this reasoning, the results of this study should be viewed as being a step towards a more accurate assessment of the acculturation phenomena in the past.

Lastly, this study is additionally significant as it seeks to nullify the early historical notion of there being a Greek cultural dominance during the ‘Hellenistic’ period (323-31 BCE), at least in the areas of Greek rule. This previous bias of Greek cultural dominance, often termed as the ‘Hellenization’ process, is a notion that proposes the various native peoples under Greek rule, from traditionally non-Greek environments, turned away from their previous cultural traditions; and by doing so, successively adopted Greek ways, either by way of force or of their own free will (Kouremenos, 2011:2). The issues behind the inaccurate ‘Hellenization’ process have already been described in other readings, most notably in the selection entitled: *From Pella to Gandhara: Hybridisation and Identity in the Art and Architecture of the Hellenistic East* (Kouremenos, 2011). One should note, that while this prior works’ aspect of viewing such

Hellenistic period cultures as 'hybrid' cultures, is, without doubt, a step in the right direction, it has in no way solved the issue of assessing what these Hellenistic period cultures were at any given point in time. Nor does the theory of hybridity, on a general basis, detail to what degree these hybrid cultures were, for lack of a better terms: 'Greek' and 'local', which is one of the major problems with hybrid theory. A fact that is even admitted by hybrid theory supporters, like Stockhammer, who has utilized hybrid theory within their own research (Stockhammer, 2012:48). These prior issues are why the theory of acculturation was again favored for this study, as the theory of acculturation can overcome both problems mentioned above, and it is through the material culture of coinage, that one is arguably able to access a valuable outlook of Hellenistic period acculturation.

CHAPTER 2: BACKGROUND

OVERVIEW OF SECTION

To provide clarity on the subject matter, this study's background section has been divided into two main subsections, with a subsequent number of discussion points within each. It is the purpose of these two subsections, to discuss two pertinent problems this thesis research has dealt with; and then upon the problem's addressment and thorough explanation, discuss the implemented solution used within this research. The first of these subsections concentrates upon the region of Gandhāra itself, along with the successive native people of the region, hereafter referred to as Gandhārans. In the first section, detailed summarizations will be given on Gandhāra's political history prior to the Indo-Greek period, along with related archaeological studies that have been conducted within the region. While the second section focuses on the Indo-Greeks and their known history, in addition to a very brief discussion on past numismatic studies.

1st RESEARCH PROBLEM

One of the most overwhelming issues this research has dealt with would be the lack of an ethnohistory, that being historical documentation describing who the Gandhārans were as a cultural group. Another issue faced during this paper's research was a lack of consistent archaeological material leading up to the Indo-Greek period, however, due to this study's concentration of coinage this second issue, has in a sense, already been 'solved'. Regardless, due to the lack of an ethnohistory for the Gandhārans, the region's known political history shall now be provided below, in addition to a scant amount of recent archaeological research. Both of which provide a very crude understanding of who the Gandhārans were as a cultural unit, before

the Indo-Greek era of rule. Prior to the discussion of Gandhāra's political history, there remains a definite need to establish the basic geography of the region of concentration.

Geography of Region

Ancient Gandhāra is said to have been located in the Peshawar Valley, lying between the natural borders of the Hindu Kush mountain range to the west, and the Indus River to the east (Arif, 2014). This very general description is known today in academia as Gandhāra 'proper' (Khan, 2013). It was upon the 4th century BCE that the political territory of Gandhāra expanded its province to modern Eastern Afghanistan in the west, the Swat Valley to the north, the Bannu to the south, and to the east the Taxila Valley (Khan, 2013). It was upon this expansion, made during the late period of Persian administration that the region became known as 'Greater Gandhāra', at least to modern academics (Samad, 2011:5).

A key aspect of the territory of Gandhāra is that the southernmost silk route ran through the region. This prior fact is of extreme importance for this study as it displays Gandhāra as being a territory of commerce, with material evidence providing support for a long tradition dating back to the historical periods of interest (Samad, 2011:261). In fact, the region of Gandhāra has recently been marked as one of the earliest regions of 'world trade', with some evidence of long distance trade dating back to the 4th millennium BCE (Williams, 2015). This previous date has been solidified, due to the recent archaeological discoveries of precious stones known as lapis lazuli, which is native to the Gandhāran region, and was excavated within an ancient Mesopotamia archaeological site (Williams, 2015). Moving back to the silk road discussion, it is important to emphasize that the term: *Silk Road* is a misnomer, as there were, in fact, multiple silk roads, which can be seen explicitly in **Figure 2.1** below. Furthermore, one can note, the southernmost silk route, traveling east to west, appears to have gone directly into the

territory of Gandhāra, shown by the green square in **Figure 2.1** (Williams, 2015). Furthermore, in past Indo-Greek studies, one archaeologist (Paul Benard) stated that there was a ‘Greek’ control of this route during the 3rd and 2nd centuries BCE (Benard, 1994). While there is admittedly some speculation behind such a statement, this study upholds that the invasion of India, by the Indo-Greeks, most likely occurred due to the rise of the *Silk Road* under the Han Dynasty, who began to rule China in 206 BCE (Behera, 2002). The previous statement can be made outside the basis of mere speculation, due to the rise of the Silk Road coinciding rather well with the Indo-Greek invasion, both of which occurred within the first decade of the 2nd century BCE (Behera, 2002; Jakobsson 2009). Further information of interest, can be found in the conclusion of Indo-Greek coinage now being credited as the first to be used in Gandhāra for



FIGURE 2.1: A MAP THAT PROVIDES A DETAILED VIEW OF THE VARIOUS SILK ROADS RECENTLY MAPPED. THE BOX ABOVE REPRESENTS THE TERRITORY OF INTEREST: GANDHĀRA, AND AS ONE CAN SEE THERE ARE SEVERAL ROUTES OF INTEREST LYING WITHIN THE TERRITORY’S VICINITY. ADAPTED FROM (WILLIAMS, 2015:12).

both trade and widespread commercial use, though this previous detail remains a highly-debated subject in academia today (Samad, 2011:64).

For further clarification on the proximity of Gandhāra, a map (**Figure 2.2**) has been listed below that provides not only the political boundaries of Greater Gandhāra during ancient times but also its modern geopolitical location.

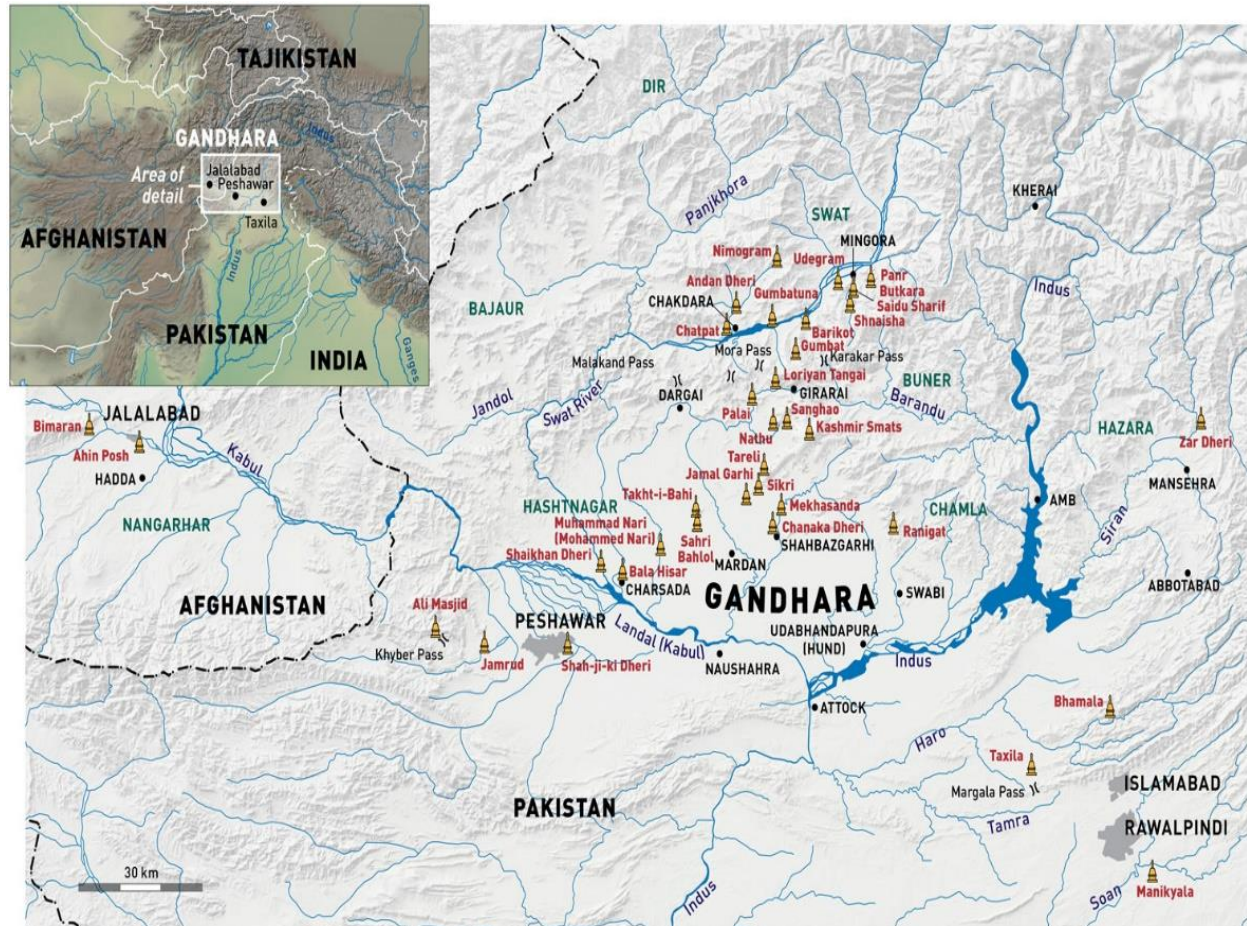


FIGURE 2.2: A MAP PROVIDING THE BASIS OF THE REGION OF STUDY: GANDHĀRA. NOTE THAT THE GOLDEN TRIANGULAR OBJECTS ARE AREAS WHERE BUDDHIST STUPAS (TEMPLES) HAVE BEEN FOUND. THE MAP ALSO DETAILS THE TWO MAIN ARCHAEOLOGICAL SITES OF DISCUSSION: TAXILA AND CHARSADEA. ADAPTED FROM (NAVEED, 2015)

Eras of Gandhāra

Persian Gandhāra

The Greek historian Herodotus wrote the first known western account of Gandhāra during the 5th century BCE, wherein the province was detailed by the name ‘Gandaroi’, and it is with this ancient account that the current term Gandhāra originates (Young, 2009). The conversion of Gandhāra into a Persian satrapy, a province of Persian administration, was a move that was most likely conducted in the year 535 BCE by Cyrus the Great, though the exact date of Cyrus’s invasion and successful annexation of Gandhāra remain unknown (Samad, 2011:31). What is known for certain, however, is that when Gandhāra became a part of the Persian Empire, the foremost goal of the Persian rulers was to establish an administrative structure run by the local populace, with the leaders of this said organization being called ‘Rajas’ (Samad, 2011:32). Persian difficulties in the establishment of an administrative system are also well attested, with the largest issue being the variety of people groups that occupied the regions, in which each group likely possessed a local language and custom that were uniquely their own (Samad, 2011:34). These historically described locals can be seen in accordance with the prehistoric archaeology of Gandhāra, which does indicate different culture types within the region. One example of these societies can be seen in the Gandhāran Grave culture, who continued to exist up until the early Persian period within the Swat region, see **Figure 2.2** (Young, 2009). Despite the lack of cultural unity on an archaeological basis, the historical records indicate that the Persians overcame such obstacles, primarily through the establishment of a universal language for the Gandhārans, known simply as “*Gandhāri*” (Samad, 2011:35). In addition to the establishment of a universal language, the Persians also proceeded to develop a written system called Kharosthi, which was based on the Aramaic (Persian) script (Samad, 2011:35). The

development of Kharosthi remains highly important for the later periods of Gandhāra, as the written system would become one of the local scripts engraved on the Indo-Greek coins of study (Hoover, 2013:lxiv).

Another occurrence of note would be the developed religious tolerance the Persian system lawfully enforced, which initiated the long relationship the region of Gandhāra would have with the religion of Buddhism and was practiced despite the Persian state religion of Zoroastrian also being present in the region (Samad, 2011:35). Furthermore, there is evidence of the Gandhārans having blended together the more prominent Persian religion of Zoroastrianism during this era, with that of the seemingly ‘less popular’ local faith of Buddhism; an element of this mergence can be seen even today in the “*veneration of the flame*” (Samad, 2011:35). This act of hybridizing religious elements is also of relation in Indo-Greek times, due to both traditional Greek gods and native Indian gods, often being inscribed simultaneously on Indo-Greek period coinage; a matter which denotes the ‘melting pot’ effect for this region (Hoover, 2013:lxiv).

Also within the period of Persian rule, an established network of roads was said to have been built, upon Darius I’s reign during the late 5th century BCE; wherein it was also stated that a Persian official could travel to any part of the empire in 15 days or less (Samad, 2011:34). In addition to paved roads, naval pathways were also commissioned during Darius I’s reign, and a route down the Indus river was said to have been established under Persian administration; though to what extent both trade ways were used is currently unknown (Samad, 2011: 35-36).

Despite all the benefits Persian occupation brought to the region of Gandhāra, the Persians were also ruthless in the role of taxation. A fact that can be seen in the direct exploitation of Gandhāra’s natural wealth. Evidence of which can be seen in Gandhāra alone

having provided 1/3 of the combined 20 Persian Satrapies' annual tribute, an administrative act accounted by Herodotus in his *Histories*, written in the 5th century BCE (Samad, 2011:34). In Herodotus's account, it was stated that Gandhāra supplied three hundred and sixty talents of gold dust, which at the time was equal to 13 times that in silver. Therefore, one does not have to know the exact weight system, of which there is a high debate on, to realize the Gandhārans' predicament (Siddiqui, 2009).

One possible theory on why the Gandhārans were still willing to comply with such demands, comes from the late 19th century British archaeologist Sir Alexander Cunningham. Cunningham theorized that these acts of taxation were mutually beneficial to the '*natives*' of Gandhāra, due to the Persian's ability to obtain silver, which was considered far more valuable to the Gandhārans than gold, as Gandhāra lacked natural reservoirs of silver (Cunningham, 1891:6). This theory is of significance, as its core concept has continued to be enforced to this day, due to silver's role as a commodity to ancient India, and can be seen in India's first coinage, otherwise known as punchmarked coins, primarily being composed of silver (Goyal, 2000).

Another territory acquired during the Persian era would be the satrap of Taxila, which was successively conquered, and annexed, by Darius I during the late 6th century BCE; Taxila as an area is of great importance due to its later absorption into Greater Gandhāra (Samad, 2011:33). Moreover, the Persian style of administration for both Gandhāra and Taxila seemingly allowed for a loose cultural unity to emerge, which later would give way to Taxila's absorption into Greater Gandhāra, and thereby established the theoretical territory ruled by the Indo-Greeks (Samad, 2011:33).

Recently there have been estimations of how large the satraps of discussion were, with the Persian satrapy of Gandhāra being projected at around 7,176 square kilometers, while the

separate region of Taxila has been projected to have been 7,000 square kilometers (Samad, 2011:32-33). This makes for a combined total of 14,176 square kilometers upon the combination of both territories in the successive eras mentioned below, one should emphasize that these numbers are just approximations, and are in no way given in the historical records of the region. Nevertheless, these estimated numbers provide how large of a territory Gandhāra was, and will ultimately prove valuable in the continued discussion of the region below.

One final subject of note for the Persian period would be the historically assumed Persian initiation of urban developments within Gandhāra and Taxila, in which both satraps possessed ‘Persian’ established capital cities (Samad, 2011:37). For Persian Gandhāra, the capital city was said to have been the city of Charsadda, which was believed by a 20th century archaeologist (Sir Mortimer Wheeler) to have been founded by the Persians (Wheeler, 1962). As for the Persian satrap of Taxila, the capital city was the aptly named city of Taxila (natively known as Takṣaśilā) that was attested by another archaeologist of the 20th century (Sir John Marshall) as also being constructed initially by the Persians (Marshall, 1960). These previously mentioned archaeologists are renowned individuals, and much progress in Indian archaeology is owed to them. However, their great renown does not dismiss the fact that they were wrong on both accounts, as recent archaeological evidence now attests that the two cities above are in fact much older than previously thought. Taxila as a city is now estimated to have been constructed sometime between 1,000-500 BCE (Allchin, 1993). While the city of Charsadda’s establishment has now been pushed back to the mid second millennium BCE, due to modern archaeological testing (Magee, 2005).

One question regarding these historical assumptions above concerns the extent to which the Gandhārans accepted the Persian’s strategies of administration, and causes a direct issue with

the acquirement of ethnohistory for Gandhārans from the mentioned historical events above. Moreover, the material evidence supporting the cultural dominance of the Persians has also recently been brought into question (Petrie, 2008). This factor of an unclear material culture, when coupled with the poor stratigraphy of key archaeological sites, such as Taxila and Charsadda, has made even the end of the Persian influence over Gandhāra, a matter of great debate among modern archaeologists (Petrie, 2008).

Regardless of this previous debate, the Gandhāran era of Persian rule historically ended with the initial Greek invasion led by Alexander the Great, which began in the Spring of 326 BCE, and is where this current subsection ends and the next begins (Marshall, 1960:11).

Initial Greek Invasion (Alexander Period)

Alexander's invasion of both Gandhāra and Taxila in 326 BCE, has given modern scholars an abundance of written accounts on the Gandhārans, which to a certain extent confirm the debated Persian influence in the previous section (Samad, 2011:37). From historical accounts detailing the Gandhārans' integration of Zoroastrianism, the Persian state religion mentioned in the last section, to a grand wine competition Alexander held through the usage of native undiluted wine, much and more that can be learned about Gandhāran life in the late 4th century BCE, through the wealth of historical sources alone (Samad, 2011:37; Falk, 2009). Although there is a 'grain of salt' mentality to the accuracy of these sources, which can be seen alone in the physical descriptions of the ancient Indians, who were said to have ranged from 1.80 to 5.85 meters tall; an inaccuracy that was likely developed as a result of grand exaggerations, and a firm lack of firsthand accounts (Ray, 2007:23).

Regardless, one topic that likely remains true, due to the multiple historical accounts of the event, is the existence of a Gandhāran set of philosophers known as the 'Gymnetai' sect, with

one member (Calanus) having joined Alexander on his journey back to Babylonia (Beckwith, 2015:220). The significance of this previous story is that it is now believed to be one the earliest interactions between Greeks and Buddhists (Beckwith, 2015:218-225). Furthermore, it has modernly been speculated that Greek philosophy and Buddhist philosophy are extremely similar, and in a sense ‘highly compatible’ with one another, which adds support to the supposed Indo-Greeks’ adoptions of Buddhism (Beckwith, 2015:218-225). Thus providing source material on this study’s hypothesis of the Greeks having acculturated to Indian culture.

Accounts of Alexander’s journey through the region of Greater Gandhāra, also describe the region as being one of abundant life and offers subsequent details on how prosperous it was at the time of Alexander’s invasion; which provides merit for the continuous invasions of Gandhāra. As for the urban areas, there are also accounts that mention the city of Taxila directly, wherein the city was said to have possessed both a fully developed marketplace and university (Samad, 2011:38). A full description of the market is provided by the classical historian Arian, whose account was written in the 2nd century CE, a full five centuries after Alexander’s campaign in Asia. Nevertheless, Arian’s account provides explicit details of the native stall’s possession, which included a variety of fresh produce, vessels in the form of both pottery and woven baskets, and even a talking parrot (Samad, 2011:38). This previous account was given due to its display of the developed local market system, and the diversity of goods offered in Alexander’s time; which is of grand importance due to the Indo-Greek rule occurring approximately a hundred years later, wherein one would expect even more developments of such a market system, due to the influence of the ‘*Silk Road*’ (Behera, 2002).

Despite the grandeur of Alexander’s campaign in India found within classical western accounts, early eastern accounts on the matter, limited to one primary medieval Persian source,

displays a lessened significance of Alexander's invasion (Ray, 2007:7). A fact that can be seen today, due to Indians often possessing a firm position of Alexander having died in India, due to him being successfully defeated by the Indian king Porus, whom Alexander successfully defeated on the Hydaspes River in 326 BCE (Ray, 2006:98). Moreover, there are no early Indian historical sources of Alexander's campaign, at least none that have survived to this day, which has led to a general sense of Indian indifference on Alexander's invasion, and the event's negligible effect on the region of Greater Gandhāra (Marshall, 1960:13).

As for the matter of Alexander's administration of Greater Gandhāra, by most accounts, it appears that Alexander emulated the previous Persian satrap system. Evidence of this can be found with Alexander's former adversary (Porus) having been given the right to rule Alexander's conquered Indian territories (Badian, 1965). Though accounts on such matters are far from conclusive, as some ancient sources also state that Alexander appointed Greek generals to rule his Indian satraps instead (Samad, 2011:91).

In spite of Alexander's grand campaign described in western accounts, Alexander's influence on Indian culture is virtually nonexistent, though some have stated otherwise (Naskar, 1996:28-60). Regardless of the debate, on the level of material culture, there is evident material displaying Alexander's lack of influence, one of which can be seen in John Marshall's account of Taxila (Marshall, 1960:13). As Marshall's excavation records make a note of the small material existing from Alexander's conquest, and his subsequent period of administration, wherein only a few coins and pottery sherds openly account for the initial Greek political administration of the area, which was less than a decade in length (Marshall, 1960:13). Marshall's excavation account of Taxila also makes a note of a massive coin hoard, which was estimated to have been buried around 300 BCE, which falls more than a decade after the period of Alexander's era

administration (Marshall, 1960:57). The coin hoard contained over 1,000 punchmark coins, and only two Greek coins, with one of the Greek coins being that of Alexander the Great, while the other Greek coin was minted during Alexander's brother: Philip Arrhidaeus' reign (Marshall, 1960:57). This hoard has been mentioned here due to its potential outlook of Alexander's influence on the Gandhārans' way of life, as an overwhelming majority of the coinage that was found was Magadhan era punchmarked coinage; which would give precedence to a grand lack of Alexander's invasion having impacted the Gandhārans culturally (Kosambi, 1965:134). Magadha was an Indian empire in power approximately a century before the Mauryan Empire mentioned all too briefly in the introduction section above (Kosambi, 1965:134). It should be noted that this previously supplied conclusion lacks full merit, as the given evidence is only one coin hoard, although as the evidence currently stands Alexander's influence, on a material level, is virtually non-existent in the region of ancient Gandhāra.

One more item of importance for this section is that punchmarked coins, the early coinage of India, which was a coin that featured very rudimentary figurines, was in no form influenced by Alexander's invasion; which very clearly brought in Greek portrait style coinage, as can be seen in the previously mentioned hoard found in Marshall's account of Taxila (Gupta, 2014:64). This previous statement is of great importance for this study as it falls under the rules of acculturation, wherein the process of cultural change, and the reflective material by product, only occurs in long term periods of increased interactions (Redfield, 1936:149). Therefore, these prior results of a failure of Greek material influence in Gandhāra, in this instance coinage, can be viewed as a failure of the acculturated process to come to full fruition in the first period of Greek administration, which again was less than a decade.

Closing this era of Gandhāra is the steady decline of Greek presence after Alexander's death in 323 BCE, by which the Greeks remaining in the region were said to have fully evacuated by the year 316 BCE (Samad, 2011:44). However, as mentioned above within the introduction section, it wasn't until the last decade of the 4th century BCE that the territories of Greater Gandhāra, were officially seceded, by the Greeks, in particular, the Seleucid Empire, to the Mauryan Empire (Stančo, 2012:12).

Mauryan Gandhāra

The Mauryan Empire's administration of Greater Gandhāra began with the previously mentioned ruler Chandragupta, who according to historical accounts united a majority of ancient India under one banner (Samad, 2011:46). This statement is notable due to the Mauryan period (last decade of 4th century- first decade of 2nd century BCE) representing the first historical era linking Greater Gandhāra, both in terms of formal political and cultural patterns, to the rest of the Indian subcontinent; which is a matter that had not been seen in the archaeological record prior the Persian period of rule in Gandhāra (Samad, 2011:46.; Vogelsang, 1988).

Under the initial period of Mauryan administration, during the early 3rd century BCE, roads were continually being built and maintained, an item that was described explicitly in the Greek historical account by Megasthenes, who was a Greek ambassador for the Seleucid Empire, with both territories being seen in seen in **Figure 1.2** (Ray, 2007: 20-2). The continued upkeep of these roads allowed for an unprecedented level of interconnection, from the ancient Indian subcontinent to the ancient Mediterranean. This state of connectedness seems to have promoted even more trade within Gandhāra, with the most prominent evidence for an increase in trade activities lie within the Seleucid Empire, mentioned above (Samad, 2011:50). Due to such an increase in commerce, it can be inferred that trade was of the utmost importance for Mauryan

administration. In fact, according to one Indian text known as the Arthashastra, the title translating from Sanskrit to the ‘science of material gain’, the Mauryan dynasty incorporated a law requiring a license for the act of trading goods; wherein there also appears to have been fixed prices for the trade items, set by the ruler, who also configured a select percentage of profit (Kosambi, 1965:155; Muniapan, 2008). This induction of trade regulation is highly significant, as it displays how rapid the development of Indian trade was becoming under the Mauryan period of rule. Moreover, one cannot help but assume that this level of trade eventually gave rise to the famous *Silk Road*, which formed during the late years of Mauryan rule in 202 BCE (Behera, 2002).

Another major item of occurrence within the Mauryan rule of Gandhāra would be the monumental evidence for Buddhism’s advancement to a widely-practiced religion (Samad, 2011:49). Material evidence for the rise of Buddhism dating from this period can be seen in the increased number of Buddhist temples, otherwise known as stupas, in addition to the grand Edicts of Ashoka (Samad, 2011:49). Ashoka being the grandson of Chandragupta and was the first historically known Indian ruler who openly ‘converted’ to Buddhism (Samad, 2011:49). These two archaeological additions are of grand significance, as they allow one a brief glimpse of who the Gandhārans as a ‘native’ group were on the cultural level. Prior to this development, Buddhism as a religion was unquestionably a small religious sect of little importance to the wide cultural context of ancient India; and it wasn’t until Ashoka’s adoption of Buddhism, mentioned on his edicts, that Gandhāra became an effective refuge for Buddhists (Smith, 2016).

Ashoka’s Edicts not only detail Ashoka’s life story, which do so by noting his great transformation from ‘bloodthirsty’ warrior to ‘peace-loving’ ruler, but also provide details on the political administration, in which the teachings of Buddha, known by the Buddhist term ‘Dharma’

are formally provided and assumedly enforced (Dhammika, 1993). The Ashoka's Edicts are also valuable due to their display of the writing systems used by the immediate populace, and in the Gandhāran context both known edicts are inscribed with the previously mentioned Kharosthi script, which was a written language that saw continuous use even after the Indo-Greek period of study (Samad, 2011:50). In spite of the language's continued usage within the Mauryan period of rule, one can truly never know to what degree Kharosthi was used by the populace. Regardless, the continued usage of Kharosthi even after the Persian system of rule, is a matter of extreme importance to the Indo-Greek period of study, due to the bilingual inscriptions on this study's coinage being an item of research.

As for Buddhist stupas, the origins of the architectural design remain unknown, but according to Buddhist tradition, the form of architecture is said to have developed shortly after the death of Buddha, which would place the period of Buddhist Stupa development around the mid-1st millennium BCE (Myer, 1961). Despite this previously known fact, Ashoka is often credited with the expansion of the Stupa tradition on an unprecedented scale, due, most prominently, to historical texts detailing Ashoka's sponsorship of raw material for the development of 84,000 stupas across the Mauryan Empire (Smith, 2016).

While the Mauryan period is renowned for its architectural achievements and historic trade development, the material culture of this period, like the previous two eras of Gandhāra above, remains lacking for this study's assessment, outside of prescribed assessment of coinage. As Marshall's excavation of Mauryan Taxila, primarily details 'trade goods' from both the east, mostly in the form of small figurines, and the west, wherein small items of art and utensils were found (Marshall, 1960:58). And while such artifacts are of importance, they, unfortunately, offer

very little in this study's assessment of acculturation, which requires an artifact type of continued occurrence within the eras before Indo-Greek rule (Marshall, 1960:58).

The prosperity of the Mauryan Empire, like the historical occupations of Gandhāra before it, waned with time; and one can find the formal end of Mauryan rule shortly after the death of Ashoka in 232 BCE (Samad, 2011:51). Within the first decade of the 2nd century BCE, the area of Gandhāra exchanged ruling hands yet again, and this time the invaders were the Indo-Greeks of study, who are to be mentioned in greater detail below in the second section of this background.

Overview of Archaeology

Overall, the previous archaeological excavations conducted in ancient Gandhāra, have been found lacking in most modern archaeological studies, including this current research; as there is a unanimous need for more work to be done within Gandhāra (Tanweer, 2011; Petrie, 2008). Such issues have not been aided by the continual restraints, and political turmoil occurring within modern Pakistan, which is the area in which ancient Gandhāra primarily presides, as seen in Figure 2.2. As such, archaeological sites in Pakistan, from pre-Islamic periods are often irreversibly damaged and looted, which has furthered increased archaeological problems for the individual who studies ancient Gandhāra (AhmedChaudhry, 2011). The site of Taxila has experienced a large portion of this burden, a statement that can be seen in the archaeological site having recently been listed as one of twelve sites 'on the verge of irreparable loss and damage', with most of the recent damaging having been caused by acts of war and looting (UNESCO, 2010). Despite this previously regarded issue, in the past decade, through the guidance of Italian archaeologist, there has been an increased governmental strive for CRM (Cultural Resource Management); which is an act that ultimately seeks to reclaim the region's

past heritage, regardless of the period's religious affiliation (Khan, 2013). Therefore, with such programs instated, along with the continued excavations by Italian archaeologist, there remains a future hope to overcome these well-documented archaeological issues for ancient Gandhāra (Callieri, 2008). However, this study seeks to overcome these previously stated archaeological issues without the aid of such future studies, and the way this study seeks to do so is through the analysis of both societies' coinage prior to the Indo-Greek period and is why this study's unique methodology has been enforced.

1st PROBLEM'S SOLUTION

This study's solution of using coinage, while in way deviates from most modern archaeology, is not a new concept and has been used in several other ancient archaeological studies. In fact, in a recent Roman provincial study, there was a statement of the potentiality of coinage being able to aid in cultural identity studies, due to coinages' unique offering of various cultural memes of assessment (Howgego, 2005:2). Unlike previous numismatic studies, however, this study's aim is to concentrate on acculturation; and in order to properly assess acculturation, one must first see what the two cultures were like before the period of assessment, which is what the analysis on prior Greek and Indian coinage does (Redfield, 1936:150). Furthermore, through the process of incorporating schema theory, by which the theory details, on an archaeological basis, what makes a Greek/Indian coin, in effect Greek/Indian respectfully, there remains a way to properly evaluate acculturation rates within the Indo-Greek period of study. To provide a further grasp on what defines both societies' coinage, below are two summarizations on the characteristics of Greek and Indian coinage that were minted prior to the Indo-Greek period of interest. It should be noted, that the discussions of coin characteristics

directly correlate to the selection of variables within this study's data set, the latter of which shall formally be provided in the research section below.

Greek Coinage

Overview

Greek coinage is traditionally constituted as being any ancient European coinage that has not been classified as a Roman coin (Carradice, 1988:20). Therefore, there is an immediate need to readdress what a Greek coin is for this research, not only for the sake of this discussion but also for the successive employment of schema theory in this study. For this study, the concentration of what a Greek coin mainly lies with the coinage of Alexander the Great and his successors in the Hellenistic period; for the latter of these, the coinage of the Seleucids and Greco-Bactrians are of great importance. The reasoning for the latter's selection would be due to the Indo-Greeks being a successful decedent from both of the Hellenistic Kingdoms, a fact that was mentioned earlier within this thesis's introduction, see Figure 1.2. Upon the clarification of this study's concentration of selective Greek coinage, this discussion will now turn towards aspects that have grown to define ancient Greek coinage, in the attempt to attain a Greek cultural schema. In the vein of Dr. Holt's theory of a 'Darwinian selection' of coin traits, in this study there is a firm belief that a society's notion of what a coin is, in terms of a coin's intrinsic and cultural values, and the selection process of successive coinage traits; which is a far cry from the process being a randomized affair (Holt, n.d.).

Economic Traits

1. METAL TYPE

Another ancient Greek coin trait of schematic interest are the precious metals used to create a Greek coin; and while the percentages of a coin's trace elements (e.g. iron, titanium,

etc.) can be found within modern coinage studies, for this current discussion one only needs to know the main metallic substance, as it remains the item of schematic importance in this study (Vijayan, 2005). Therefore, with this previous statement in mind, one can find that the two precious metals of choice for ancient Greek coinage were silver and gold, with the later induction of copper and bronze metal coinage following the Peloponnesian War in the late 5th century to early 4th century (Carradice, 1988:132). In the case of Alexander's coinage, the same metals are historically attributed, though as for the ratio of how much one metal was minted over the other, one can only speculate with the findings that have survived today. However, in the Hellenistic period following Alexander's death, bronze coin findings become far more abundant than any era of Greek coinage before (Carradice, 1988:132). Thus, one can assume that the local demand for bronze coinage was unprecedentedly high. In fact, within the Indo-Greek coinage of study, one can arguably find evidence for low denomination coinage experimentation, due to the Indo-Greek's advent of cupro-nickel coinage within the first generation (Hoover, 2013:lxiv). The higher rate of bronze Indo-Greek coinage is a significant outcome, due to the early Indian coinage generally being composed of silver, with only a small number of copper Indian coinage being found today (Brown, 1922:15). Therefore, one can see the induction of bronze coinage as a process of the Greeks having acculturated the Gandhārans to a more complex monetary system, which is directly reflected in the usage of multiple metals that were not previously used by the Gandhārans.

2. WEIGHT STANDARD

The weight standard of a Greek coin is another characteristic of importance and remains one of the more prominent connections between Alexander's and the various Greek Hellenistic states' coinage, the latter of which includes the Indo-Greek coinage of interest (Carradice, 1985:

127; Hoover, 2013:18-166). The result of this previous fact complies that from Alexander's rule, beginning in 336 BCE, there was a 'starting line' of schematic succession of what a Greek coin should weigh; which was directly inherited by the Indo-Greek coinage. One should note however that as Alexander's campaign moved eastward, Alexander did employ a Persian weight standard on his minted coinage for eastern provinces; an act that was likely implemented, due to the already well-established Persian monetary system having existed within the eastern provinces (Metcalf, 2012:111). Therefore in a way, Alexander set the pattern of local weight standard adaptation, of which the successive Seleucid Dynasty seemingly accorded to, and can be seen with the latter's adaptation of the Persian weight standard, while also retaining their ties to the Attic standard (Metcalf, 2012:236). The reasoning behind the Seleucid's retainment of the Attic weight standard, is seemingly due to its usage in a wider context of trade, while the Seleucids' implementation of the local weight standard seemingly was used for monetary practices in the immediate 'local' vicinity (Metcalf, 2012:236). A similar occurrence appears to have happened within the Indo-Greek period of study, though to an unprecedented degree of local weight standard employment, as the local Indian standard was successively adopted, and seemingly prioritized more than the Attic standard (Hoover, 2013:lxiv). However as previously mentioned above, the adoption of a local weight standard is likely a reflection of the immediate economic needs of the territory, rather than a correspondence to a change in culture; an idea that will be expanded below within the research discussion section.

3. DENOMINATION

Next on the set of Greek characteristics would be a coin's denomination, or set value, which is dictated directly by the Attic standard previously mentioned. The Attic weight denominations of 4th century BCE Athens (**Table 2.1**) seemingly transcended to both

Alexander's silver, and gold Greek coinage; despite Athenian currency solely being comprised of silver coinage, at least after 392 BCE (Mørkholm, 1991). Alexander's successors also based their coinage values off the Attic denominations, seen again in **Table 2.1**, and it with the

Denominations	Metal Type	Weight (in Grams)
Tetradrachm	Silver	c. 17.28 gm.
Drachm	Silver	c. 4.32 gm.
Hemidrachm	Silver	c. 2.16 gm.
Diobol	Silver	c. 1.44 gm.
Obol	Silver	c. 0.72 gm.
Hemiobol	Silver	c. 0.36 gm.
Quarter Obol	Silver	c. 0.18 gm.
Eighth Obol	Silver	c. 0.09 gm.

TABLE 2.1: *THE ANCIENT GREEK COIN DENOMINATIONS OF THE ATTIC STANDARD IN ATHENS DURING THE 5TH CENTURY BCE.*
ADAPTED FROM (MØRKHOLM, 1991)

previously mentioned Seleucids that this fact can be seen most prominently (Mørkholm, 1991). Though like any system adapting to a new environment, there are some expected changes and variations that occur, and ancient coinage values are no exception to this rule. In fact, in the

Hellenistic era, there are multiple new denomination types, of which seemingly conferred to weight standards, and thus likely reflect the monetary needs of the locals (Carradice, 1988:128-134). One example of new Greek coin denominations can be found with the Seleucids, who upon the increased usage of bronze metals, implemented a series of new denominations of bronze coinage based upon a 'chalcus', which acts in a similar accordance to the name 'drachm' within ancient silver Greek coinage. To furtherly explain what was meant by this latter statement on drachm and chalcus, a modern example shall now be detailed to provide clarity. Both drachm and chalcus were terms that possessed a particular function within ancient coinage,

which to draw on modern currency, can be seen in the way that an American ‘dollar’ is viewed as the base currency in our society. Moreover, the base currency sets the path, and often the name, of the other denomination types, due to the other denominations being based upon successive fractions of the named denomination type; such an example can be found in our American quarter being valued at $\frac{1}{4}$ of a dollar (Newell, 1978:271). One should note that the nature of the Hellenistic bronze denomination, ultimately remains a mystery to modern numismatists, with there being multiple theories on the subject. This previous outcome is primarily an issue, because of the problems one faces in the attempt to properly access the size and weight of bronze coinage, due to the corrosive nature of base metals, which tends to cause inaccurate results. It should also be noted that this section of Hellenistic Greek coin denominations, gave a very generalized view of what denominations were in use during the Hellenistic period, as this discussion’s purpose was to display an underlying process of cultural schema for a Greek coin, and was not to detail the particularities of coin values or the multiple theories behind them. Therefore, as this discussion stands, there was indeed a very general sense of continuity of what a Greek coin was during the Hellenistic period; with one of the most important examples being found in the continuation of the Attic standard denominations, which were of use even during the Indo-Greek period of study.

Cultural Traits

These previous variables have displayed the economic characteristics of Greek coinage, below are the more ‘culturally expressive’ aspects of coinage that are in a sense direct memes of culture. Chief among these traits is the ‘type’ of a coin, both in the sense of an obverse and reverse. Type is a numismatic term dealing with the unique cultural imagery, or the previously regarded ‘memes’ in this study’s introduction, that appears on a coin and help distinguish one

society's coinage from another (Carlton, 1996:285). An example of a coin's type, for this study's description, can be seen in the American quarter, with the obverse side's type being George Washington, while the quarter's reverse type is the American eagle, up until the 50 States Program (Yeoman, 2016:752- 873).

1. OBVERSE TYPES

A common Greek obverse type for Hellenistic coinage is the stylized portrait of the current ruler, usually facing right, which coincidentally is similar to the American quarter's George Washington portraiture of previous reference (Carradice, 1988:122-123; Yeoman, 2016:752- 873). One should note, that the ruling portrait's bust type did not suddenly appear out of Alexander's own coinage, who outside of one bronze coin type of dispute, did not employ a ruling self-portrait on his coinage (Carradice, 1995:109). Despite this, Alexander's coinage was still inscribed with a portrait style image on the obverse side of this coinage, which was of Herakles in a lion skinned headdress. Therefore, one can state that the advent of the Hellenistic era's imperial portrait was a slow evolutionary process that began soon after Alexander's death in 323 BCE (Metcalf, 2012:212-213). This slow induction of the ruling portrait can first be seen in the coinage of Ptolemy I, who was a Greek king who ruled in Egypt, who posthumously minted coins ascribed with the portrait of Alexander wearing an elephant headdress around 319 BCE (Metcalf, 2012:211-212). The process of ascribing a living person on a Greek coin seems to have been done first by Ptolemy I around 304 BCE, who implemented a self-portraiture on his coinage thereafter (Metcalf, 2012:180). By the end of the first generation of Alexander's successors, the ruling portrait type had successfully been schematically implemented into Greek ideals of coinage, which can be seen on virtually all the Hellenistic coinage by the mid-3rd century BCE (Metcalf, 2012:180). This trait of ruling portrait is highly significant for the Indo-

Greek study at hand, as it vividly displays Greek authority, and some might even say ‘arrogance’, as Indian coinage prior to the Indo-Greek period possessed only rudimentary forms of people, and did not include any form of self-portraiture (Gupta, 2014:63-64).

It is important to note that this discussion above of a schematic obverse type for Greek coinage, concentrated solely upon the silver metal coinage; and due to the nature of ancient bronze coinage conditions, with the previously mentioned issues of corrosion being quite common. Due to such problems, bronze coinage types have often been excluded in previous numismatic studies because of the poor quality of their obverse and reverse types. Regardless, there is a significant difference in what schematically constituted a bronze coin’s obverse, as under the Seleucids, for example, instead of a ruler’s portrait there is a horse’s head facing right in a similar portrait style manner (Metcalf, 2012:239). There are multiple other Greek bronze obverse types, far too many to mention in this section, there is however still a basic pattern, at least in the terms of Indo-Greek coinage, as the bronze coinage seemingly utilized elements of the native (Gandhāran) culture; which can be seen quite often in the study ahead, and is why the obverse variable has been successively split into the respected categories of silver and bronze schemas (Hoover, 2013:lxiv).

2. REVERSE TYPES

A Greek reverse type is far more diverse in appearance, in comparison to the Greek obverse schema above. However, there does appear to be some basis of schematic thought to a Greek coin’s reverse that can be found from Alexander’s lifetime to the Hellenistic period of interest. As Greek coinage from Alexander’s period (336-323 BCE) to the Hellenistic (323-31 BCE) were generally inscribed with a Greek deity for its reverse type (Mac Dowall, 2007). Therefore, one can say that for the schema of ancient Greek coinage, during the Hellenistic

period, the reverse was generally reserved for religious patronage. Though as with any given statement, there are noted exceptions to the rule, most often occurring in the form of various inanimate objects (e.g. shields, helmets, etc.), along with native animals from the region of rule, both being inscribed on the reverse of Greek coinage, though on a notably less common occurrence (Plant, 1979). Regardless, there again is a continued pattern of such a system in the Indo-Greek period, with there even being local deities ascribed on their coinage; which alludes to the process of the Gandhārans having acculturated the Greeks in the matters of religion (Hoover, 2013:lxiv). Despite the lessened difference in reverse type between coins of silver and bronze, as there was in the obverse type, the reverse section has regardless been split into the two categories still, due to the recognition of their being a significant increase in Gandhāran themed reverse types on bronze coinage.

3. SHAPE

The most obvious, and important, of ancient Greek coinage traits, is the shape of a coin, which since the origins of Greek coinage, dating to around 615 BCE, have predominately been circular in shape; with one minor exception being the dolphin shaped coinage of Olbia, from the Black sea region seen in **Figure 2.3** (Tye, 2009:61; Carradice, 1995:43). The reasoning behind the prominence of the circular shape is an outcome of the process of minting ancient coins, which due to the circular die shape, mentioned within the introduction, naturally the coins will follow suit on the aspect of a circular shape. While the variable of shape is a simplistic one, it is nevertheless an item of great value for this study; as the Greek circular trait co-existed in Indo-Greek coinage with square shaped coins, the latter shape, of which stemmed from prior Indian coinage (Hoover, 2013:lxiv). This comparison of two coin shapes, within the Indo-Greek period,

thereby offers one systematic way of assessing the acculturation process the people of the Indo-Greek period theoretically experienced.



FIGURE 2.3: ABOVE ARE TWO IMAGES DEPICTING THE TWO COIN SHAPES FOUND IN ANCIENT GREEK COINAGE. THE COIN ON THE LEFT IS OF ALEXANDER THE GREAT'S LIFETIME, AND DISPLAYS THE TYPICAL CIRCULAR SHAPE OF A GREEK COIN (IMAGE ADAPTED FROM NGC ANCIENTS, 2011). WHILE THE PICTURE ON THE RIGHT, IS A DOLPHIN SHAPED COIN FROM OLBIA, DEPICTING THE SHORT-LIVED OUTLIER SHAPE OF GREEK COINAGE FROM THE 5TH CENTURY BCE (IMAGE ADAPTED FROM ODESSA NUMISMATIC MUSEUM, 2000).

These mentioned Greek characteristics above, vividly define a sense of what a Greek coin was in the Hellenistic era, as from the end of Alexander's rule (323 BCE) to the Indo-Greek period (c. 185/6 to late 1st century BCE) there remained a cultural statement and idea of what a Greek coin should be. Of course, this discussion above has in many ways glossed over some details, some of which has been previously mentioned in the introduction (e.g. coin legend, die axis orientation, etc.). Nevertheless, the Greek coinage attributes of this discussion stand to reason, and have without a doubt provided a sense of continuity; or in other words, knowing what made a Hellenistic era coin 'Greek'.

Indian Coinage

Origins

For the matter of Indian coinage prior to the Indo-Greek period, known hereafter as punchmarked coinage, there is considerably less information known. A fact that can be seen even within the origins of punchmark coinage, of which there are multiple theories currently in play, on how the punchmarked coinage first appeared (Goyal, 1999). Of these multiple theories of punchmarked coin origin, there are two overlying categories of thought, the first of which is that punchmarked coinage was influenced by outsiders (e.g. Babylonians, Greeks, Persians), while the other category of thought is that punchmark coinage was created independently of early Europe's coinage (Goyal, 1999). This thesis's research favors the latter of these categories, as despite the noted evidence in favor of the former, overall the characteristics of punchmarked coinage are visibly unique, and in the same opinion of Sir Alexander Cunningham, they are entirely their own, or so current evidence would have many of us believe (Cunningham, 1891:52-54; Gupta, 2014:44). This previous statement can be attested solely, by the notable difference of how ancient Indian and European coinage were made. As punchmarked coins were first clipped directly from a flattened piece of metal, mostly composed of silver, and then successively 'punched' with, on average, five separate dies; a die again being a nail-like piece of hardened metal, used to impress features on coins (Tye, 2009:64). It should be duly noted that a 'punch' on a punchmarked coin, is not in any way an actual punch, or hole, in the coin's metal, and is, in fact, impressing relief features onto the coins. Moreover the key difference between ancient Greek and Indian coinage, is that the former used two dies, one for the reverse and obverse, to imprint the features onto their coinage, while the latter used a various mini-dies to imprint features on coinage, with there often being multiple 'punches' on the obverse side

(Metcalf, 2012:6). It is with these key differences in production that one can see the existence of the unique schema of what constituted an Indian punchmark coin, as again the coinage was never directly influenced by Alexander's invasion coinage; and the previously mentioned coin hoard, found by Sir John Marshall at Taxila, attests for this prior statement (Gupta, 2014:45). In the attempt to parallel the previous Greek coinage topic, the Indian coinage discussion will use the same coin characteristics and order, with the hope of making the dichotomy of thought between the two societies' coinage clear.

Economic Traits

1. METAL TYPES

The main metal used for punchmarked coinage is silver, with only a small amount of copper punchmarked coinage having been found today (Dhavalikar, 1975). This usage of only one primary metal is unusual, and there is some debate on whether gold coinage was ever used or not, mainly due to the ancient Vedic accounts of gold being used as money (Dhavalikar, 1975). Note that the term for the Vedic discussion in the last sentence was money and not coin, and is emphasized here due to the gold in the Vedic account not being described as formally weighed, or having possessed an official stamp of recognition denoting its legitimacy; both of which are required prerequisites for coinage (Dhavalikar, 1975; Casey, 1986:12). Regardless, silver represents the metallic aspect of ancient Indian coinage, which makes silver a metal that is used in this study for both Greek and Indian schemas. This matter, initially makes the process of assessing acculturation via the metal type difficult, at least for silver coinage, as for how can one define which context the Indo-Greek society viewed the usage of silver? It is for this reasoning that the other metals are of great importance for this study, as the induction of diverse Greek

metals displays the acculturated process that the Gandhārans likely experienced during Indo-Greek times, such as the previously mentioned Greek bronze coinage.

2. WEIGHT STANDARD

Weight Standard for the Indian context is relatively self-explanatory due to the previously mentioned ‘Indian’ standard already in use within other Indo-Greek studies, wherein the process of acculturation has, in a very crude sense, been assessed. This statement can be seen in previous numismatic works, especially in coin catalogs, in which the description of an Indo-Greek coin’s weight is either of the Greek ‘Attic’ standard or the Gandhāran ‘Indian’ standard (Hoover, 2013:lxiv). Naturally, the weight that has constituted the Indian standard fluctuated with time, like the Attic standard above. Despite such fluctuation, there is still a loose continuity of what an ancient Indian coin should weigh; and one that is thoroughly different than the Greek weight system, which is of direct importance in this study due to the variable of weight being viewed as highly schematic (Hoover, 2013:lxxx-lxxxi). As for the way this trait displays actual acculturation, it has been previously suggested that it does not, as after all, it is likely that the Greeks’ adoption of this standard was done so to appease the local populaces’ economic needs; much like how Alexander the Great adopted the Persian standard during his campaign eastward, into previous areas of Persian monetary influence in the late 3rd century BCE (Metcalf, 2012:111). In spite of this previous statement, there does remain a possibility that this trait of weight standard displays an outcome of acculturation, that being assimilation, in which one society is culturally absorbed into the other more dominant society; which does remain a possibility for the Greeks of the Indo-Greek period, as their coinage, by the end, is solely based on the Indian standard (Redfield, 1936:233; Hoover, 2013:18-166). Another aspect of the acculturation process for the weight standard of Indo-Greek coins is in the induction of the so-

called Indian and Greek ‘Module’ classifications for the bronze coinage of the Indo-Greeks (Hoover, 2013:18-166). These ‘module’ weight standards, are in all actuality an indication of the bronze coin’s shape and are in no way a positive indicator of which weight standard was of use for each bronze categorization. Despite this previous statement, the modules in this study will nevertheless be used as two separate weight standards, due to the shape of a bronze coin being a likely indication of economic usage, and thereby providing the probable weight standard.

3. DENOMINATIONS

As for the aspect of punchmarked coin denominations, there are four historically mentioned denomination types within the ancient text of the *Arthashastra*: 2.24.14 (Rangarajan, 1992). However, in the material evidence, currently only two denomination types are archaeologically accounted for, those being the karashapana and mashakas (Gupta, 2014:20). The karashapana is by far the more common of the two denominations, with an attested 989 defined variety types being ascribed thus far, and all being accounted as silver (Gupta, 2014:20). While the variety types of mashakas total out at 98, wherein most are comprised of base silver and copper (Gupta, 2014:20). These two known denominations create an outlook of a relatively bare monetary economy in ancient India, as while the Mauryan period of the 3rd century BCE did indeed possess coinage, to what degree the coins were used, one can only speculate. In fact, now that the previously mentioned *Arthashastra* text has been brought under question in terms of its historical accuracy, much of what was previously ‘known’ about the Mauryan coinage system, and their economy, has also been scrutinized (Gupta, 2014:15). Nevertheless, even if one were to have all four ancient Indian coin denominations accounted for in the archaeological record, the induction of Greek denomination types was undoubtedly extremely beneficial to the local economy of Gandhāra. This latter statement would be due to the increased outcome of lower

valued denominations, which would be of great use for day to day purchases, and is an act that was seen previously in Alexander's campaign, as he also implemented a large number of bronze coinage based upon local weight standards for 'day to day' transactions (Carradice, 1995:59).

Admittedly, these previous two sentences are pure speculation, though the success of the Indo-Greek coinage, over the previous punchmarked coinage, does cause one to wonder why the Indo-Greek coinage was so successful in dismantling the older punchmark coin system.

Cultural Traits

1. OBVERSE 'TYPES'

The remaining point of discussion on punchmarked coinage would be the items inscribed on them, and the factor of multiple 'punches' implemented does indeed give punchmarked coinage a unique flair, quite unlike any found within numismatic studies (Gupta, 2014:19). Moreover, there is a great range on the number of '*punches*' used on a punchmarked coin obverse side, though a great majority have five punches for the obverse alone (Gupta, 2014:19). These common five punches on the obverse side of karashapana coinage are of great interest in numismatics, despite the meaning of the five being one of the greatest mysteries in numismatics, as only 2 of the 5 have a fully deduced meaning (Tye, 2009:64). Despite such issues, these punches remain relevant to the Indo-Greek study at hand, due to the continued cultural pattern being seen within the more 'native' symbols on Indo-Greek coinage. As some native cultural memes (e.g. bulls, elephants, etc.) have been implemented seemingly since Harappan times (late 4th - late 2nd millenniums BCE) and were successfully incorporated into the Indian schema of coinage. A major issue with this previous statement of continued cultural connection, or implemented coin types, is that there was no actual coinage in Harappan time; although there are seals that display eerily similar inscriptions when compared to some Indo-Greek coinage. Some

of which can be found most frequently on the Indo-Greek king: Apollodotus I, whose Indian drachms are almost identical to Harrapan seals (Arte, 1990; Hoover, 2013:39-42). Overall, there does seem to be a legitimate flow of Indian cultural memes within the Indo-Greek coins of study, as the native animals of elephants, bulls, and camels appear on both punchmarked coins, and the later Indo-Greek coins; the latter of which strongly indicates an Indian influence on Indo-Greek coinage (Rath, 2004). This commonality again suggests the process of acculturation is at work during the Indo-Greek period, as there are definite signs of the collision/blending of what a coin is supposed to be during the two centuries of Indo-Greek rule; a factor that ultimately makes the era an excellent case study for assessing the acculturation process through coinage.

2. REVERSE 'TYPES'

As for the reverse side of punchmarked coinage, there is typically only one punch found on karshapana coinage, however, there are some instances where there are multiple punch marks; therefore, the process of acquiring an Indian reverse schema is difficult (Gupta, 2014:36-39). Despite such difficulties, there remains multiple reverse symbols that are of direct influence within Indo-Greek coinage. One example can be found in the use of a rudimentary tree object implemented directly in one coin type issued under the Indo-Greek King: Agathokles (Gupta, 2014:241; Hoover, 2013:31). Therefore, the Indian reverse schema, while still cryptic, remains theoretically comprehensible in this study, due to prior Indian symbols having been integrated into Indo-Greek coinage, which subsequently displays the effects of acculturation. It is for this latter reasoning that the aspect of reverse imagery has been viewed as one of great importance, due to the allowance of the acculturation process; and is an aspect of particular importance due to the religious iconography often being implemented on the reverse side of coinage.

3. SHAPE

The shape of a punchmarked coin is often quoted as being ‘square’, even within this paper, however, the earliest of punchmarked coinage made in approximately mid-6th century BCE, those of the Magadha series, are mostly irregular in shape (Gupta, 2014:83-85). Furthermore, even during the Mauryan period in the 4th century BCE, the pattern of ‘square’ coinage was still irregular, though the general shape on a statistical standpoint did become more regularized (Gupta, 2014:207-239). Nevertheless, one cannot overly emphasize, that although there is a loose pattern of shape development, there are still an accounted amount of irregularities in shape, despite a grand majority of punchmark coins being quadrilateral in shape, as seen in **Figure 2.4** below. Thus, one can find the reasoning for the often ‘square’ generalization used within this study, and other publications (Gupta, 2014:207-239). The importance of the square trait of ancient Indian coinage is that the cultural schematic square coinage appears within Indo-Greek coinage; which as mentioned in the previous Greek section above, has given for a clean assessment of the acculturation process. This assessment is amplified due to the already existing chronological timeline, that is a result of previous work of historical numismatists. Lastly, it should be mentioned that while shape could be indicative of economic traits in this thesis research, the variable has instead been treated as a cultural variable solely. Though it is admittedly highly plausible that the Indo-Greeks also adapted square coinage for economic purposes, such as in the hypothesized attempt to take over trade in India, and thereby replace the prior Indian punchmarked coinage, most notably the karashapana denomination types seen in **Figure 2.4** below.

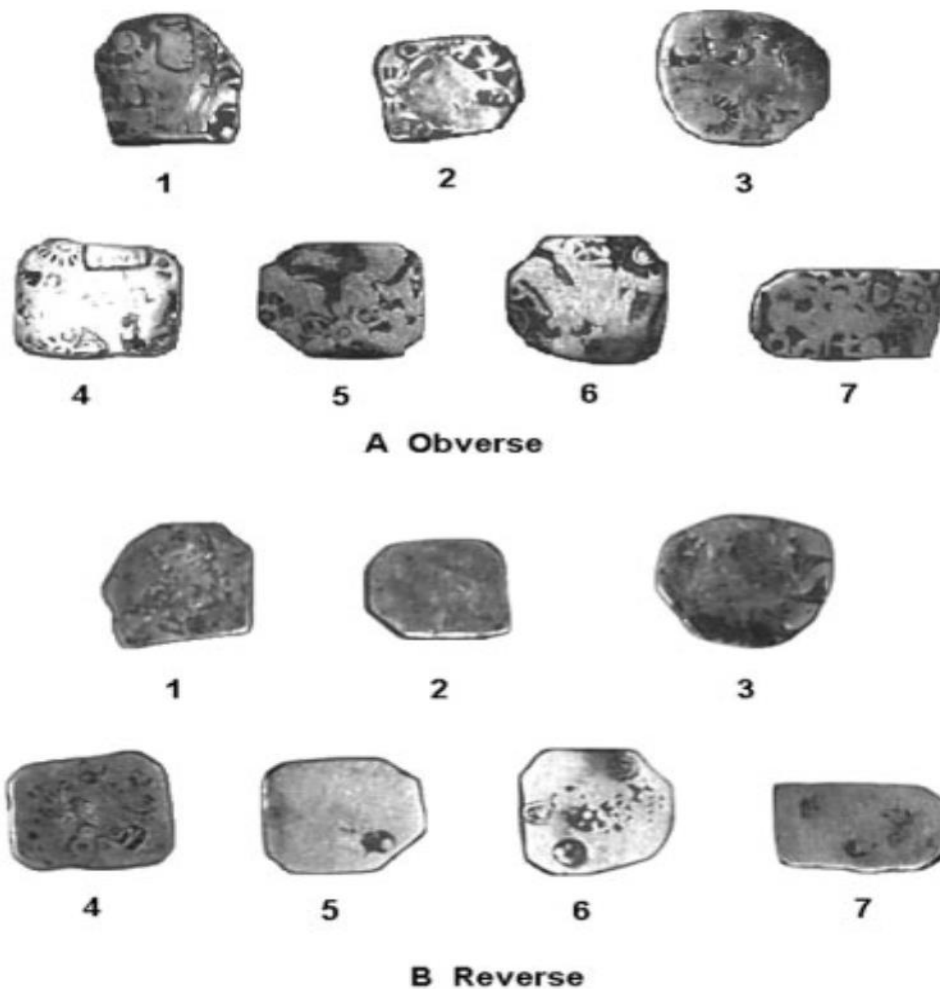


FIGURE 2.4: SEVEN PUNCHMARK COINS OF THE KARASHAPANA DENOMINATION, DISPLAYING THE IRREGULAR SHAPE OF EARLY INDIAN COINAGE. ALSO, ONE CAN SEE THAT THERE ARE SEVERAL ‘PUNCHES’ ON THE OBTVERSE, WHILE THERE IS GENERALLY ONLY ONE ‘PUNCH’ ON THE REVERSE (VJAYNA, 2005:129).

Overall, there is much to be learned just through the discussion of the two different coin types, and from the defining of how different both societies’ coinages are. Furthermore, one can no doubt see how unique of an opportunity the Indo-Greek period is in terms of both numismatics and acculturation.

2nd RESEARCH PROBLEM

Indo-Greeks

The second research problem of this research is interlinked with the 1st issue above, as there remains no tangible information of who the people in the Indo-Greek period were on a cultural basis. Despite recent excavations to fix such an issue (Callieri, 2008; Karttunen, 1990), there ultimately remains little understanding of the material culture in the Indo-Greek period. As besides Indo-Greek coinage, other artifacts have remained relatively elusive in Indo-Greek studies. Therefore, for now, there remains merit in the statement of coinage being the only item that culturally displays the Greeks who ruled south of the Hindu Kush, and the successive natives of their kingdom (Bopearachchi, n.d.). Prior to the formal discussion of the second problem's solution, the basics of what is known about the Indo-Greeks should be established, which includes the historical information that is known thus far. After the establishment of the basics for the Indo-Greek period, there will be a brief subsection on previous Indo-Greek numismatic studies, concentrating on two studies, who have likewise, attempted, in vain, to attain insight on who the Indo-Greeks were culturally.

Brief Beginnings

The Indo-Greek invasion in Gandhāra is estimated to have begun sometime after 200 BCE, wherein the second Greek invasion was presumably led by the Greco-Bactrian King: Demetrius I (Hoover, 2013:18). These Greek invaders hailed from the Hellenistic Kingdom of Bactria, dating from the mid-3rd century approximately, and was an ancient territory primarily located in modern Afghanistan, as seen in **Figure 1.2** (Benard, 1994). The Indo-Greek Kingdom was formally established in 186/5 BCE, a date that has been solidified in Indo-Greek studies thanks to a recent finding of a Buddhist reliquary (Jakobsson, 2009). Upon this foundation of the

Indo-Greek kingdom, the fundamental ‘guesswork’ of king chronology begins as well, which again is due to only a handful of historical sources surviving to the modern day, of which a good majority shall now be mentioned directly below.

1. CLASSICAL ACCOUNTS

The classical accounts of the Greco-Bactrian and the Indo-Greeks are all too brief and uncommon, with only seven of the known Greek kings being mentioned in written accounts at all (Bopearachchi 1998:7). One of the rulers accounted within the classical written sources would be the previously mentioned Demetrius I, who along with Menander I, was said to have “...subdued more peoples than Alexander had done...”, a tremendous task if truly accomplished (Holt, 2012:17). Eukratides I is another king who is directly mentioned in the written accounts, wherein King Eukratides I was said to have ruled a “*thousand cities*”, as mentioned in Strabo’s account of ancient India (Holt 2012:16). It is in these all too brief accounts, mere snippets really, that the historic appearance of the Indo-Greeks is even seen, at least in the classical sources.

2. ASIAN ACCOUNTS

The Asian historical accounts are hardly any better than the classical western account. In fact, only Menander I is explicitly mentioned by name. Despite this reduction of mentioned kings, it is within these Asian accounts that one can see the possible relations Indo-Greeks had with the Indian locals, this research’s personally ascribed Gandhārans. For instance, in the account given by the *MilindaPañha*, a Buddhist religious text, one can see a very extensive dialogue between Menander I and a Buddhist monk, the controversial conversation opens the possibility of the king being a ‘convert’ to the Buddhist faith, though most modern historians would dismiss the possibility of Menander I’s “*conversion*” to Buddhism (Benard, 1994). Such a dismissal would be due in part to a conflict in historical sources between the *MilindaPañha* and a

classical Greek source written by Plutarch, the latter of which details Menander I's death in a military camp, rather than the peaceful death of Meander I as a Buddhist monk given within the *MilindaPañha* (Holt, 2012:20).

Meander I's highly contested fate, whatever the case may be, is of no relevance for this research, as the acculturation process seeks the movement of the ocean's tides, not one individual wave. Meaning that this study seeks the acculturation process of a society, not a sole individual, even if that individual is a king. And while these historical accounts were undoubtedly useful to early Indo-Greek numismatists, who needed the sources to identify the initial stage of Greco-Bactrian and Indo-Greek coinage in a methodological fashion. Beyond the stage of identification, it is the belief of this research that the historical accounts of the Indo-Greeks have caused nothing but issues for the Indo-Greek field ever since. Evidence for such a statement can be found in the works of the two most renowned numismatists of Indo-Greek studies, these individuals being Sir William Woodthorpe Tarn and Awadh Kishore Narain (Holt, 2014).

Previous Numismatic Studies

To be brief, both Tarn and Narain gave into the biases of the historical source materials mentioned briefly above, sources of which emphasized the west and east conflict, which could be seen in the account of Menander I alone. Ironically, this previous sense of historical conflict between the eastern and western sources was emulated within these two men's successive works (Tarn, 1938; Narain, 1957).

To make matters even worse, both Tarn and Narain let their societies' current political affairs affect their views on who the Greeks of the Indo-Greek period were (Guillaume, 1990b). As Tarn, being an Englishman of the waning Imperial era during the early 20th century CE, believed that the Greeks who ruled ancient India, within the Indo-Greek period, ruled much like

the British Empire had India; wherein aspects of racial segregation would likely be in play during the Indo-Greek period (Guillaume, 1990b). While Narain, on the other hand, was of Indian descent and wrote his research during the first decade of India's independence from the British Empire in 1947 CE (Guillaume, 1990b). As such, Narain's take on the Greeks, during the Indo-Greek period, was one where the Greeks "*came, saw, but the Indian's conquered*", thereby suggesting that the eastern historical accounts detailing matters such as Menander I's 'conversion' were truthful (Narain, 1957:11).

2nd PROBLEM'S SOLUTION

While it is understandable how these two men became tantalized by their desires to see who the Greeks of the Indo-Greek period were, which came to fruition within their own 'histories', their works are, nevertheless, extremely flawed. Most notably due to both men's unmistakable biases, that were mentioned all too briefly above (Tarn, 1938; Narain, 1957). Moreover, each should also be criticized very heavily on a methodological level, due to both works' usage of coinage in a nonsystematic fashion, which was seemingly done to emphasize their widely different viewpoints (Guillaume, 1990a). Overall, there remains a definite need for a more objective based study on the peoples of the Indo-Greek period, which is what this study attempts to accomplish through the aid of the anthropological theories and methodologies that shall be in the following section.

CHAPTER 3: RESEARCH OVERVIEW

MATERIAL

The material of this thesis research is coinage, and as mentioned in the introduction section, the data for this study has been obtained through the use of coin catalogs, with Bopearachchi's 1991 catalog: *Monnaies Gréco-Bactriennes Et Indo-Grecques* being the primary catalog of use. The total number of coin entries for this study is 709, and all of which are accounted for in Bopearachchi's 1991 catalog. The successive interpretation of these coins is based almost entirely on Oliver Hoover's 2013: *Handbook of coins of Bactria and Ancient India*, with only a few exceptions, which shall be addressed explicitly, in the discussion section below. Overall, this research's interpretation of the respected material (e.g. what imagery is on the coin? the weight/size of the coin?) is highly dependent upon prior numismatists' research and is in no form different. This study's reliance on past Indo-Greek numismatic studies, remains especially true regarding the historical chronology of the Indo-Greek kings, wherein Senior's 1998 revision of the Indo-Greek line of kings is enforced, despite the usage of Bopearachchi's 1991 catalogue, which is significant as the latter has a different number of Indo-Greek kings assigned to Gandhāra (Senior, 1998:27).

METHODOLOGY

This study's methodology is truly where this research differentiates from prior Indo-Greek numismatics, as again this study is one of acculturation and its effect on artifacts of the past. How one can see a cultural process, like acculturation, in objects of the past is via the methodology of seriation, which was mentioned very briefly in the introduction of this study. The seriation methodology is often used to obtain a pattern of the 'comings and goings' of style; and thus, provides a rough chronology, of both time and cultural change for the society of study (Dunnell, 1970). This methodology is commonly used by archaeologist when the method of

relative dating via strata is no longer a viable option, and in some instances, the method has been favored even when an artifact is found in situ (original archaeological context), due to the amazing accuracy of the methodology. To explain more on the process of seriation, for those less familiar with the archaeological significance of this method, a short summary of a past seriation study done by the well-known 20th century archaeologist James Deetz shall be detailed below.

Summary of Deetz's Study

In Deetz's study, an analysis was conducted on a variety of tombstones in the New England area, dating from the 16th and 17th centuries CE (Deetz, 1994). The goal of the assessment was to display how a tombstone's design can reflect a society's cultural beliefs. Moreover, Deetz's study showed that when a change in the society did occur, known from the through historical records of the period, so too did the tombstone. Deetz's noted material change was assessed via a 'battleship' shaped curve on a line graph, which indicated the beginning, and successive falling, of the tombstones cultural styles (Deetz, 1994). It is due to such seriation graphs that one can conclude when a cultural/stylistic change was introduced, and when the style dissipated; the latter act often occurs a short time after a style has reached its peak in popularity (Dunnell, 1970). It is by this methodology that a variety of artifacts can be dated, including coins, after all no ancient coins have a date on them, despite the commonly incorrect belief that they do (Lockyear, 2012). However, it should be emphasized here that this study's usage of the seriation methodology varies greatly from the case study above. It does so most notably due to this thesis's concentration on the acculturation theory, thereby making the acculturation process the item of assessment, rather than the typical chronology.

Study's Implementation

This study's variation of the seriation method it brought on firstly due to the already established Indo-Greeks chronology, an act that has been completed by prior numismatist, as mentioned multiple times above, due to the previous numismatist's concentration on king chronology. Therefore, despite the method of seriation commonly being used for chronological purposes, the seriation method in this study is used to access acculturation patterns. Moreover, while the seriation methodology was inadvertently used during previous numismatist studies, the methodology incorporation in this study, nevertheless remains unique, due to its target of the acculturation process. The way in which the seriation method works in this study is due to the inclusion of the Generational aspect of the Indo-Greeks that has provided a proper way of assessing the phases of acculturation over the Indo-Greek period and is an item that shall be mentioned in greater detail below.

Upon the basic establishment of the study's methodology, one might still ask how the usage of such a method relates to this study's research questions and area. The answer to the previous question is quite simple, as it is through the same analysis and interpretation of Deetz's case of tombstones, that one will theoretically be able to see the cultural patterns of Indo-Greek coins. For instance, on Indo-Greek reverse iconography, which is one of the main interest for this study, one should be able to see the rise and fall of traditional Greek religious deities on the coinage via the use of the seriation method. As an added effect of the Greek religious decline, there should also be the byproduct of an increase in the appearance of native deities, which will theoretically result in a whole new set of patterns. It is through the analysis of these 'battleship' charts of culture, that one will be able to make a conductive scientific argument on the subject matter, due to the usage of quantifiable methods.

VARIABLES

This study possesses a great variety of variables, most of which were mentioned in the introduction and background sections of this study. It is for this prior reasoning that the variables of this study shall now be listed in two charts below, with no added explanation. The reasoning for two charts of variables would be due to this study's focus on both the cultural implemented memes on coinage (**Table 3.1**), in addition to the economic influences (**Table 3.2**), both of which are outcomes the acculturated process, but occur in different ways, as this study shall furtherly address in its discussion section below.

<u>Cultural Significance:</u>	<u>Culture variables on Indo-Greek Coinage:</u>	<u>Examples of variables from the study:</u>
Both	Main obverse figure	Ruling King, Elephant, Herakles, etc.
Greek	Portrait style for obverse?	Y/N (Highly Greek characteristic!)
Both	Clothing of the ruler	Diademed, Elephant Headdress, Aegis, etc.
Both	Main reverse figure	Herakles, Panther, Zeus Seated, etc.
Indian	Buddhist gesture implemented?	Y/N ('Local' induction of culture!)
Both	Shape of coin	Square or Circular (Indian/Greek)

Both	Legend type orientation	Right to Left, Counter-clockwise, etc.
Both	Unique terms used for legend	Raja (Sanskrit for King), Maharaja (Sanskrit for Grand King)
Both	Epithet of ruler	King's 'nickname' (e.g. Alexander the 'Great')
Both	Is there weaponry on the obverse side?	Present or not (Possible Greek characteristic 'displayed military might?')
Both	What type of weaponry?	Spear, bow and arrow, etc.
Indian	The absence of monogram?	Y/N (If so indicative of past Indian coinage)
Greek	Greek reverse elements?	Y/N (Both Greek and local 'Gandhāran' elements can be present, representation of possible hybridity!)
Indian	Local reverse elements?	Y/N (Both Greek and local 'Gandhāran' elements can be present, representation of possible hybridity!)
Greek	Greek language present?	Y/N

Greek	Monolingual legend?	Y/N (Highly Greek, as this was the standard previously)
Both	Bilingual legends?	Y/N (Highly indicative of hybridity!)
Indian	Kharosthi used for coin legend?	Y/N ('Local' influence)
Indian	Brahmi used for coin legend?	Y/N ('Local' influence)

TABLE 3.1: THE VARIABLES OF CULTURAL VALUE FOR THE INDO-GREEK COINS OF STUDY.

<u>Cultural Significance:</u>	<u>Economic variables on I-G Coinage:</u>	<u>Examples of variables from the study:</u>
Both	Metal type	Gold, Silver, Bronze, and Copper-Nickel
Both	Denomination	Drachm, tetradrachm, obol, etc.
Greek	Axis of coin (When given in Bopearachchi's 1991 catalog)	12 o'clock, 11 o'clock, etc.
Greek	Attic standard weight?	Y/N (Continued usage of Greek weight standard,

		from Alexander the Great's period)
Indian	Indian standard weight?	Y/N (Continued usage of Indian weight standard, used by punchmarked coinage)
Greek	Greek module weight?	Y/N (Evidence of hybridity! A weight standard that falls under neither the traditional Greek or Indian weight standards, though more in the line of previous Greek weight standards.)
Indian	Indian module weight?	Y/N (Evidence of hybridity! A weight standard that falls under neither the traditional Greek or Indian weight standards, though more in the line of previous Indian weight standards.)

Both	Actual weight of coin (When given in Bopearachichi's 1991 catalog)	Weight is given to the 2nd decimal place in grams.
Both	Area of coin (When the diameter, or length and width, is given in Bopearachichi's 1991 catalog)	Calculated via the diameter of circular coinage, or through the length and width of square coinage; both of which are provided in centimeters squared.

TABLE 3.2: ALL THE VARIABLES OF ECONOMIC IMPORTANCE FOR THE INDO-GREEK COINS OF STUDY.

OUTCOMES OF ACCULTURATION

The three outcomes of acculturation, previously stated in the introduction, shall now be provided directly from Redfield's 1936 publication on acculturation. This work while 'dated', gives not only an excellent definition of acculturation and its three outcomes but also provides step-by-step instructions of assessing the cultural process. Of which can briefly be displayed in this snapshot of the three outcomes given in the introduction as assimilation, hybridization, and cultural resistance; these names have been altered due to the modern terms of Redfield's model (Chun, 2003). Furthermore, it is through a combination of Redfield's work, in addition to the newer acculturation publications, that this study will ultimately attempt to assess the Indo-Greek acculturation process through coinage. Though it should be heavily emphasized that Redfield's

three acculturation outcomes, seen in **Figure 3.1**, remain the main description for the acculturation process found in this study, as one shall soon see below.

V. The *results of acculturation*

- A. *Acceptance*: where the process of acculturation eventuates in the taking over of the greater portion of another culture and the loss of most of the older cultural heritage; with acquiescence on the part of the members of the accepting group, and, as a result, assimilation by them not only to the behavior patterns but to the inner values of the culture with which they have come into contact.
- B. *Adaptation*: where both original and foreign traits are combined so as to produce a smoothly functioning cultural whole which is actually an historic mosaic; with either a reworking of the patterns of the two cultures into a harmonious meaningful whole to the individuals concerned, or the retention of a series of more or less conflicting attitudes and points of view which are reconciled in everyday life as specific occasions arise.
- C. *Reaction*: where because of oppression, or because of the unforeseen results of the acceptance of foreign traits, contra-acculturative movements arise; these maintaining their psychological force (a) as compensations for an imposed or assumed inferiority, or (b) through the prestige which a return to older pre-acculturative conditions may bring to those participating in such a movement.

FIGURE 3.1: A BRIEF GLIMPSE OF REDFIELD'S RESULTS OF ACCULTURATION, OF WHICH THIS STUDY HAS INTERPRETED ITS DATA WITH (REDFIELD, 1936:152).

GENERATIONAL MODEL

<u>Generation:</u>	<u>Kings of Gandhāra:</u>	<u>Total Number of Coin Types</u>	<u>Total Number of Coin Monograms</u>
Generation 0:	Demetrios I	6	26
1st Generation:	Agathokles	18	31

1st Generation:	Pantaleon	6	8
1st Generation:	Apollodotos I	7	30
1st Generation:	Anitmachos II	2	11
2nd Generation:	Eukratides I	20	100
2nd Generation:	Menander I	39	124
3rd Generation:	Zoilos I	6	16
3rd Generation:	Theophilos	6	7
3rd Generation:	Lysias	9	24
3rd Generation:	Antialkidas with Lysias	2	2
3rd Generation:	Antialkidas	18	30
3rd Generation:	Philoxenos	12	48

3rd Generation:	Diomedes	10	17
4th Generation:	Agathokleia and Straton I	6	6
4th Generation:	Straton I	32	59
4th Generation:	Artemidoros	9	23
5th Generation:	Menander II	7	11
5th Generation:	Heliokles II	9	27
5th Generation:	Polyxenos	3	4
5th Generation:	Telephos	3	3
5th Generation:	Epander	3	6
5th Generation:	Amyntas	15	28
5th Generation:	Peukolas	2	4

5th Generation:	Archebios	13	30
5th Generation:	Demetrios III	3	3
5th Generation:	Hippostratos	12	31
Total:	26 Rulers	278 Coin Types	709 Coin Monograms

TABLE 3.3: THE ASSIGNED 26 RULERS FOR EACH RESPECTED GENERATION OF THIS STUDY, ALONG WITH THEIR ASCRIBED COUNT OF COIN TYPES AND MONOGRAMS FROM BOPEARACHCHI 1991 CATALOGUE.

This table above is of tremendous importance for this study, as it has allowed this study to bypass many of the problems with Indo-Greek King chronology, and has ultimately allowed for a successful outlook on the acculturation process through coinage. Moreover, this table also displays the explicit numbers of this thesis data, all of which has been taken directly from Bopearachchi's 1991 catalog. It should also be noted, that the data selected does not include ancient imitations, some of which are given in the 1991 catalog of study. The main reasoning behind this exclusion would be due to the concentration of actual Indo-Greek material culture, which thereby give a more accurate account of acculturation patterns.

MINT LOCATIONS

Previous Indo-Greek numismatics studies have been highly concerned with the much-debated mint locations of Indo-Greek coinage; and while the area of mintage shall doubtless be of importance for future numismatist, in this study mint area is of secondary importance.

Therefore, while the assessment of mint area will be touched upon in the research section below, this study has no intention of assessing monograms, the ancient world equivalent of mint marks, beyond the scope of acculturation. The reasoning for this lack of concentration is due to the meaning behind the various monograms falling out of the parameters of this thesis's research, as again this research is anthropological in scope and is a study focused upon acculturation.

Nevertheless, **Figure 3.2** below provides the territories surrounding Gandhāra, with areas of importance being Sogdiana, Baktra, Paropamisadai, Taxila, and the Punjab. It is with these very general locations that there have been mint estimates in previous numismatic studies, as one shall soon see first-hand in the research discussion section below.

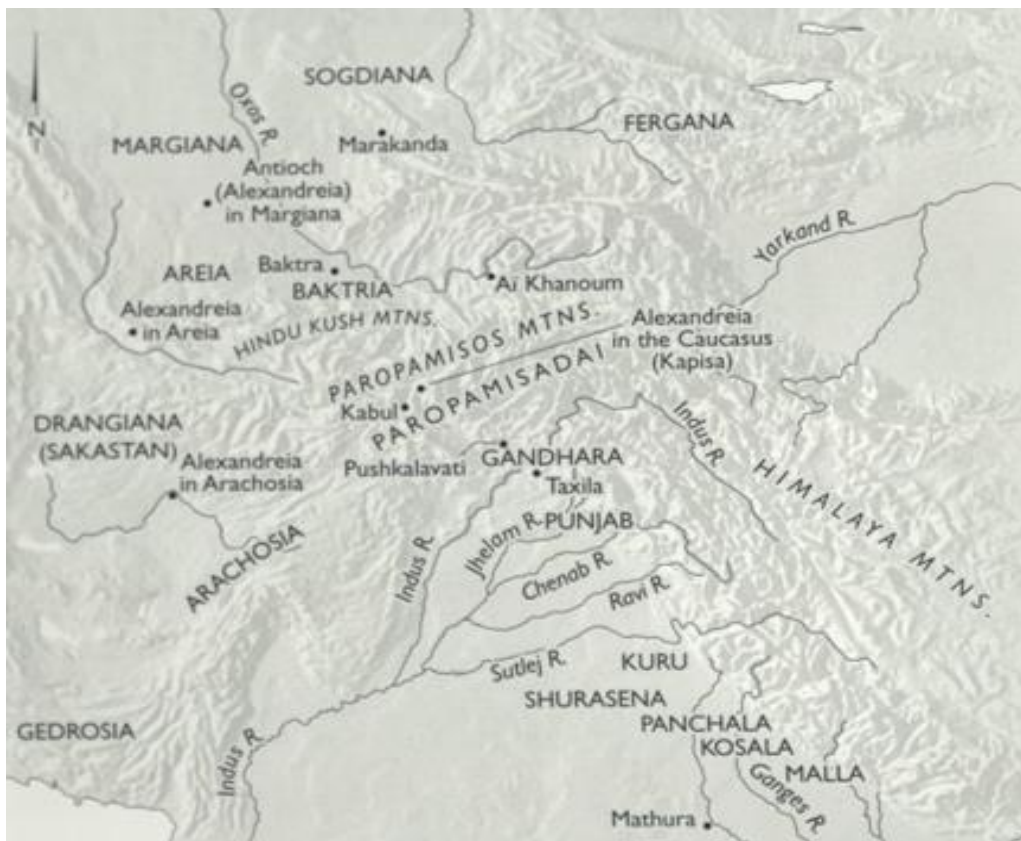


FIGURE 3.2: A MAP DISPLAYING THE RESPECTED POLITICAL REGIONS SURROUNDING GANDHĀRA DURING THE INDO-GREEK PERIOD (EARLY 2ND – LATE 1ST CENTURY BCE) (ADAPTED FROM HOOVER, 2013:2).

HYPOTHESES

As mentioned before, there are two overlying hypotheses for this research and are divided into the categories of economy and culture; which represent, in a light sense, what a coin displays in any given society. This study's economic hypothesis is that Indo-Greek coinage shall adopt local norms of both size and weight, which in a sense has already been established by previous numismatists, thanks to the creation of the 'Indian Standard' category, which directly goes against the Greek 'Attic Standard'. As for the cultural hypothesis, there is an assumption of the Indo-Greeks, the Greeks of the Indo-Greek period, having adopted local Gandhāran cultural elements, and by the end of their period of rule, come to the degree of full assimilation.

CHAPTER 4: RESEARCH

The results of this study's data have displayed very clear signs of the acculturation theory at work, which has been aided heavily by schema theory, in addition to this study's generational perspective. The latter of these items has proven to be particularly helpful in the task of assessing economic elements and has allowed for an evident sense of a pattern of occurrence for the Indo-Greek economy. As for the cultural data, while the utilization of a generational perspective did indeed help in the assessment of Indo-Greek acculturation, what truly aided its assessment was the division between bronze and silver coinage; wherein this study has taken that the two metal types should have their own separate schemas, due to prior Greek traditions of coinage. Further emphasizing these distinctions of schema, for bronze and silver coinage, the anthropological notions of the emic and etic perspective were also used for clarifying the cultural data results. The emic and etic concepts shall be explained in detail during the cultural section below, and shall be given ample reasoning for their implementation, and subsequent use.

One final item to mention, prior to the discussion section is the layout of the charts below, wherein the y-axis contains the percentage of the total selected database in decimal form, while the x-axis contains either the estimated area of mint or the 6 generations used in this study.

CHAPTER 5: DISCUSSION

ECONOMIC VARIABLES

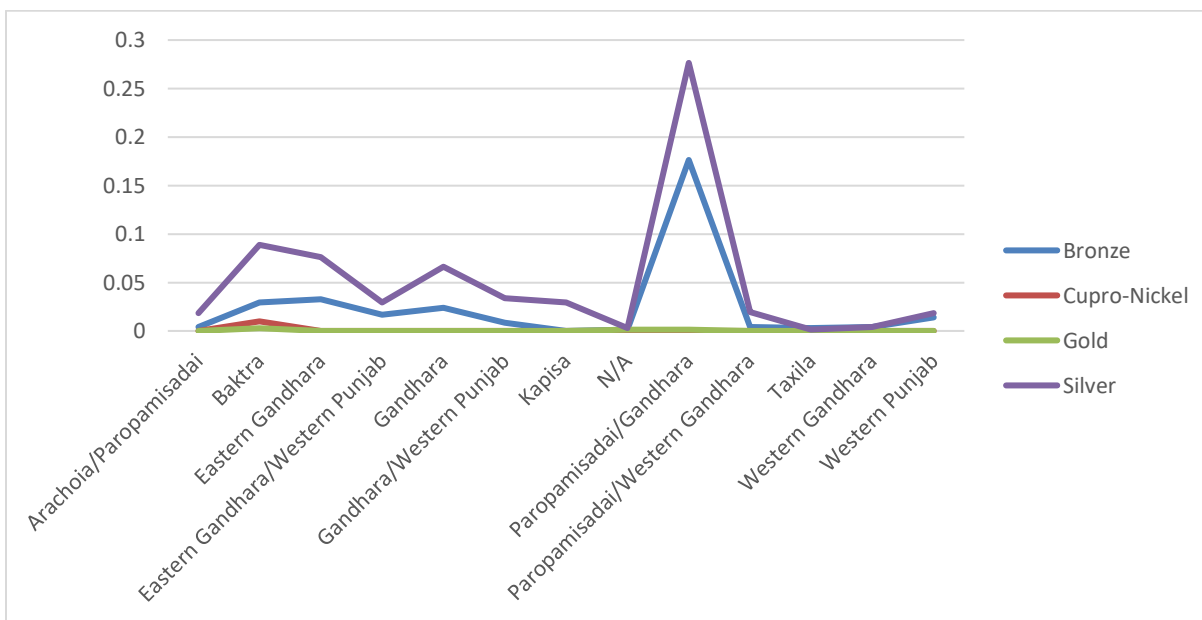


FIGURE 5.1: THE DIFFERENT METAL TYPES OF INDO-GREEK COINAGE MEASURED THROUGH THE ESTIMATED AREA OF MINT.

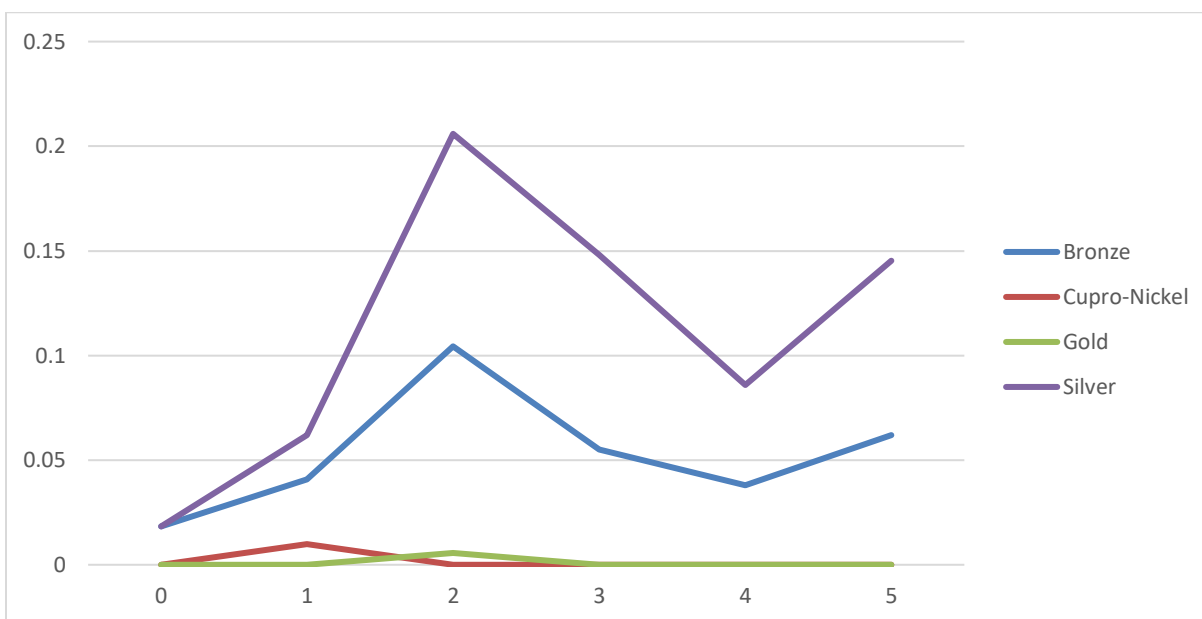


FIGURE 5.2: THE DIFFERENT METAL TYPES USED FOR INDO-GREEK COINAGE MEASURED THROUGH THE ESTIMATED GENERATION, WITH EACH GENERATION ENCOMPASSING 25 YEARS APPROXIMATELY.

Metal Type Overview

As mentioned in the prior sections, the aspect of coin's metal type is of extreme economic importance for the discussion of economic adoption. With these ultimately being four metal types of personal interest in this study, in which the higher commodity specimens are composed of *Silver* and *Gold*, while the lower intrinsic valued currency can be seen in the *Bronze* and *Cupro-Nickel* specimens. This system of precious vs. common metals is common even in today's economy and has proven to be a necessary step in any developed monetary system. Now that the basic principles of this variable have been established, the formal discussion of these two figures above shall now be provided.

Metal Type Discussion

As one can see from **Figures 5.1** and **5.2**, the variable of metal type does indeed express some patterns of the theorized adoption, wherein silver, by a great majority was the most used coin metal in the Indo-Greek period. **Figure 5.1** offers the approximate area of coin mintage, which roughly displays a process of thought; though to be forthright the assessment isn't particularly useful for this study, as it only expresses a generalized area of mint, and does not offer a clear picture of economic understanding. On the other hand, when the metal type variable is viewed via each given generation (**Figure 5.2**), the Indo-Greek monetary system become far more visible. A fact that can be seen in the Indo-Greek's continual use of silver and bronze coinage, of which both metals follow a very similar pattern through time with an approximate ratio of 1 bronze coin for every 2 silver coin, or so this study's monogram and type concentration would have one believe. It should be added, that such findings are based solely upon the found material today, and due to this study's limitation to one catalog (Bopearachchi, 1991), there is, without doubt, a bias in these given results. Regardless of these two previous issues, **Figure 5.2**

above has still displayed an underlying pattern for the economic process of metal type within the Indo-Greek period.

There is some speculation that could be made regarding the cultural schema of a coin's metal type, but due to both societies having used silver in their prior coinage, the result of the cultural elements remain unclear, at least when dealing with the metal type variable solely. Bypassing this prior statement, one could speculate that the grand importance of silver coinage for the Indo-Greek period was the result of the growing trade within the region of Gandhāra during the 1st and 2nd centuries BCE, brought to an unprecedented increase due to the advent of the silk road. Evidence for this matter comes from how prior Indian (punchmarked) coinage was likely used for trade purposes within the Indian subcontinent, due to early Indian coinage having been discovered in large hoards within sites along Mauryan trade routes (Coningham, 2015:413).

Overall, the variable of metal type is highly informative, due to its display of the two main metals of use, those again being *Silver* and *Bronze*, which vividly displays the Indo-Greek monetary system, and offer a true perspective on how the Indo-Greek economy functioned. This latter statement can be made due to the higher valued metal types (*Gold* and *Silver*) often being used for outside commerce, while the lesser valued coinage presumably functioned in the local economy.

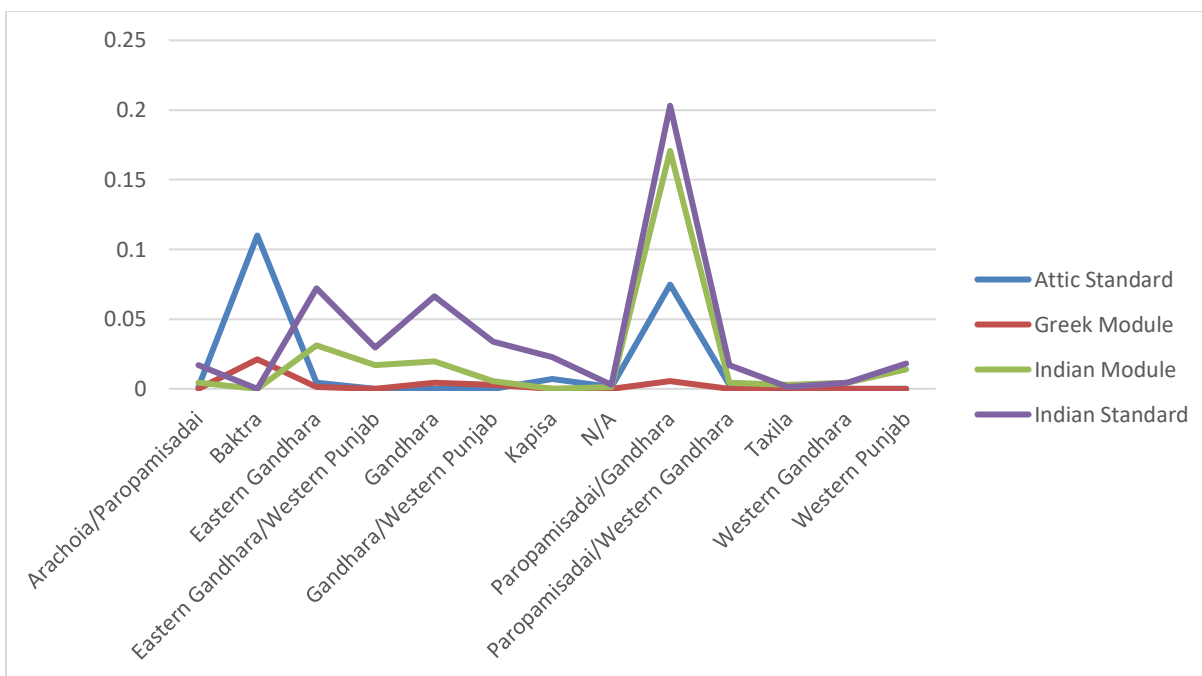


FIGURE 5.3: THE FOUR WEIGHT STANDARDS OF INDO-GREEK COINAGE USING THE ESTIMATED AREA OF MINT.

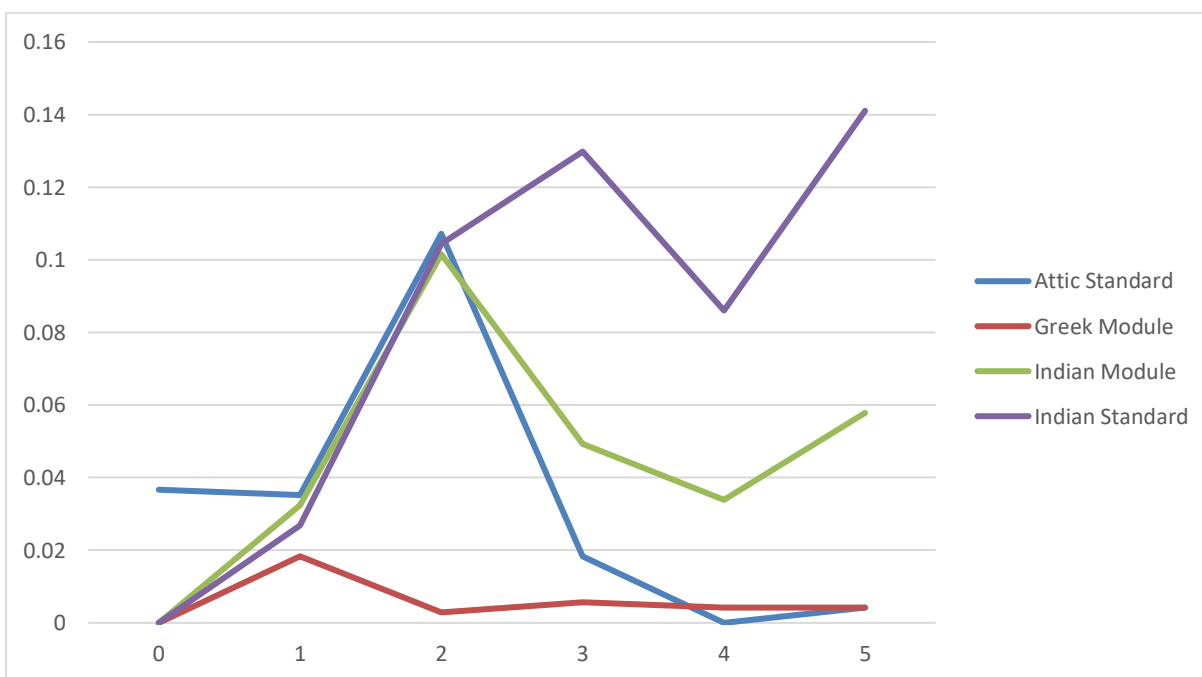


FIGURE 5.4: A CHART DISPLAYING THE FOUR WEIGHT STANDARDS OF INDO-GREEK COINAGE MEASURED THROUGH THE ESTIMATED GENERATION, WITH EACH GENERATION ENCOMPASSING 25 YEARS APPROXIMATELY.

Weight Standard Overview

The aspect of a coin's weight standard is also of equal economic importance, as depending on the region the weight standard can differ from region to region. For this study, the aspect of standards is encompassed in two different categories, the standards of Greek origin, the *Attic Standard*, and those of Indian origin, the rightly named *Indian Standard*. On an economic basis, the variable weight standard is the key indicator of economic influence, on a cultural basis, due to the given split above been the Greek measurements and the Indian. Prior to the actual discussion of this variable's figures, it should be known that the *Greek* and *Indian Module 'Standards'* are not widely recognized weight standards, and have been implemented as such within this study due to a prior assumption. That assumption simply being that the Greek and Indian module coinage, belong to the Greek and Indian standard traditions respectfully, however, due to the corrosive nature of bronze coinage, one can truly never know if these assumptions are correct or not.

Weight Standard Discussion

The two figures above are of particular interest for this study due to **Figure 5.3's** representation of 'old' Numismatic assessments, while **Figure 5.4**, by effect, represents the 'new' numismatic perspective that this study presents. There has been a long-held belief that Indo-Greek coinage minted within ancient India, the territory south of the Hindu Kush mountain ranges, were composed primarily of coins of the Indian weight standard, which as **Figure 5.3** displays, is seemingly a correct assumption (Lahiri, 1965:13-17). Though it is highly important to emphasize that these prior beliefs of mint areas are a highly-contested aspect of Indo-Greek studies and is a direct result of the mint area's estimation often solely being based upon a coin's monogram, which is an extremely contested topic in itself. In spite of **Figure 5.3's** contested

issues, **Figure 5.4**'s representation of the Indo-Greek weight standards, measured through the successive generations, offers a far better degree of economic development in the Indo-Greek period. Like the generation chart of metal type above, there again is a similar pattern of variation, wherein, in this instance there is a continuation of the three most prominent weight standards (*Attic Standard*, *Indian Standard*, and *Indian Module*); with the *Indian Standard* being the highest standard of use from Generation 3 onwards. The factor of the *Indian Standard*'s prominence in **Figure 5.3** supports this study's economic hypothesis of the Indo-Greek economy having adopted the prior Indian one. With the prior Indian function of coinage being the use of coinage for trade regulations across India and beyond (Coningham, 2015:403). An act, if true, was undoubtedly expanded upon the rise of the silk route under Indo-Greek rule. The Greek *Attic Standard*, as a byproduct of the rise of the *Indian Standard*, was a weight standard of seemingly less importance in the Indo-Greek economy. Evidence for this previous statement can be seen duly in the clear demise of coins based upon the *Attic Standard* after the 3rd Generation (c. 86/85 BCE). Such a decline, likely is a result of a collapse in the economic ties with the rest of the Greek world, due the *Attic Standard* coinage having been postulated by prior numismatists as being the "*Imperial*" weight standard for the Hellenistic era, because of the standards continued prevalence, and use, across the various Greek Hellenistic empires (Metcalf, 2012:236). During the subsequent rise of Rome and Parthia in the 2nd – 1st centuries BCE the various Greek Hellenistic kingdoms fell into a state of collapse, with the neighboring Seleucid Empire having collapsed shortly after 64 BCE (Metcalf, 2012:248). The Seleucid empire was likely of great importance for the Indo-Greek economy, at least for trade with the Western ('Greek') World, due to the Seleucid empire's location due westward of the Indo-Greek Kingdom, for reference of both locations see **Figures 1.2** and **2.1**.

In summation, when one looks at the wider world context during the Hellenistic period, one can see an evident reason for the steady decline of the *Attic Standard*, and the reactive rise of the *Indian Standard*. Furthermore, it would appear that both acts were a successive reaction of trade relations with the west and east respectively, with the Greek world ultimately having been cut off by around 86/85 BCE, while ties to the east became of greater importance as a side effect of the west being cut off.

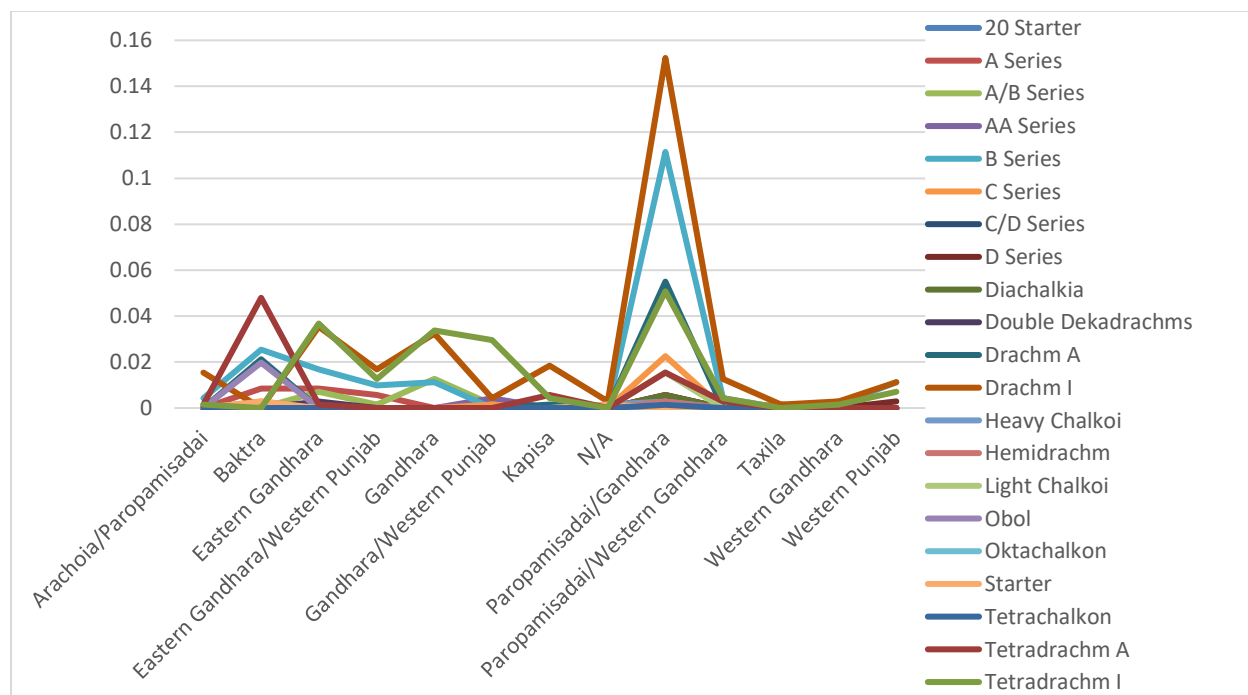


FIGURE 5.5: THE VARIOUS DENOMINATIONS, OR SET COIN VALUES, OF INDO-GREEK COINAGE VIA THE ESTIMATED AREA OF MINT.

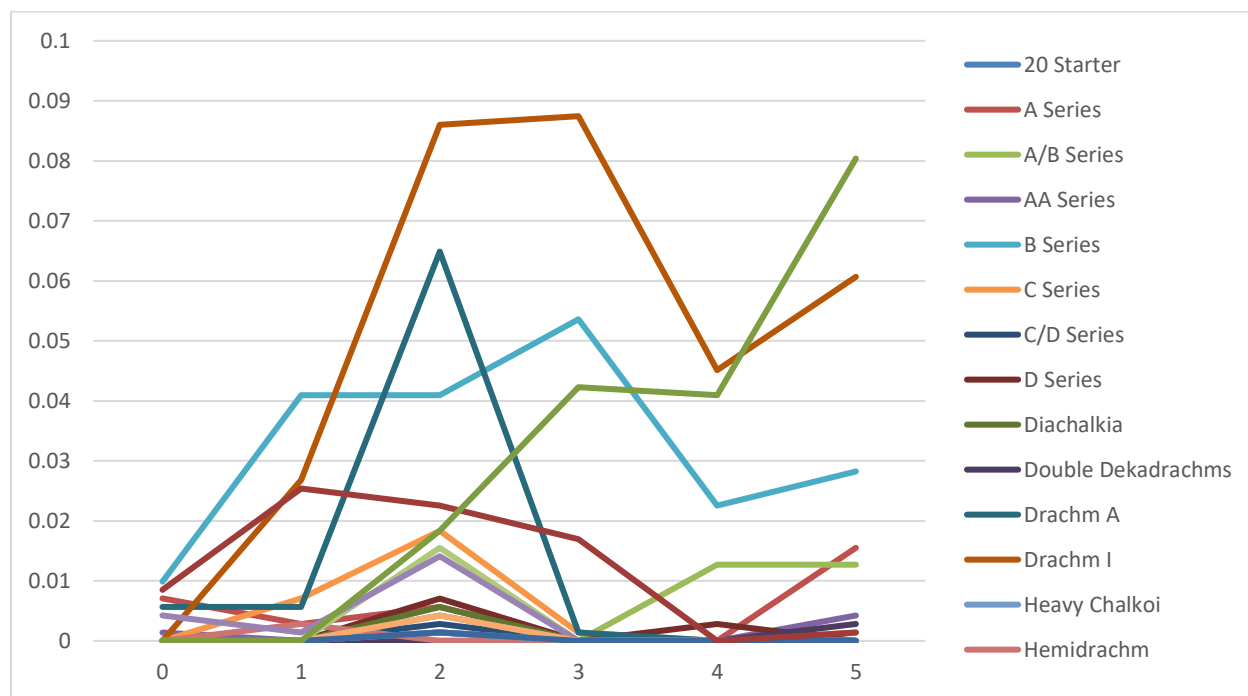


FIGURE 5.6: THE VARIOUS DENOMINATIONS, OR SET COIN VALUES, OF INDO-GREEK COINAGE VIA THE DESIGNATED GENERATIONS OF THIS STUDY.

Denomination Overview

The last economic variable of this study's discussion is a coin's denomination, which is the set value of a coin. A modern example of a denomination can be found in the quarter mentioned in the introduction section of this thesis, with the quarter being called as such due to it being $\frac{1}{4}$ of a U.S. dollar. The ancient Greeks possessed a similar denomination system, with the Drachm being the light equivalent of the previously given dollar example. The two denominations of main interest in this variable section are the *Drachm* and *Tetradrachm*, with the word tetra being Greek for four, thereby making the *Tetradrachm* four times that of the standard *Drachm*. In the two above charts, one can find that both denominations of interest used the Attic and Indian standards, mentioned in the previous variable discussion, and the differentiation is made explicitly above within the chart legend with the *A* and *I* representing coins based on the Attic and Indian standards respectfully.

Denomination Discussion

Like the previous economic discussions above, **Figures 5.5** and **5.6** display a definite pattern, though both are admittedly less clear in comparison to the prior variables, due mainly to the congested variation of coin denominations. Regardless, **Figure 5.5** adequately displays the prevalence of both drachms of the Indian standard (*Drachm I*) and *B Series* coin popularity as well; with the former being a silver type of coin, and the latter being a bronze variety of coinage. For now, the concentration shall be on silver coinage due to the clearer nature of its discussion, though for those who find a particular interest in Indo-Greek bronze coinage can find a dedicated section within *Appendix A* of this study.

Figure 5.6's generational assessment of coin denominations again allows one to see an evident economic selection during the Indo-Greek period, wherein the highest frequency silver

denomination was the previously mentioned *Indian Drachm*. This factor of *Drachm I*'s popularity can be seen quite vividly in its steep incline in Generations 2 and 3, followed by a sharp decline in Generation 4, and subsequent rise in Generation 5. During the 4th Generation, one can also see the overthrowing of *Drachm I*'s popularity, with the *Indian Tetradrachm* having succeeded the *Indian Drachm*'s popularity. This last matter not only provides further support for this study's economic hypothesis, of the Indo-Greek's having adopted prior Indian denominations types but also gives precedent to the sharp increase in trade with the east, following the collapse and demise of the Seleucid empire and a great majority of the Greek Hellenistic world. Providing, even more, evidence on this study's theory would be the factor of the *Indian Drachm* weighing approximately 2/3 the amount of a Karashapana, the dominant Indian punchmark coin denomination (Hoover, 2013:lxiv).

Therefore, this variable's results have displayed the viability of the Indo-Greek's adoption of the *Indian Drachm*, and has also proven the likelihood of the coin being used in the previous trade context; though there is admittedly no archaeological context currently supporting this study's theory.

Moving on from the two popular silver denominations of the Indian standard, one can see a sharp incline of the Attic standard drachm, on the charts referenced as *Drachm A*. The *Drachm A* declines in popularity upon the 3rd Generation, thereupon it virtually disappears in the two succeeding generations that follow. This outcome furtherly gives precedent to the theory of the Indo-Greeks having been cut off economically from the rest of the Greek world, as there would be little use for drachms of the Attic standard if trade to the west truly was cut off.

As for the Attic standard Tetradrachm, detailed in the charts above as *Tetradrachm A*, one can find the second most popular Attic standard coin, and one with was the most lasting use.

The reasoning for the Attic tetradrachm's longevity has long been speculated by past numismatists, with one of the most popular theories being that the *Attic Tetradrachm* was used for tribute payments to the 'northern invaders' in what was once the Bactrian province (Hoover, 2013:lxix). This is an extremely unlikely scenario, at least with the data shown in **Figure 5.6**, as the fall of Ai-Khanoum, the most well-documented site in the region of Bactria, has an estimate abandonment date of 145 BCE, a year that falls approximately a decade prior to this study's 3rd Generation (Bopearachchi, n.d.). Subsequently, there is a fall in the popularity of *Tetradrachm A* after the 2nd Generation, which leads to this study's issue with the tetradrachms being used as a form of payments to the north. And while this study albeit has a very limited outlook of the entire coinage of the Indo-Greeks, this outcome of *Tetradrachm A* decline simply cannot be ignored, nor denied. The decline of *Tetradrachm A*, like the fall of the prior Attic standard, suggests a related decline in either Greek influence, or the previously theorized, trade to the western world; with either reasoning being highly plausible reasons for this study's data results. Giving precedence to this prior statement, one can see the rise of tetradrachms of the Indian weight standard quickly after Generation 4, a statistical outcome that again favors the rise of eastern trade, or perhaps even an increase of Indian economic influence in the later Indo-Greek period.

While there are still many other items of significance for Indo-Greek denomination types, in the attempt to make the matter of bronze coinage clearer, *Appendix A* has been dedicated to the discussion of bronze coinage. Such a discussion has been excluded from this main section due to its subjective nature, as well as its irrelevance to this study's research questions

ECONOMIC CONCLUSION

These previous variable conclusions are based entirely on the current evidence found today, and like any artifact type, this given range of coinage represent a small fraction of what the Indo-Greek society possessed. Therefore, while this study's assessment of the Indo-Greek economy is noteworthy, there is without question a further need for data refinement. This point remains especially true within bronze coinage, which this study, as a side point issue, has sought to address within *Appendix A*. Despite these previous issues, with the economic assessments above, there remains a definite pattern of the Indo-Greeks having adopted the Indian weight system. This outcome is neither a shock, nor a new discovery, as the fact remains that the ancient Greeks were by cultural tradition: traders, and were therefore open to the notion of adopting items for economic sustainability (Lahiri, 1965:16). A fact that can be seen with Alexander the Great and his Hellenistic successors, both of whom adopted the economic weight standards of the local populace due to the desire of easing the transaction process at large (Metcalf, 2012:236).

Closing, while this outcome of economy was expected, one should note that a great majority of the Hellenistic dynasties clung onto their cultural ideology of Greek coin iconography, despite their subsequent adoption of the local 'non-Greek' weight standards; a fact most notably found on the coinage of the Ptolemaic dynasty (Metcalf, 2012:236). Therefore, this study's division of the economic traits and separate cultural implications of a coin remain a solidified factor in this study, as the two categories simply do not occur simultaneously.

Cultural Variables:

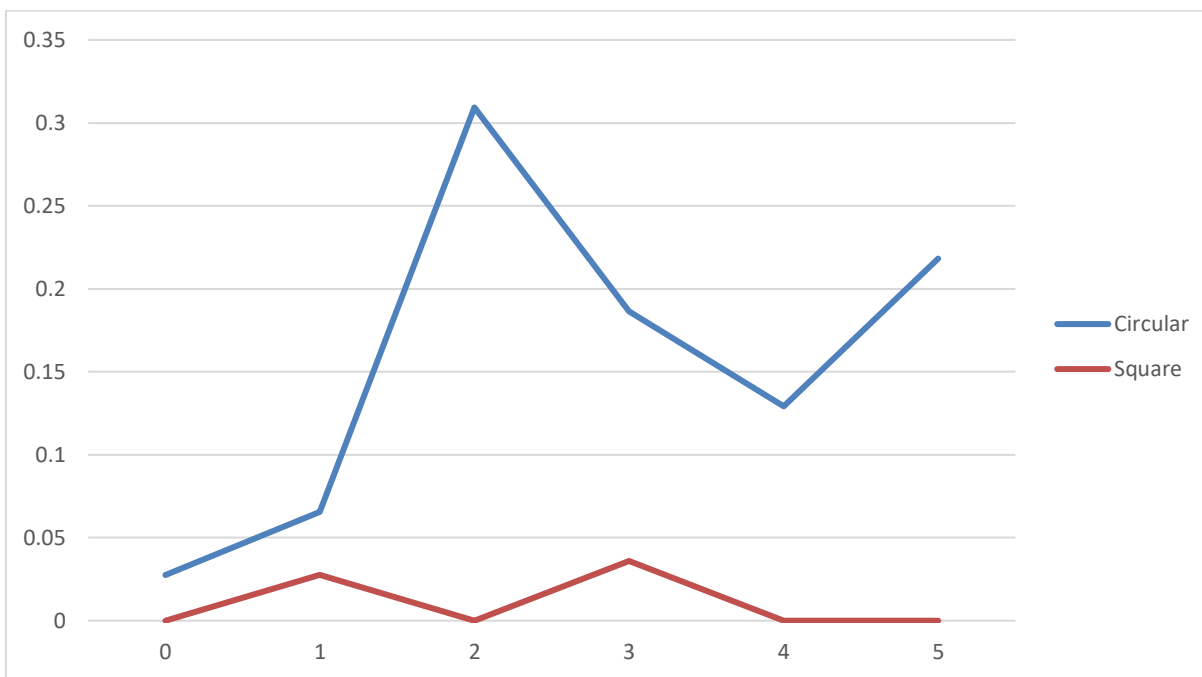


FIGURE 5.7: SHAPE OF SILVER COINAGE, ASSESSED THROUGH THE DESIGNATED GENERATIONS OF THIS STUDY.

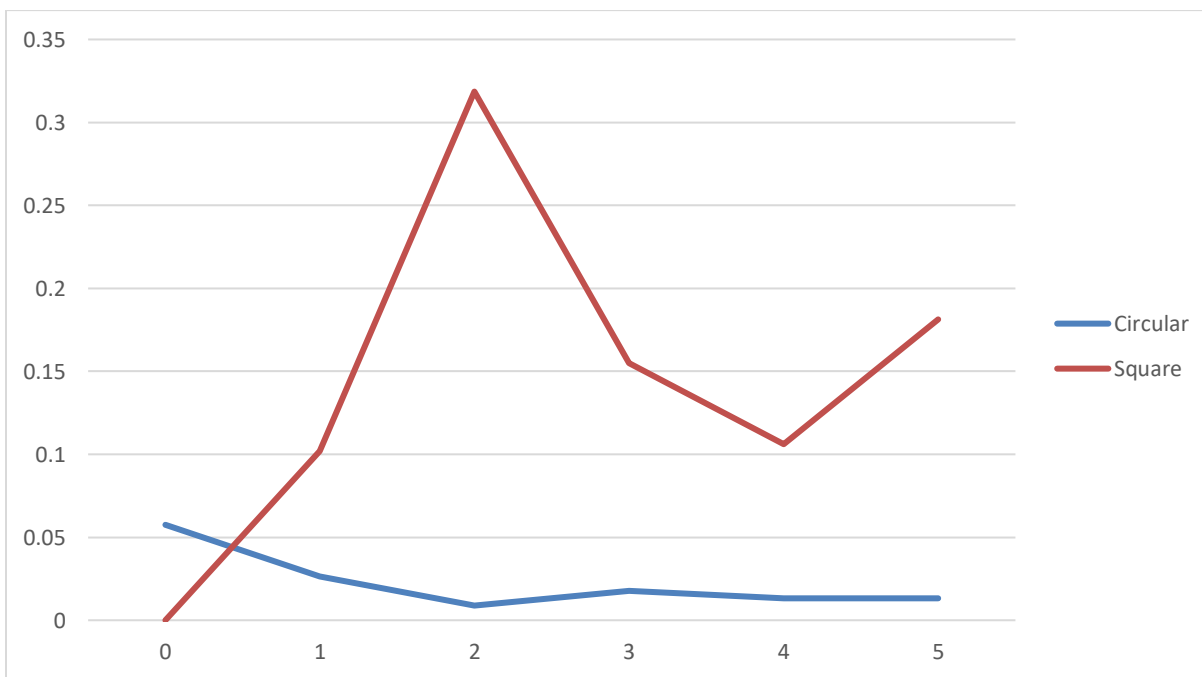


FIGURE 5.8: SHAPE OF BRONZE COINAGE, ASSESSED THROUGH THE DESIGNATED GENERATIONS OF THIS STUDY.

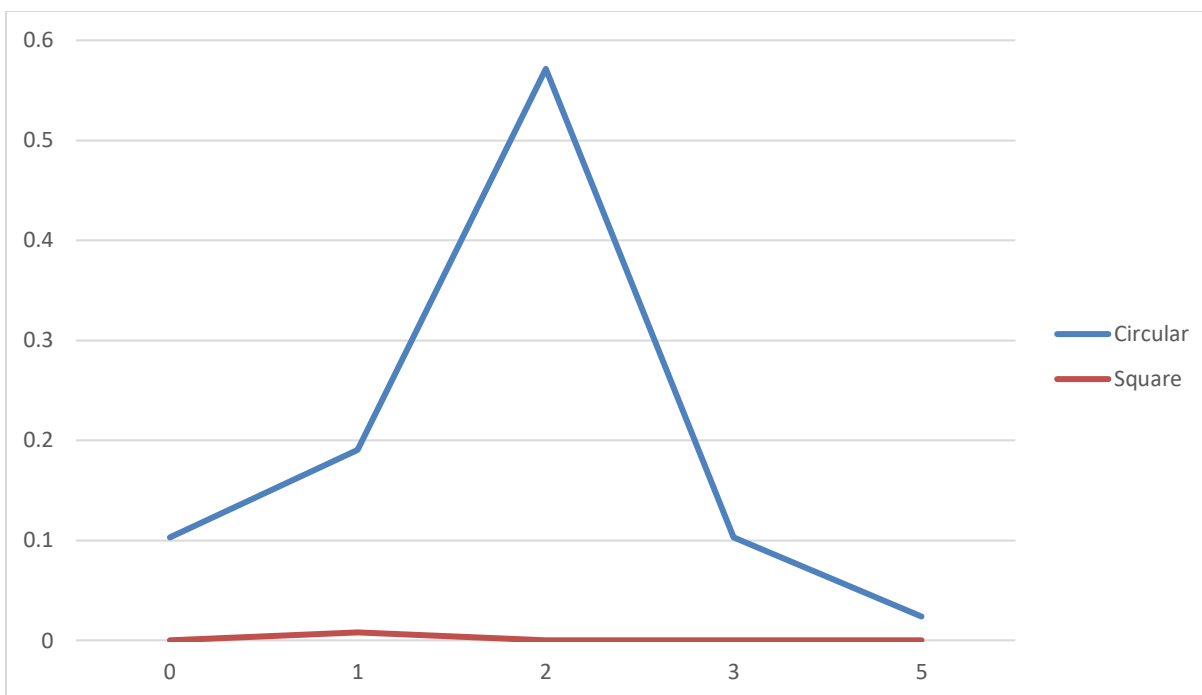


FIGURE 5.9: SHAPE VARIATION IN SILVER COINS OF THE GREEK ATTIC WEIGHT STANDARD.

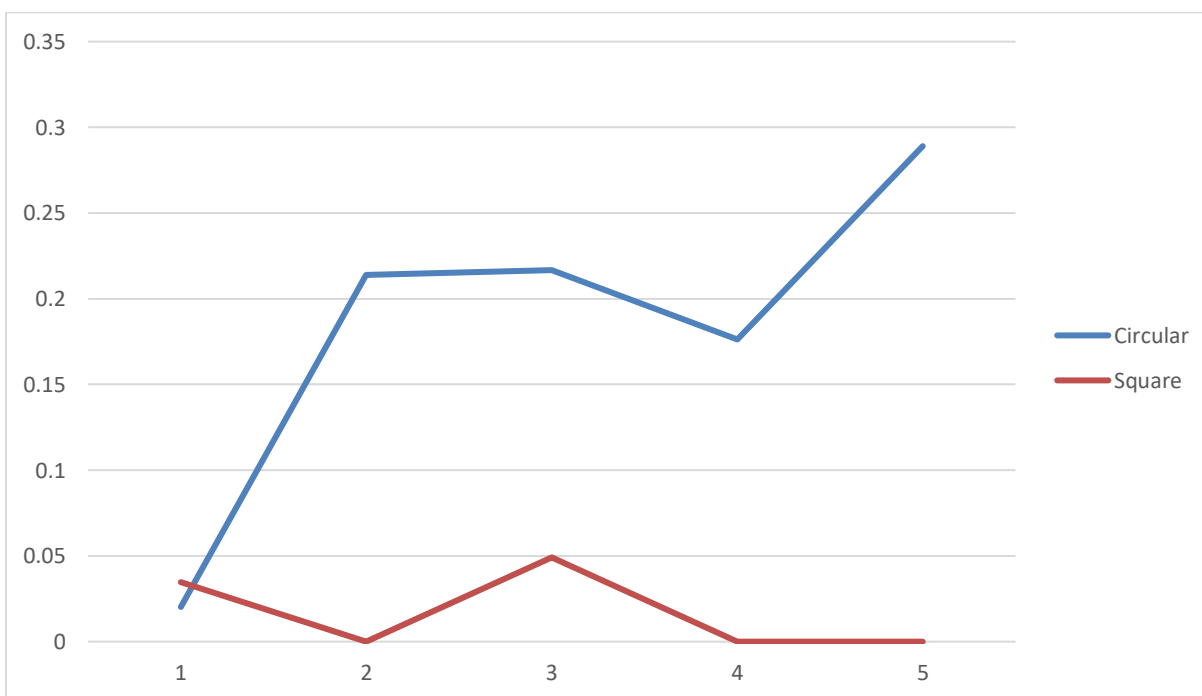


FIGURE 5.10: SHAPE VARIATION IN SILVER COINS OF THE INDIAN WEIGHT STANDARD.

Shape Overview

As mentioned in the background section of this study, a coin's shape is highly indicative of cultural schema. A fact that can be seen in the two prominent shapes of Indo-Greek coinage: *Square* and *Circular*, with the shapes representing prior Gandhāran and Greek coinage schemata respectively. The primary reasoning behind the two cultures' unique shapes, would be a result of the creation process of each cultures' coinage. With the Greek coinage being circular due to the die used to imprint features onto the coin, which is also circular. While prior Indian coinage, the so-called 'punchmark' coins, are quadrilateral in shape due to the metal being cut from a flat piece of unmarked silver, and subsequently 'punched' with small die like objects. Thus, one can see that reasoning behind the two cultures' coin shapes would both be due to the unique ways each society created its coinage and is, therefore, a practical effect of the production process.

However, during Indo-Greek times, the grand majority of coinage were made by dies, with only a small amount being created by other means (e.g. cast coins). Despite this well-attested fact of coin creation via dies, and thereby displaying the heavy Greek influence, the Indian square coinage continued during the Indo-Greeks time. Therefore, it is the belief of this study, that such a continuation of square coinage is a direct indicator of the acculturation process, though one that seemingly varies between the silver and bronze coinage, as seen in the figures above. It is due to this prior variation, that the emic and etic perspectives have been implemented in this study, and shall now be explained in the discussion section below; however, prior to such an introduction it remains important to explain the reasoning for the theories' use, while also providing a general description of the figures themselves.

Shape Discussion

Figures 5.7 and **5.8** adequately display the significance of coin shapes, as both figures display evident patterns of Indo-Greek coin shape throughout time. The two figures also vividly express the schematic differences between the two most prominent metal types of Indo-Greek coinage; silver and bronze.

Evidence of such a difference can be seen, most notably in **Figure 5.7**, where upon there is a definite popularity of circular coinage throughout all six generations. With only a moderate rise of square silver coinage in Generations 1 and 3, a fact that gives little precedence to any Gandhāran cultural influence, or acculturation.

Interestingly, the opposite outcome occurs with the bronze coinage, seen in **Figure 5.8**, as from the 1st Generation onwards there remains little doubt over the dominance of square shaped bronze coinage. The outcome of square bronze coinage, while initially unexpected due to prior Gandhāran coinage mostly being comprised of silver, becomes an understandable outcome if one were to look at the lesser valued coinage prior to Indo-Greek rule. As despite this study's previous concentration on punchmarked coinage for the Indian schema, there were other coin types in development within Gandhāra during the latter part of the 3rd century to early 2nd century BCE; with the most notable development being square bronze coinage of seemingly 'Greek influence', though thoughts on such matters remain a highly-contested subject (Hoover, 2013:270-271). Despite this prior debate, it would appear that bronze coinage, on a general basis, came to reflect the previous Indian schema; which was a prior expected outcome, due to the assumed nature of bronze coinage being used within the local vicinity. Therefore, one can state from the bronze coin discussion, that the Indian cultural notions of coinage shape not only survived during the Indo-Greek era but flourished, at least within bronze coinage.

Before moving to the next variable's discussion, the matter of acculturation patterns displayed upon the Indo-Greek shape of coinage should be discussed, and it is within **Figures 5.9** and **5.10** that this discussion will now rely upon. **Figures 5.9** and **5.10** display the former categories of weight standard in accordance with a coin's shape, and while the weight standard variable is economic, it remains arguable that a coin's shape isn't. Furthermore, this study views a coin's shape as being a phenomenon of culture, much like the previously given example of the rectangular shape of a book, and is, therefore, a decision that is withheld in the figures above.

Starting off with the more contested silver coinage, one can see with the silver Attic standard coinage (**Figure 5.9**) that a great majority of the coins remained circular in shape, with only a minor exception seen with the 1st Generation. The assessment of silver coins under the Indian standard (**Figure 5.10**) shows a different outcome entirely, wherein a more pronounced version of **Figure 5.7** can be seen. The acculturation process between the Indo-Greeks can arguably be seen in these two figures, due to the 1st Generation's mild usage of the square shaped coinage, which is a factor that in theory displays the mild influence of Indian culture on the Greek rulers of the period, thereby displaying evidence of the Greeks having acculturated to prior Indian norms. Upon the 2nd Generation period, however, there appears to have been a sharp decline of square silver coinage, an outcome that can be viewed as a subsequent correlation to the 'decline' of Indian culture; however, this outcome does not appear to be likely as the bronze coinage (**Figure 5.10**) has already attested for the continuity of prior 'Gandhāran' culture, or at the very least the continuation of the Indian schema of coinage.

Due to these previous issues, there has remained a need to clarify the two-primary metal type schemata this study has incorporated, and as previously mentioned in the research section of this thesis the way this study has done this is through the influence of the two anthropological

concepts of the emic and etic approaches. The emic approach is categorized by its concentration of how local individuals think, while the etic approach utilizes a more ‘step backward’ perspective when viewing the activities of local individuals of study (Conrad, 2006). In other words, the emic approach views a select society in the view of the local, while the etic perspective views the society through the lens of an outsider. At first glance these two anthropological perspectives offer very little for the task of accessing ancient coinage, however, if one were to incorporate the function of the two metal types into account, one would see that the concepts of emic and etic can be of great use.

Silver coinage for instance, in both Greek and Indian cultural traditions prior to the Indo-Greek period, have assumedly been used for trade; which seemingly lead to both societies having used silver coinage outside of their immediate province/kingdom of mintage. Punchmark coin function, the prior Indian silver coinage, has already been stated and is speculated to have been used primarily in a trade context. For ancient Greece, silver coinage also appears to have been used in trade outside of Greece, although no direct historical sources account for this prior function; and as such the matter remains a highly-contested subject (Mørkholm, 1991). In spite of the inclusive function of ancient Greek coinage, the widely-accepted model for the Hellenistic period is that silver coinage of the Attic standard served as an ‘imperial’ currency, which ultimately allowed for the use of silver coinage outside of the immediate Hellenistic Kingdom (Mørkholm, 1991). This previous model is of importance for this study of the Indo-Greeks, due to the neighboring Seleucid Empire’s reported open policy on Attic standard currency (Howgego, 1995:51-52). Unlike silver coinage, bronze coins’ function has been deduced for local ‘trivial’ exchanges due to its lower value, as has been described multiple times above (Mørkholm, 1991).

Through the prior assumption of silver coinage's continued trade function in Indo-Greek society, one could infer that silver coinage represents the outward political identity of the Indo-Greek provinces; thereby displaying an etic (outsider's) view of Indo-Greek society. Meaning that the territory of Gandhāra, as well as other Indo-Greek provinces, were subsequently viewed as being politically 'Greek' due to the dominance of circular coinage throughout the period. In this context, the circular shape remains in opposition of the prior Indian square coinage, which by the mid-2nd century BCE fell out of use across the Indian subcontinent, due to the abrupt end of punchmarked coinage; and provides the impression of the Greeks having taken over the role of trade organizers in the entire ancient Indian subcontinent (Gupta, 2012:62). While these statements are, after all, mere theories, they are given further precedent by the ancient Greek notions of a coin's purpose, wherein the two main purposes of ancient coinage were to firstly: display the unique political identity of their city-state, and as a seemingly secondary aim: coinage was to provide economic surplus to its region (Carradice, 1995:15-16).

Moreover, with the establishment of silver coinage's archaeological etic perspective, one must ask what bronze coinage represents. The answer can be found in its usage in the immediate area of mintage, which in theory, would allow a more local outlook of culture, which in effect provides an emic (insider's) perspective on Indo-Greek culture. This local outlook can be seen very clearly in **Figure 5.8**, due to square coinage being unquestionably the more dominant in bronze coinage, leading to the idea of the Gandhāran culture being more dominant than Greek culture, at least on an emic basis of thought.

While the notions of emic and etic have been greatly altered in this study, they are still of great use, due to the adapted terms' ability to describe a rational reasoning for the cultural data results, and shall, therefore, be of continued use in the cultural section.

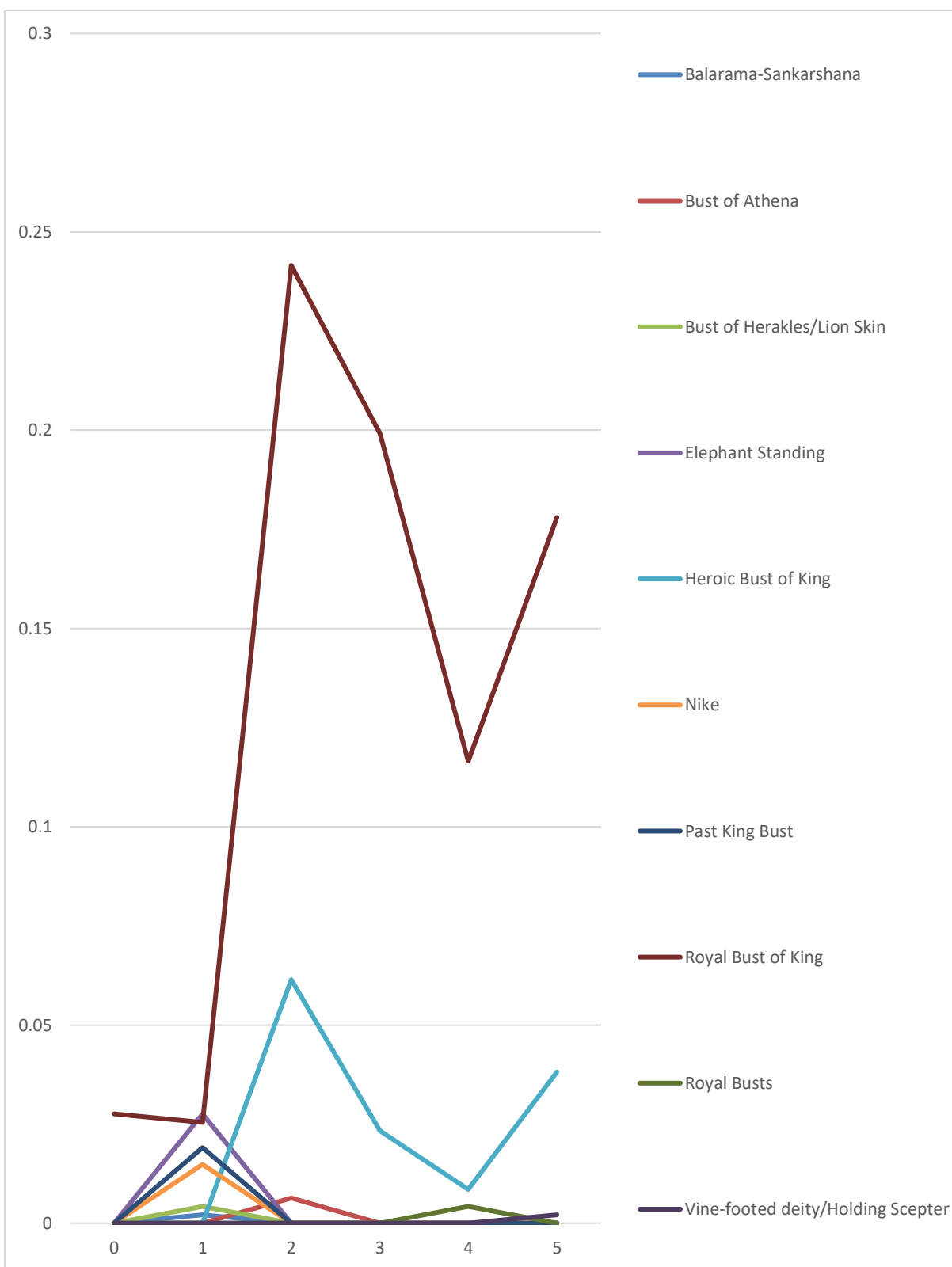


FIGURE 5.11: THE VARIETY OF OBTVERSE FIGURES FOUND ON INDO-GREEK SILVER COINAGE.

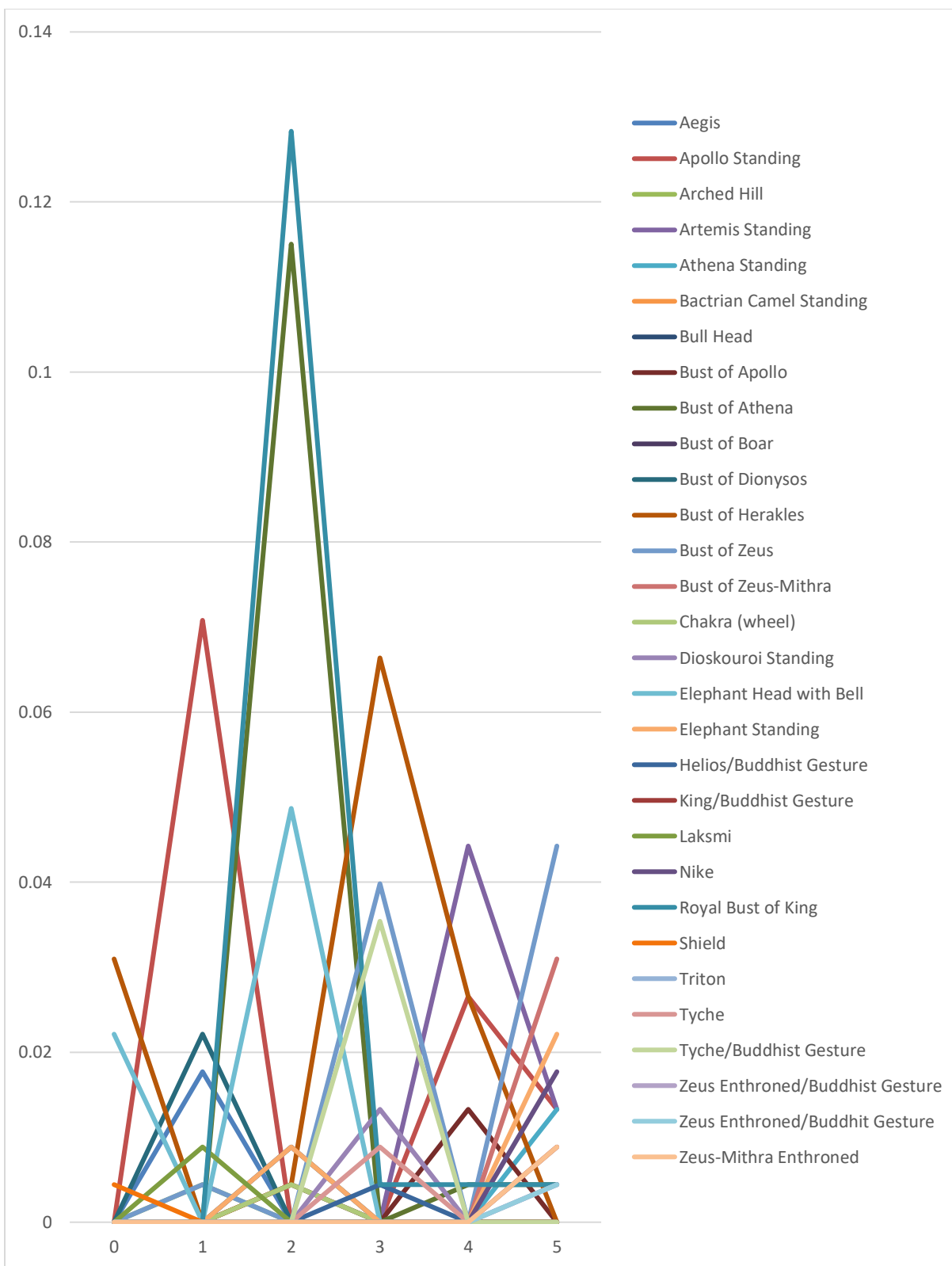


FIGURE 5.12: OBERSE FIGURE TYPES FOUND ON INDO-GREEK BRONZE COINAGE. NOTE THE GREATER VARIETY IN COMPARISON TO SILVER COINAGE SEEN IN THE PRIOR FIGURE.

Obverse Types Overview

An obverse type is a numismatic term meaning the imagery used on the informal ‘head’s’ side of a coin. Such imagery often denotes cultural significance for a certain political figure (e.g. king/queen, president, etc.), and can also be used to promote cultural memes. Indo-Greek coinage is no exception to this previous rule, as one can see a definite difference between silver and bronze coinage, which brings one to the formal discussion on why such a divergence exists.

Obverse Types Discussion

Continuing on the basis of emic and etic ideology for bronze and silver coins respectfully, one can see quite a similar pattern in silver obverse types see in **Figure 5.11**. Due to the 1st Generation’s silver coins having reflected previous Indian themes, with the *Elephant Standing* being highly reminiscent of Harappan seals, and one that clearly expresses an ancient continuation of religious theology (Condra, 2016). This period of Indian culture reminisce is followed directly by the 2nd Generation and onwards, Greek schematic dominance, which is displayed by the rise of the Greek archetype obverse of the Hellenistic period: *the Royal Bust of the King*; and is closely followed by an alteration of the royal bust, referred in this study as the *Heroic Bust of the King*. The result of this dominance of Greek based obverse types arguably displays the political position of the Indo-Greek kingdom at large. As again if one were to interpret the silver coinage as displaying an etic perspective of Indo-Greek culture, one would theoretical see mere political elements and not a justifiable view of the actual populations’ cultural change.

The bronze coinage (**Figure 5.12**) displays a different outcome. Through the retaining emic perspective, **Figure 5.12** does, in fact, offer a more in-depth display of the described ‘melting pot’ nature of the region. This previous statement can alone be seen in the 1st

Generation's two-tiered variety of religious elements, with the Greek and Gandhāran religions being represented by *Apollo Standing* (traditional Greek polytheism) and *Laksmi* (Hinduism/Buddhism). Upon the 2nd Generation, this view of the three most prominent religious groups in Gandhāra becomes, in a sense muddled, by the induction of the king's portraiture onto bronze coinage; though the emic cultural viewpoint is far from being 'cut off' at this point. To provide a more efficient way of discussing the patterns of acculturation on the obverse coinage, the following chart below has provided the origin of the obverse types. In addition to this chart, two successive figures have been ascribed directly below, which display the patterns of acculturation in both silver and bronze coins respectively.

<u>Cultural Elements on Coinage (Obverse):</u>	<u>Study's Decision:</u>	<u>References for Decision:</u>
Aegis	Greek	(Plant, 1979:323)
Apollo Standing	Greek	(Plant, 1979:28)
Arched Hill	Gandhāran	(Gupta, 2014:280)
Artemis Standing	Greek	(Plant, 1979:29)
Athena Standing	Greek	(Plant, 1979:24)
Bactrian Camel Standing	Gandhāran	(Gupta, 2014:278)
Balaram-Sankarshana	Gandhāran	(Bhattacharyya, 2001:45 and 245)
Bull Head	Hybrid	(Gupta, 2014:280; Plant, 1979:67-68)
Bust of Apollo	Greek	(Plant, 1979:61)
Bust of Athena	Greek	(Plant, 1979:21)

Bust of Boar	Greek	(Plant, 1979:86)
Bust of Dionysos	Greek	(Plant, 1979:85)
Bust of Herakles	Greek	(Plant, 1979:85)
Bust of Herakles/Lion Skin	Greek	(Plant, 1979:48)
Bust of Zeus	Greek	(Plant, 1979:34)
Bust of Zeus-Mithra	Prior Hybrid	(Hoover, 2013:lxxvi)
Chakra (Wheel)	Gandhāran	(Gupta, 2014:280)
Dioskouroi Standing	Greek	(Hoover, 2013:lxxiv)
Elephant Head with Bell	Gandhāran	(Bannikov, 2013)
Elephant Standing	Gandhāran	(Gupta, 2014:278)
Helios/Benedict Gesture	Hybrid	(Hoover, 2013:lxxiv; Choksy, 1990)
Heroic Bust of King	Greek	(Carradice, 1988:123)
King/Benedict Gesture	Hybrid	(Carradice, 1988:123; Choksy, 1990)
Laksmi	Gandhāran	(Bhattacharyya, 2001:163- 164)
Nike	Greek	(Plant, 1979:45)
Past King Bust	Greek	(Carradice, 1988:123)
Royal Bust of King	Greek	(Carradice, 1988:122-123)
Shield	Greek	(Plant, 1979:119)
Triton	Greek	(Plant, 1979:42)
Tyche	Greek	(Plant, 1979:40)

Vine-footed deity/Scepter	N/A	(Hoover, 2013:143)
Zeus-Mithra Enthroned	Prior Hybrid	(Hoover, 2013:lxvvi)

TABLE 5.1: ABOVE IS A CHART DISPLAYING THIS STUDY’S APPRAISAL OF THE INDO-GREEK
OBVERSE TYPES OF STUDY AND THEIR CULTURAL ORIGIN.

It is crucial to note that **Table 5.1** reflects the interpretation of others, most prominently Hoover and Bopearachchi, and are not in any form a personal interpretation. While some may argue that this lack of personal interpretation is an issue, for this study’s assessment of acculturation; and successive attempt to implement a new methodology for numismatics (‘Anthropological Numismatics’) this lack of personal input lessens in importance. Furthermore, this study’s primary goal is to use past numismatist’s appraisals and bring them into a new light through the anthropological implements this new methodology has sought to offer.

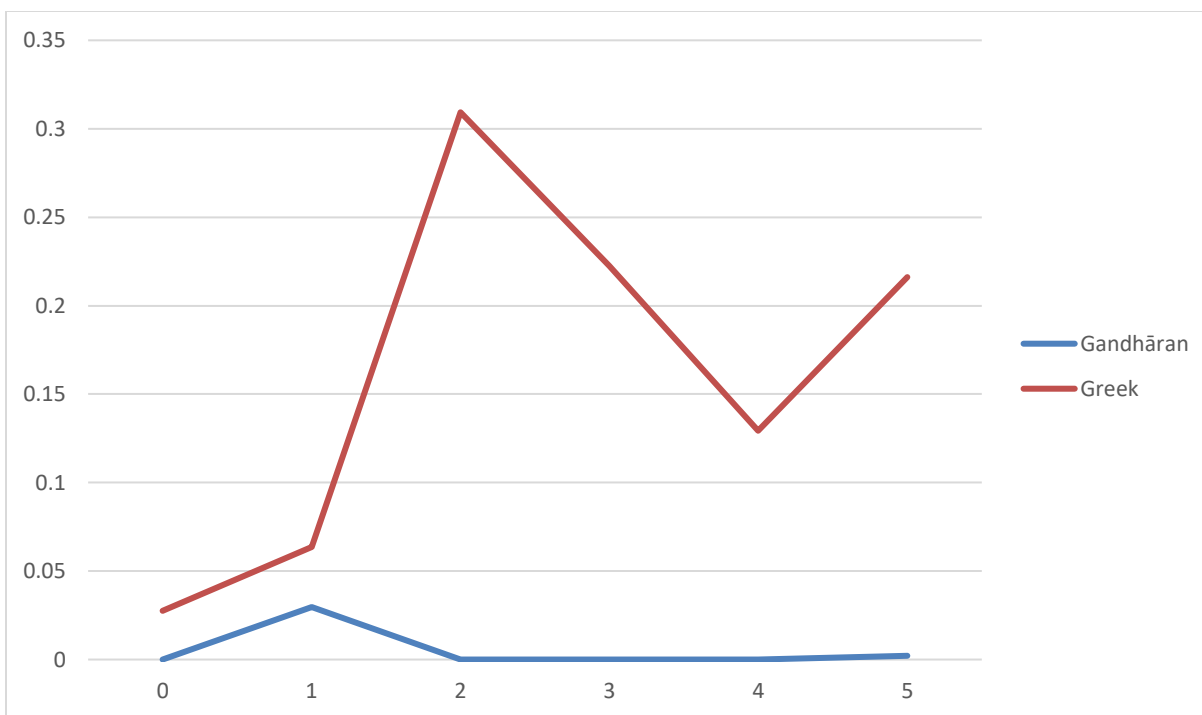


FIGURE 5.13: THE CULTURAL ORIGINS OF THE SILVER OBVERSE TYPES.

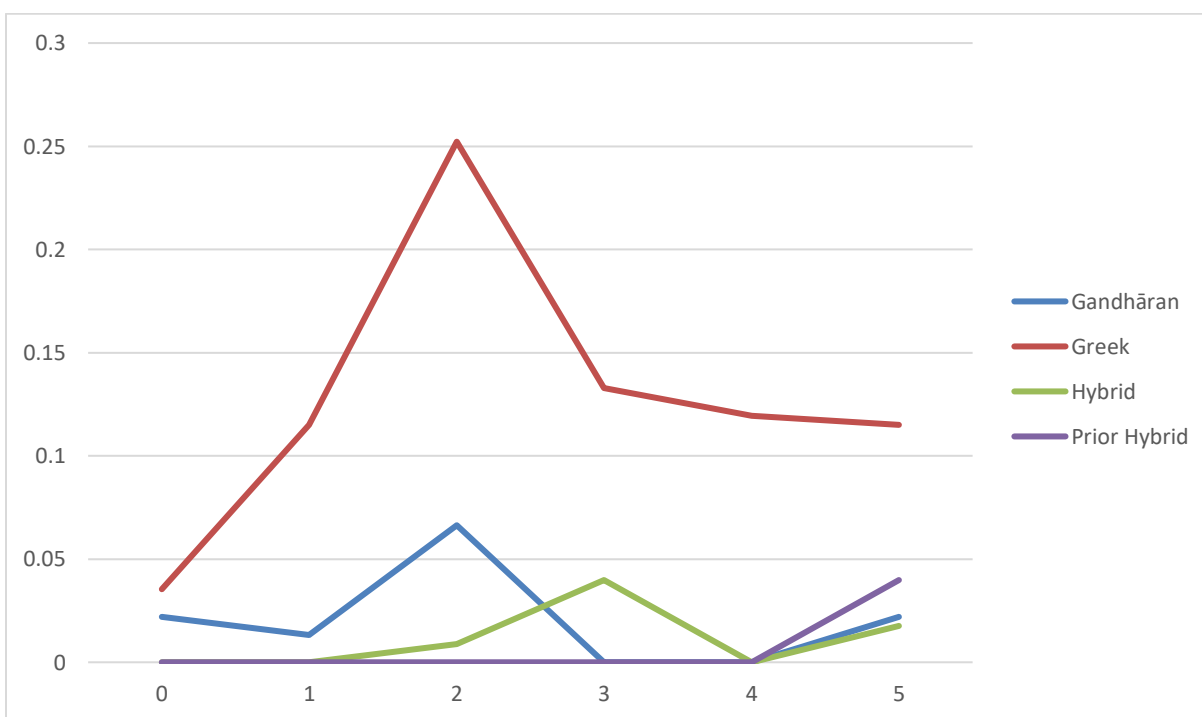


FIGURE 5.14: THE CULTURAL ORIGINS OF THE BRONZE OBVERSE TYPES.

Obverse Type Origin Discussion

Figure 5.13 affirms the previous discussion's conclusion of Greek dominance displayed on silver coinage after the 1st Generation, which again, this thesis argues solely depicts the Indo-Greeks from a political perspective; and is therefore unlikely to possess an accurate representation of Indo-Greek culture itself or the acculturation process it experienced.

With bronze coinage, found in **Figure 5.14**, there is yet again another occurrence entirely, albeit still dominated by Greek culture, the bronze figure nevertheless seemingly offers one a more accurate representation of the acculturation process. And while there truly is no proper way of assessing to what degree the population of Gandhāra worshiped Greek deities, one item that does become quite perceivable from this prior assessment is to what extent the peoples of Gandhāra were exposed to Greek deities. One can also perceive to what extent the Greeks and Gandhārans 'hybridized', which can be gathered from each generation stage. As mentioned in the introduction of this study, while the Indo-Greek period undoubtedly consisted of cultural acts that would be known today as hybridization, one can see above in **Figure 5.14** that the cultural process was far from instantaneous. In fact, Menander I's rule, falling with this study's 2nd Generation, was hypothesized to have a noted decline in Greek cultural memes due to Menander's historically described relations with Buddhist monks. However, the exact opposite seems to have occurred. Evidence of which, goes against this study's theory of hybridization as one can see in the continued popularity of Greek cultural memes, though there are some other cultural memes at work from Generation 2 onwards.

In summarization, if one had to base this study's outlook solely upon the obverse variable, one would find that the Indo-Greek period staunchly remained Greek. This statement is made in terms of both outward political representation, theoretically seen in the silver coinage after the

1st Generation, and the ‘inside’ view of ‘actual’ Indo-Greek culture display upon the bronze coinage seen in **Figure 5.14**. Fortunately for the numismatist, there is always the other side of the coin to check ones’ theoretical viewpoints and research outcomes.

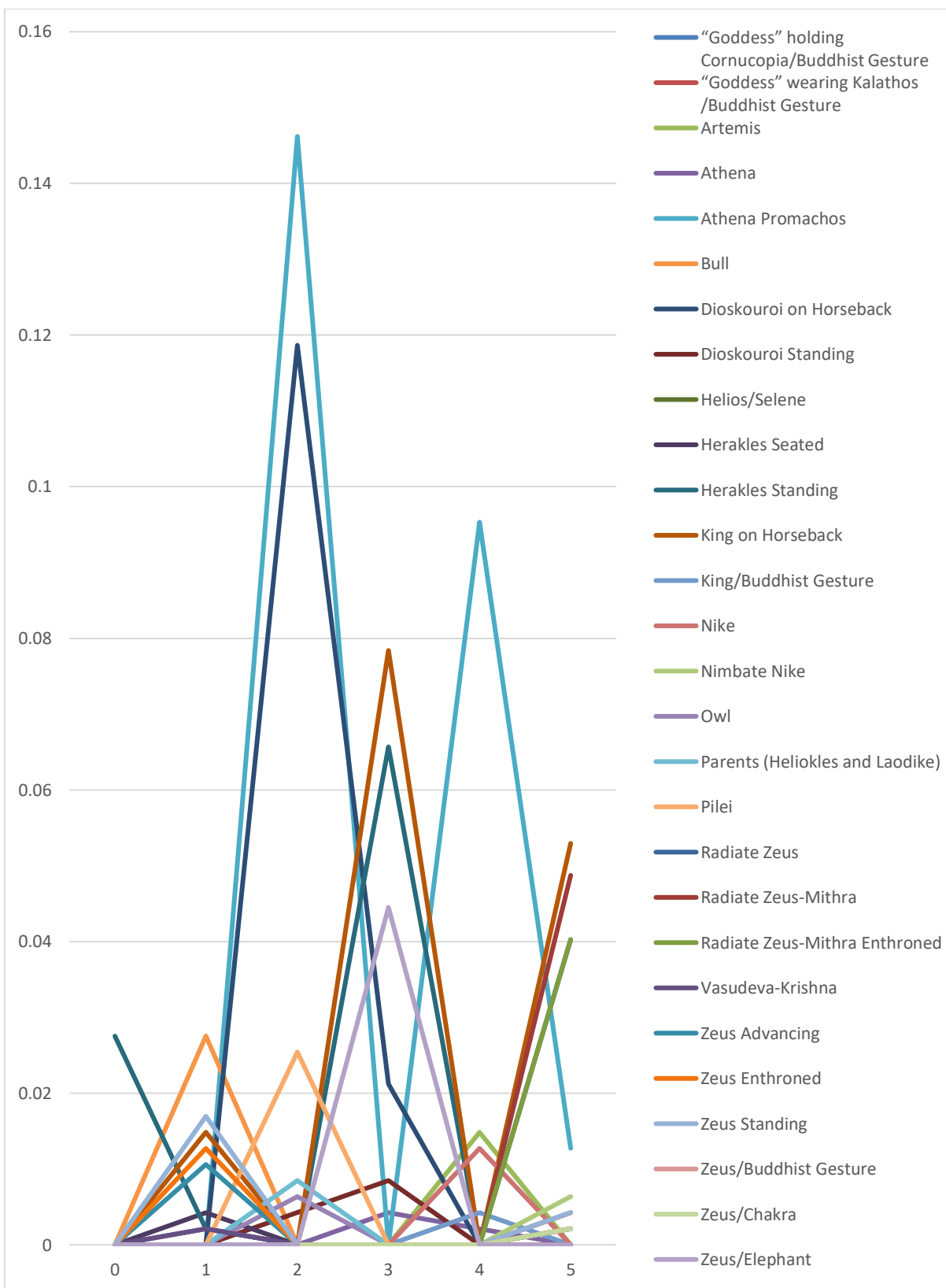


FIGURE 5.15: THE VARIOUS SILVER REVERSE TYPES FOUND ON INDO-GREEK COINAGE.

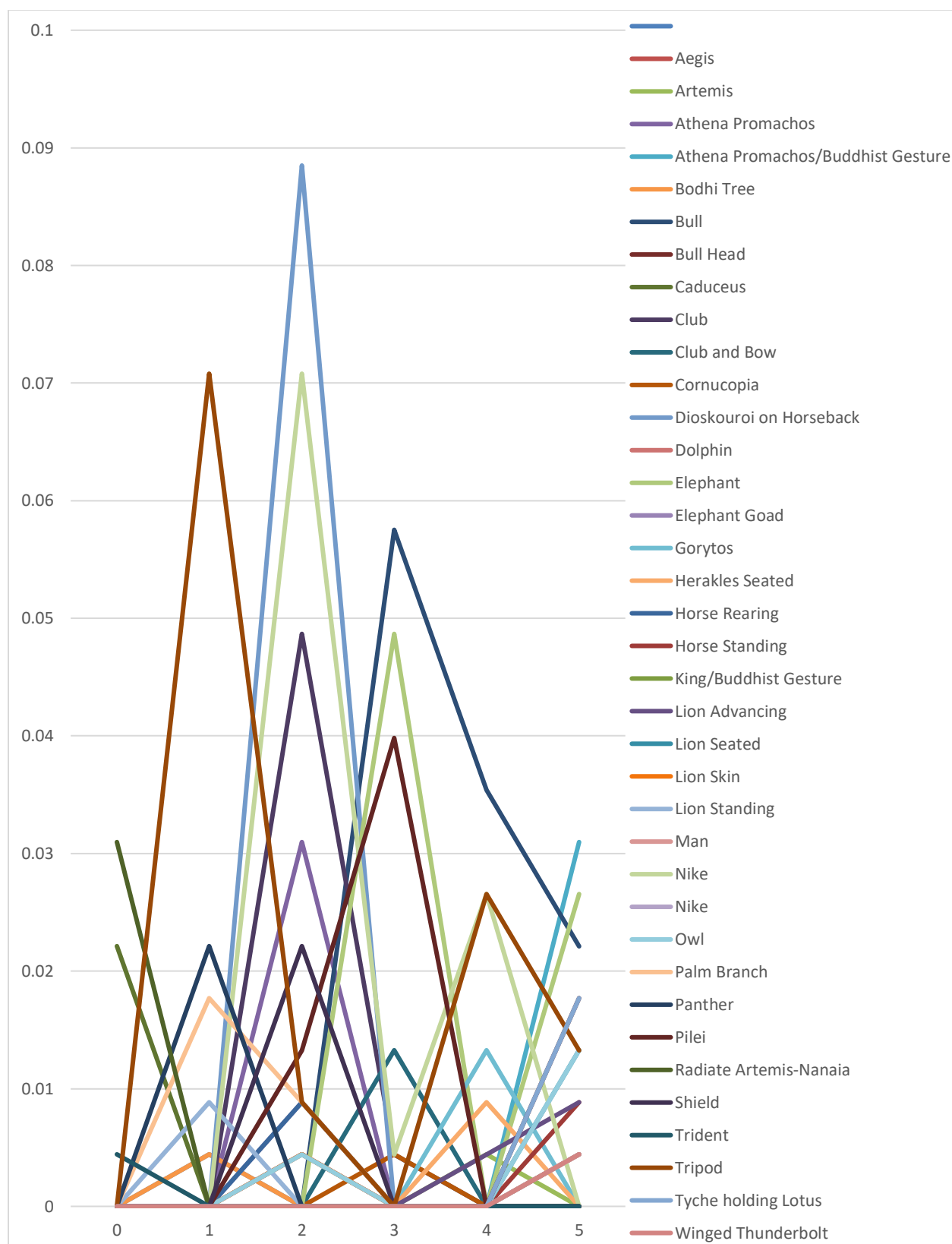


FIGURE 5.16: THE VARIOUS BRONZE REVERSE TYPES FOUND ON INDO-GREEK COINAGE.

Reverse Types Overview

The reverse type, like the obverse above, often signifies culturally embedded ideology within a coin's respected society. However, unlike the obverse side, the reverse normally expresses less politically oriented memes, and instead, often is inscribed with religious and patriotic iconography. The latter being found in today's American quarter, as one has already seen above. It is for this reasoning of displaying more 'cultural' oriented items that the variable of reverse type has been viewed as the most important variable for this study's assessment of acculturation. In fact, if one can recall from the introduction's example of the American quarter's transition from the traditional American eagle to the 50 States Collection, one would find good reasoning for the variables precedence in this study. Upon this brief description of the reverse type and its significance to this study, the discussion of the reverse data shall now be detailed below.

Reverse Types Discussion

In a similar manner to the obverse types above, the reverse types found on silver coinage (**Figure 5.15**) directly correlate with prior results and conclusions. Though unlike in previous cultural variables, with the silver reverse type there is a noted change from the 1st Generation to the 2nd Generation. Wherein, the former possess highly Gandhāran cultural reverse memes, while the latter is seemingly very Greek due to high inclusions of traditional Greek deities. These results are vividly displayed in **Figure 5.15** due to the reverse types of the Bull and Athena Promachos quantifiably being the highest within the 1st Generation and the 2nd Generation respectfully. **Figure 5.15** also displays many other elements that have yet to be seen in the two previous cultural variable discussions, such as the 3rd Generation's early development of 'hybridization' elements, which can be seen in the reverse type *Zeus/Elephant*'s popularity,

along with numerous other hybrid depictions of *Zeus* appearing in the 5th Generation. While it is tempting to believe that these elements are acts/results of the acculturation process, the notion of the silver's etic (outsider's) view remains intake; and while some might account this decision to be 'stubborn', if one were to view the nature of a deity's popularity, one would quickly realize why bronze coinage is favored. The selection process of a silver coin's reverse type is assumed to be an outcome of a ruler's patron deity, as in the outcome of Menander's selection of *Athena Promachos* seen within the 2nd Generation. Meander's great popularity and reign time is given in the historical record, and is firmly displayed in **Figure 5.15**, due to *Athena Promachos* accounting for almost 9% of the total silver coinage in this study's database. Because of this previous outcome, one could argue that the matter of a silver Indo-Greek coin's reverse type is by effect an individual decision, due to a silver coins' reverse type having been the result of an Indo-Greek king's decision of religious vocation, be it Greek or native in origin, or possibly even a combination of both ('Hybrid'). It is for this reasoning that silver coinage is still considered too biased on a political basis to offer any insight on the acculturation process of the native Gandhārans. As such, it is intriguing to note that the Indo-Greek political evocations diverged from the norms of Greek coinage, and is an act that will be explored in more detail in the next discussion below.

The bronze reverse chart (**Figure 5.16**) represents the expected outcome in this study. Such an act would be due to the declining prevalence of Greek religious iconography over time within the Indo-Greek period, and as a result, the steady incline of native religious elements after the 2nd Generation. Evidence for this prior claim can be seen in the native reverse type surge in popularity within Generation 3, with the types of Bull and Elephant having possessed a sudden increase in popularity, in which the Bull type continued to dominate up until the 5th Generation.

Upon the 5th Generation, several ‘hybrid’ types become popular such as *Athena Promachos/Buddhist Gesture* and *Tyche holding Lotus*, both of which display a coalition of the Greek pantheon and the local Gandhāran religions of Hinduism and Buddhism. In the attempt to make the patterns of acculturation easier to perceive, the following chart of reverse origins has been provided below, along with two successive figures that display the reverse types’ cultural process for both silver and bronze coinage.

<u>Cultural Elements on Coinage (Reverse):</u>	<u>Study’s Decision:</u>	<u>References for Decision:</u>
“Goddess” holding Cornucopia/Buddhist Gesture	Hybrid	(Hoover, 2013:163; Plant, 1979:109; Chosky, 1990)
“Goddess” wearing Kalathos /Buddhist Gesture	Hybrid	(Hoover, 2013:149; Plant, 1979:23; Chosky, 1990)
“Veiled Goddess”	N/A	(Hoover, 2013:30)
Aegis	Greek	(Plant, 1979:323)
Artemis	Greek	(Plant, 1979:29)
Athena	Greek	(Plant, 1979:23)
Athena Promachos	Greek	(Plant, 1979:23)
Athena Promachos/Buddhist Gesture	Hybrid	(Plant, 1979:23; Chosky, 1990)
Bodhi Tree	Gandhāran	(Gupta, 2012:279)
Bull	Gandhāran	(Gupta, 2012:278; Mohamad, 2009)

Bull Head	Hybrid	(Plant, 1979:67-68; Gupta, 2012:79)
Caduceus	Greek	(Plant, 1979:126)
Club	Greek	(Plant, 1979:134-135)
Club and Bow	Greek	(Plant, 1979:133)
Dioskouroi on Horseback	Greek	(Plant, 1979: 72)
Dioskouroi Standing	Greek	(Hoover, 2013: lxxiv)
Dolphin	Greek	(Plant, 1979:99-100)
Elephant	Gandhāran	(Gupta, 2012:278)
Elephant Goad	Gandhāran	(Bannikov, 2013)
Gorytos	Greek	(Plant, 1979:132)
Helios/Selene	Greek	(Hoover, 2013: lxxiv and lxxvii)
Herakles Seated	Greek	(Plant, 1979:30)
Herakles Standing	Greek	(Plant, 1979:30)
Horse Rearing	Greek	(Plant, 1979:74)
Horse Standing	Greek	(Plant, 1979:74)
King on Horseback	Greek	(Plant, 1979:75)
King/Buddhist Gesture	Hybrid	(Carradice, 1988:122-123; Chosky, 1990)
Lion Advancing	Greek	(Hoover, 2013:130)
Lion Seated	Gandhāran	(Hoover, 2013:130)
Lion Skin	Greek	(Plant, 1979:32)

Lion Standing	Gandhāran	(Hoover, 2013:130)
Man	Greek	(Plant, 1979:51-52)
Nike	Greek	(Plant, 1979:20-21)
Nimbate Nike	Greek	(Plant, 1979:20-21)
Owl	Greek	(Plant, 1979:95)
Palm Branch	Greek	(Plant, 1979:106-107)
Panther	Greek	(Plant, 1979:85)
Parents	Greek	(Plant, 1979:53)
Pilei	Greek	(Plant, 1979:72)
Radiate Artemis-Nanaia	Prior Hybrid	(Hoover, 2013:13)
Radiate Zeus	Greek	(Plant, 1979:36-37)
Radiate Zeus-Mithra	Prior Hybrid	(Hoover, 2013:lxvii)
Radiate Zeus-Mithra	Prior Hybrid	(Hoover, 2013:lxvii)
Enthroned		
Shield	Greek	(Plant, 1979:121-123)
Trident	Greek	(Plant, 1979:129-130)
Tripod	Greek	(Plant, 1979:130-131)
Tyche/Lotus	Hybrid	(Plant, 1979:39-40)
Vasudeva-Krishna	Gandhāran	(Hoover, 2013:lxviii)
Winged Thunderbolt	Greek	(Plant, 1979:127)
Zeus Advancing	Greek	(Plant, 1979:36-37)
Zeus Enthroned	Greek	(Plant, 1979:47)
Zeus Standing	Greek	(Plant, 1979:36-37)

Zeus/Buddhist Gesture	Hybrid	(Plant, 1979:36-37; Chosky, 1990)
Zeus/Chakra	Hybrid	(Plant, 1979:36-37; Gupta, 2012:280)
Zeus/Elephant	Hybrid	(Plant, 1979:36-37)

TABLE 5.2: A CHART DISPLAYING THE VARIOUS INDO-GREEK REVERSE TYPES AND THEIR CULTURAL ORIGINS.

In a similar manner to **Table 5.1** above, **Table 5.2**'s interpretations owe a great deal to the works of both Hoover and Bopearachchi, as this table does not, in any form, represent a personal interpretation. As again the main goal of this study was not to argue over mere opinions of interpretation but was instead to display a new methodology, capable of showing past cultural patterns through coinage. Furthermore, one of the major decisions of this study was to use previous numismatists' work/interpretations, in the attempt to discern the usefulness of anthropological theory and methodology, while also providing traditional archaeologists a brief glimpse of the vast interpretation work numismatist have done.

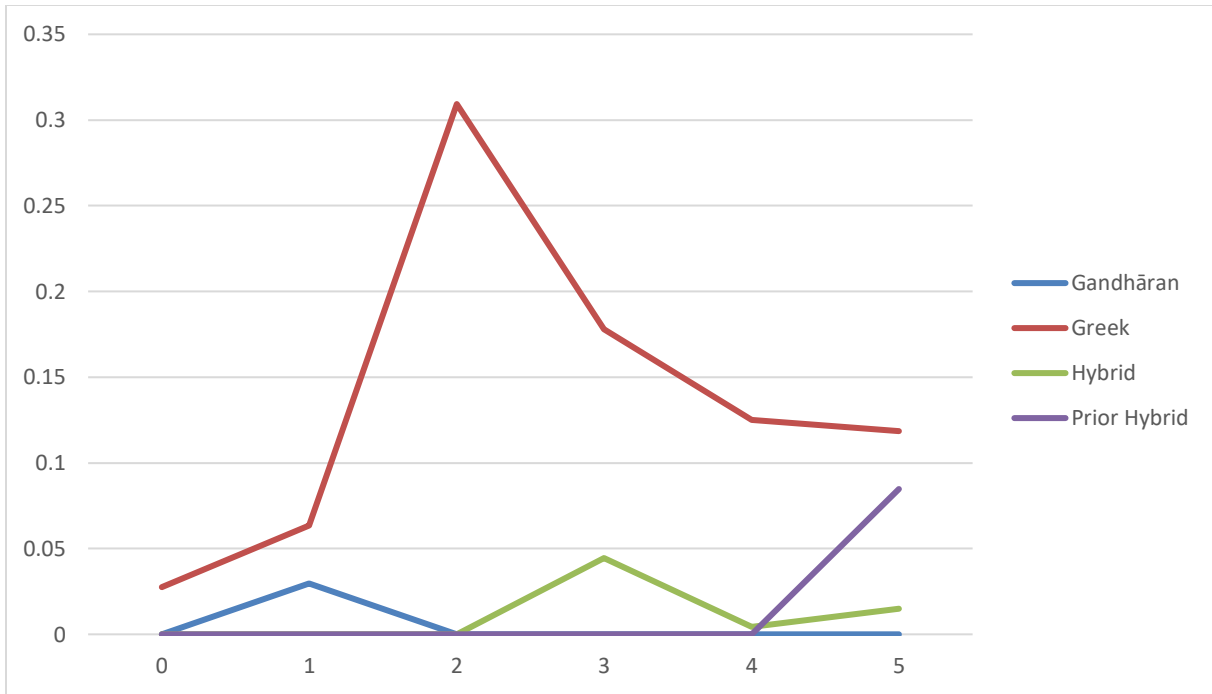


FIGURE 5.17: THE CULTURAL ORIGINS OF THE SILVER REVERSE TYPES.

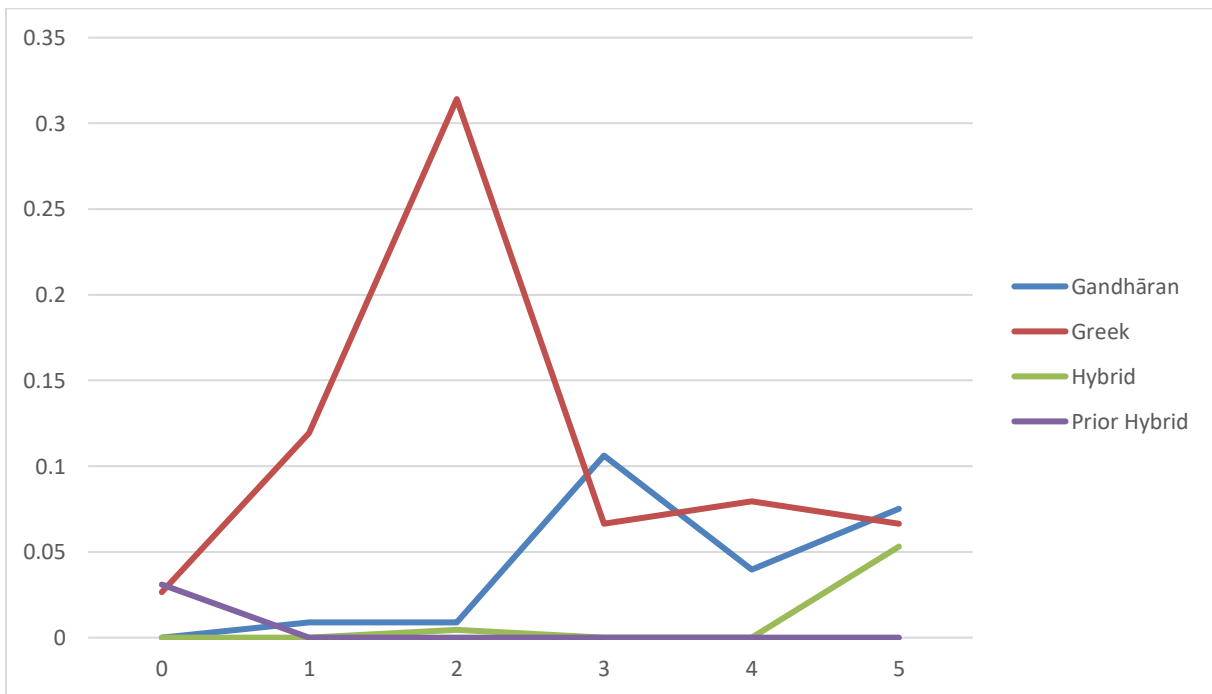


FIGURE 5.18: THE CULTURAL ORIGINS OF THE BRONZE REVERSE TYPES.

Reverse Type Origin Discussion

The silver reverse types' cultural origins, seen in **Figure 5.17**, when viewed on the basis of this study's argued etic (outside) perspective becomes far more clear upon the analysis of this figure. One item of particular interest in **Figure 5.17**, is the figure's portrayal of the 'cultural' variation within the Indo-Greek period, which can be seen in the respected 'rise and fall' patterns of the lesser cultures of influence; and while this study ultimately stands by its previous statement of silver coinage representing an outsider's view of the acculturation process, the political process is still fascinating to see. One other point of interest for **Figure 5.17** is the notable rise of 'hybridity' in the 3rd Generation, followed by the successive Greek 'conservative' period in the 4th Generation, which in many ways is a direct reflection of **Figure 5.19**, discussed below. **Figure 5.18** also displays the 5th Generation's lapse in traditional Greek elements, an act that likely reflects the end of Greek political influence in the region.

In **Figure 5.20**, the idea of bronze coinage representing the emic (insider's) perspective is continually upheld, which theoretically allows for the display of the actual acculturation process. A process that can vividly be seen in the dominance of Greek culture up until the 3rd Generation, whereupon there is an immediate increase of Gandhāran reverse types. Such an outcome contradicts the obverse cultural section seen in **Figure 5.14** above, as there was by effect an opposite occurrence, due to the Greek obverse types having dominated the 3rd Generation. Despite the lack of cohesion, if one were to view **Figure 5.19** as the religious state of the Indo-Greeks, after Meander I's supposed 'conversion' to Buddhism in the 2nd Generation. The outcome of change that occurred in the 3rd Generation is given both context and understanding. Still, the matter of Meander I's conversion is nevertheless of great debate, due to the conflicting

source material mentioned in the background section of this study. Nevertheless, **Figure 5.19** does indeed offer a possible reaffirmation of the event's occurrence.

Upon the 4th Generation, there is seemingly a backlash of Greek elements on bronze coinage (**Figure 5.19**), which is reminiscent of **Figure 5.11**'s 'politically' conservative act in the 4th Generation. In a similar process of thought, the bronze coinage of the 4th Generation can be viewed culturally as a last effort to 'turn the tide' of the acculturation process, or in Redfield's interpretation the 'reaction' phase. Subsequently, within the 5th Generation, one can see the 'melting pot' persona at its fullest extent due to the almost equal varieties of Gandhāran and Greek reverse type, followed closely by a small amount of 'hybrid' types as well.

Overall, **Figure 5.19** demonstrates the fall of Greek dominance, on a cultural level, and is likely the most accurate representation of acculturation that the Greek invaders experienced, due to the very gradual process of Greeks having adopted local (Gandhāran) religious motifs on bronze reverse coinage. Furthermore, when one adds the previously noted 'conversion' of Menander I to Buddhism, whose rule was placed into the 2nd Generation of this study, one can see a definite reasoning for why the Greeks were acculturating; though like most items of ancient history this matter remains contested. Regardless, from **Figure 5.19** alone one without question can see that the Indo-Greeks did indeed acculturate to local Gandhāran customs within the 3rd and 5th Generations. In the aim to amplify these arguably religious adaptations the following variable of 'Buddhist Gesture' appearance, has been added below for the purpose of continuing this much-debated matter.

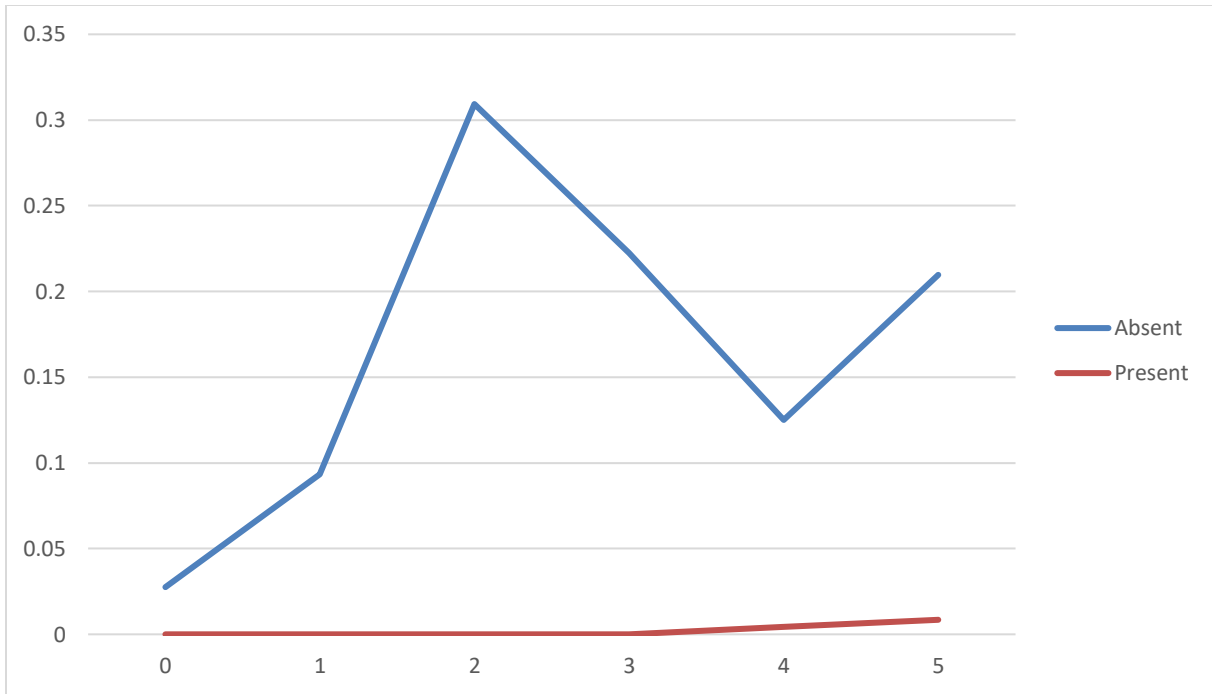


FIGURE 5.19: ‘BUDDHIST GESTURES’ IMPLEMENTED ON SILVER COINAGE.

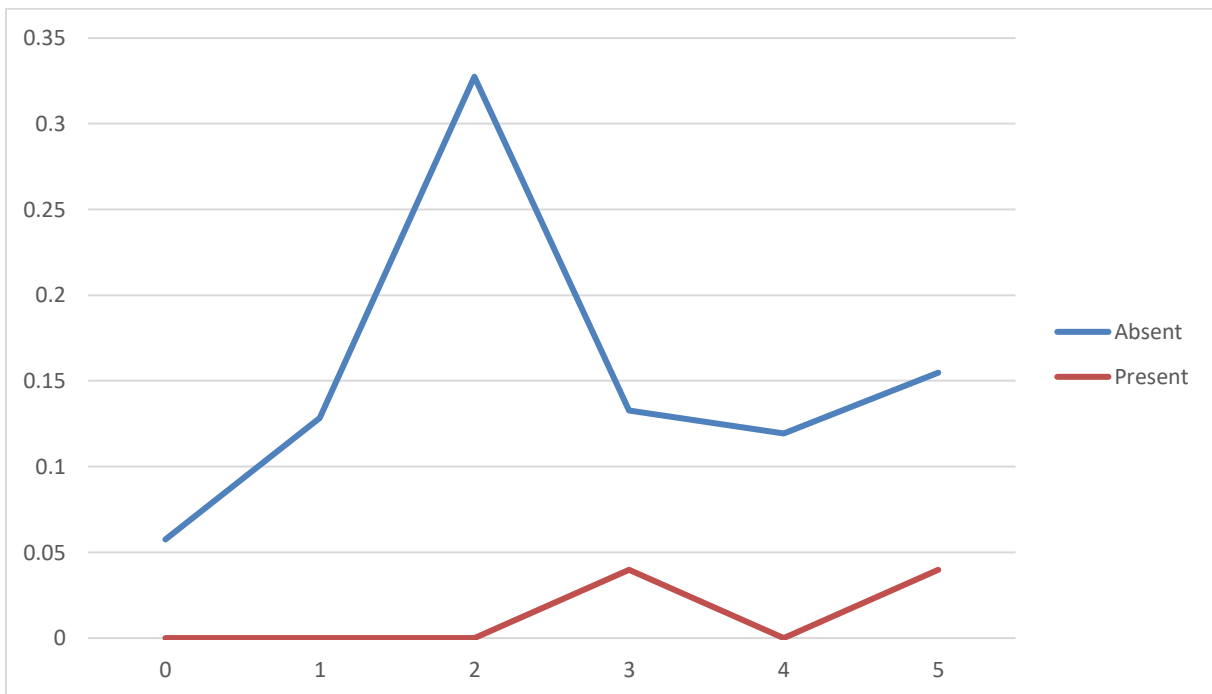


FIGURE 5.20: ‘BUDDHIST GESTURES’ IMPLEMENTED ON BRONZE COINAGE.

‘Buddhist’ Gesture Overview

The variable of ‘Buddhist’ gestures has been categorized as being a part of the Buddhist faith for two reasons. The first of which is due to the gestures being known within the religion itself, in addition to the older religion of Hinduism, while the second reasoning can be found in the recorded popularity of Buddhism in the region, and this thesis’s concentration of religious adoption. Therefore, while the gesture mentioned in this section, could very well be non-Buddhist, due to this study’s main focus of acculturation, one matter remains certain, and that is these outlined benedict gestures fundamental remain a cultural aspect of Gandhāra, and not of Greece. Thereby making the variable an extremely accurate view of the acculturation process that occurred during the Indo-Greek period.

‘Buddhist’ Gesture Discussion

The variable of ‘Buddhist’ Benedict gestures, like the previous cultural variables above, has been divided via the respected two coin metal types, silver and bronze coinage, which can be seen in **Figures 5.20** and **5.21** respectively.

Starting with the silver coinage, one can see in **Figure 5.20** that there was indeed a small rise of ‘Buddhist’ gestures upon the 4th Generation, which is an intriguing outcome due to the 4th Generation’s conservative nature in the prior cultural variable discussions. From the 4th Generation’s induction of ‘Buddhist’ gestures, there is a subsequent rise in the 5th Generation; though such elements appear on a minor portion of the coinage from the two respected periods. These results, when interpreted through the etic perspective, offer a dismal outlook of the Greeks having conformed to Buddhist practices. These prior results have been concluded as such due to their comparisons with one of the prior Buddhist rulers of Gandhāra, the previously mentioned Ashoka who adamantly proclaimed his ‘conversion’ to Buddhism. In fact, many of Ashoka’s

dedication to his new faith can still be seen archaeologically to this day, through the architectural developments (e.g. stupas, edicts, etc.), all of which was briefly explained during this thesis's background section. Therefore, the overall interpretation of **Figure 5.20**, is that the Indo-Greeks, for political matters, displayed their adoption of Buddhism on a seldom basis. An act leading to the conclusion of the Indo-Greeks having retained their traditional Greek political identity ultimately. It should be noted, that this conclusion did not include the various 'Buddhist' iconography appearing on Indo-Greek coinage (e.g. 'Buddhist' Lion, the Lotus Flower, the Standing Elephant, etc.); and has strictly included the explicit religious gestures, due to the prior elements being greatly contested.

Moving on to bronze coinage, seen in **Figure 5.21**, one can see a pattern of development, which has been seen before in the cultural variables above, most notably in **Figure 5.19**; and thus, there appears to be a definite emic (insider's) view of Indo-Greek culture. The main outcome of this pattern is that there is a great increase of evidence for the Gandhārans having acculturated the Greeks, with a particular concentration on religion; which ultimately creates the impression of the *Milindapañha*'s account possessing some degree of truth. Though as to whether Menander I truly 'converted' to Buddhism, one can never know for certain, and the matter is regardless an insignificant historical occurrence if it did indeed occur; as the king's effect on the populace's religious, and other cultural outcomes do not appear to be related, if this study's etic and emic viewpoints are correct. In fact, it appears on a cultural level that the Greeks succumbed to Buddhist concepts, and perhaps even religious practices, which can be seen in the rise of 'Buddhist' gestures in the 3rd Generation. However, much like the reverse cultural elements seen in **Figure 5.19**, there appears to have been a successive backlash of conservative Greek ideology in the 4th Generation, an act that reflects the acculturation process

of Redfield's 'Resistance'. Such a practice of resistance fails to last, as upon the 5th Generation the frequency of 'Buddhist' gestures arises yet again and creates the effect of the Greeks seemingly having been exposed to Buddhist concepts yet again. Whether the 5th Generation's outcome was intentionally done by the Greek populace or was an outcome of the decline of Greek culture, remains to be seen. Regardless, it is safe to assume that the Greeks were indeed affected by this exposure to 'Buddhist' gestures from the 3rd Generation onwards, as evidence can be seen in the 'hybrid' religious elements in **Figure 5.19**; wherein Zeus, the patron god of the Greeks was often seen alongside an elephant. The latter figure can be interpreted as associated with a variety of religions, all of which have been concluded as a 'native' religion of India, which by effect is 'non-Greek' in origin (Hoover, 2013:89).

Furthermore, it should be stressed that the current western state of religious 'conversion' was not in effect during this period, as within a great majority of ancient societies a person would simply adopt a god/goddess into their already pre-existing religious sphere. Therefore, the continuation of Greek religious motifs, solely describes a continued process of Greek cultural coin motifs, wherein the actual process of acculturation is far more open to interpretation. A fact that can be attested by the various previous scholarly interpretation of the Indo-Greeks, most notably Tarn and Narain, who were both mentioned in the background section above. Despite the admitted complications, **Figure 5.21** still offers an excellent outlook of the Indo-Greek acculturation process, due to its display of the non-Greek cultural practices, which again strongly display an influence made by the Gandhārans onto the Indo-Greeks' sphere of religion.

CULTURAL SECTION CONCLUSION

Overall, the figures of this section have affirmed the two underlying theories of cultural patterns this study has implemented, those two being the emic and etic perspectives, both of which have been successfully assessed through the bronze and silver coinage respectively. Moreover, while the actual culture of the Indo-Greeks remains cryptic, due in part to coinage representing only a small degree of the period's material culture, these six variables above have regardless provided a basis for Indo-Greek cultural patterns.

CHAPTER 6: CONCLUSIONS

To provide but a brief overview of this study's analysis of the four major variable sections, all four sections' results shall be summarized below. This has been done not only to discuss the Indo-Greek culture of interest but also to provide the basis for what could be improved in the future to help similar assessments.

SUMMARIZATION OF FINDINGS

Economic Section

Research Question (Why would the Indo-Greeks adopt a local economic system of coin weight?)

This study has found a plausible basis upon why the Indo-Greeks adopted the Indian standard of weight for silver coinage while continuing to implement the Attic standard in a lower volume. The answer simply is trade, in both the Greek 'Hellenistic' world to the west and the period's newly developed *Silk Road* in the east. And while there have been many debates of the latter usage of the Attic standard, including its function as a tribute to the 'barbarian' invaders north of the Hindu Kush, after the Yuezhi invasion of Bactria during the late 2nd century BCE, due to this study's generational aspect one can see a clear decrease in the Attic standard following the Yuezhi's successful invasion of Bactria, which would suggest an entirely different outcome. Moving back to the discussion of the Indian standard, it remains very likely that the drachm of the Indian standard served a similar function to that of the prior Indian punchmark coinage, namely the karshapana denomination. Moreover, given the context of the probable use of the karshapana, of its merchant use primarily, one can see why there was a demand for the implementation of the Indian weight standard, which the Indo-Greeks were all too happy to oblige. Thereby, providing a practical explanation for the affirmed economic hypothesis, of the

Indo-Greeks having adopted prior Indian standards of coinage, which was seen most notably in the aspect weight standard.

As for this study's bronze coin analysis, seen in *Appendix A*, much remains to be done; though this study has provided brief attention on what needs to be implemented in the future to bypass such issues.

Overall, the economic assessment of this thesis was admittedly of secondary importance in terms of the acculturation process, as one has already seen above, the factors of cultural and economic adoptions do not go 'hand in hand', though one usually does proceed another. Therefore, it can be stated with added certainty that the economic adoption made by the Indo-Greeks were not, in any form, connected to the actual acculturation process.

Cultural Section

Research Question (Did the Indo-Greeks truly adapt to Buddhism, and thereby assimilate into the local Gandharan culture?)

As for this study's cultural assessment, through the adoption of both schema theory and the anthropological notions of the emic and etic perspectives, one was offered several glimpses of the acculturation process, most notably through bronze coinage. These prior aspects have allowed for the formation of a methodology; wherein there is still a need for modifications ahead. Though it should be noted with great confidence that the basis of what was implemented within this study, has allowed for the acculturation process to be pinpointed across each successive generation, which is a monumental step. Furthermore, it was through Redfield's three acculturation outcomes that these cultural generation data results were interpreted. Ironically, the cultural hypothesis of the Indo-Greeks having assimilated into the Gandhāran society did not come to pass; and instead, it would appear by the 5th Generation, that the Indo-Greeks and

Gandhārāns had both continued to prosper on a cultural basis, and had begun evident steps toward cultural ‘hybridity’. This latter statement is heavily ironic due to this study’s previously noted issues with a hybrid theory for the implication of this study, and yet, by the end of the Indo-Greek period, there remains unquestionable evidence of hybridity, which can be seen quite clearly in the obverse and reverse origin variables above for bronze coinage.

As for whether the Indo-Greeks, as a unified culture, adopted Buddhism, one can truly never know for certain. However, upon this research’s cultural conclusion, it would seem that some of the Indo-Greeks did indeed adopt Buddhism in some form. Though, to what degree one again can only speculate. Regardless, for now, it would appear that *Milindapañha* offers some degree of truth, due to the acculturation rate of Buddhism within Indo-Greek culture.

Appendices’ Conclusions:

Last for discussion is the study’s two sub categories of *Linguistic* and *Ruler* variables, both of which are located in the appendix sections of this thesis, in *Appendices C* and *D* respectively. And while both additions offered a unique perspective of the Indo-Greeks, both variable categories proved to be unwarranted in the answering of the two research questions of this thesis. Despite its exclusion, the *Linguistics* section of the thesis research proved to be invaluable in the affirming of both the cultural and economic perspectives this thesis’s research has obtained, due to the linguistic variables offering a subsequent outlook for the prior theories’ correctness. The same could not be said for the *Ruler* variables, which offered very little for this study. In fact, the *Ruler* variable assessment outright confirmed the need to change from the old perspective of numismatics, as has been hinted from the beginning pages of this research.

Moreover, while historical based numismatics is an ‘olden’ perspective, this does not mean that

it should cease to exist in the future, as this study simply could not have been done without prior numismatist research, and much, and more is owed to their previous misgivings and findings.

Limitations and Future Research

This study's analysis of both economic, and cultural variables, have displayed the value of coinage when viewed in an archaeological perspective; and have proven to be just as valuable as ceramics, within the assessment of past acculturation processes. Furthermore, although this study has represented a 'trial and error' research of finding the acculturation process through coinage, upon the completion of this study, it remains evident that such a methodology can be of use in a wider field. In fact, it is the belief of this study that the obverse and reverse cultural elements, and their successive cultural origins, hold the key for the possible future assessments of acculturation through coinage. And it is with this study's usage of both schema theory and the emic and etic perspectives that the tools to find cultural processes at work still lay.

Lastly, as for improvements on this study's assessment of Indo-Greek acculturation, this study could be improved upon on two fronts. The first of these fronts is the inclusion of more data from other catalogs, as while Bopearachchi 1991 catalog of reliance was a grand start of understanding, many coins of recent discovery has been excluded due to the age of the catalog of reference. Secondly, the parameters of this study could be expanded, as the entirety of the Indo-Greek kings could be assessed in a similar fashion to the selected Indo-Greek rulers of Gandhāra. This second improvement is arguably the most important, as it would allow one to theoretically differentiate the location influence, as well as the generational view this study has already established.

This methodology could also be used to research other societies who possessed coinage, as it offers a substantial amount of information that has yet to be assessed by archaeologists.

Also, this methodology has the potential to offer a new viewpoint of anthropological phenomena, like the acculturation process this thesis has researched, for already researched cultures.

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APPENDICES

APPENDIX A: BRONZE COINAGE

Introduction

This section has implemented set denominations for the previously ambiguous bronze coin categories and has done so through the aid of Hoover's 2013 abstract sets of bronze denomination type (e.g. A Series, B Series, etc.). The way this study has sought to categorize these new denomination types has been to test the standard deviation of both the size and weight of the bronze coins measurements given in Bopearachchi's 1991 catalog, and then successively compare the median of these measurements to the averages given in Hoover 2013's catalog.

Tables A1 and **A2**, given below, display this study's assessment of these averages and standard deviations, along with the implemented median. The weight of which is given to the 2nd decimal point in grams, while the size of a select coin is given in square centimeters. It should be noted that other lower metal types, such as the cupro-nickel coins of Generation 1 have been excluded from this research, despite the similarities of size and weight of bronze coinage from Generation 1.

<u>Denomination</u> <u>(Hoover, 2013)</u>	<u>Approx.</u> <u>Weight</u> <u>(Hoover, 2013)</u>	<u>Study's</u> <u>classification</u>	<u>Standard</u> <u>deviation</u>	<u>Median Weight</u> <u>for study</u>
AA	25.20 g.	AA1	N/A	N/A
AA	44 g.	AA2	1.24	40.07 g.
AA	17.15 g.	AA3	N/A	N/A
AA	19.6 g.	AA4	N/A	19.06 g.
A	12.60 g.	A1	1.05	12.58 g.
A	10-17 g.	A2	1.83	12.39 g.
A	16.8 g.	A3	N/A	N/A
A	13.75-15 g.	A4	0.82	12.31 g.
A	11.00 g.	A5	N/A	N/A
A	12.25 g.	A6	N/A	N/A
B	8.40 g.	B1	0.70	7.62 g.
B	9.0 g.	B2	1.08	8.97 g.
B	8.25-9.8 g.	B3	0.96	7.97 g.
B	8.5 g.	B4	1.28	6.83 g.
A/B	9.8 g.	A/B	0.47	9.26 g.
C	4.00 – 6.00 g.	C1	N/A	4.65 g.
C	4.90 - 6.80 g.	C2	1.28	4.42 g.
C	4.25 - 6.12 g.	C3	N/A	6.21 g.
D	2.1 g.	D1	N/A	N/A
D	2.10 – 2.15 g.	D2	0.62	2.25 g.

D	1.38 g.	D3	N/A	N/A
C/D	2.75 g.	C/D	N/A	2.61 g.

TABLE A1: THIS STUDY'S ASSESSMENT OF BRONZE INDO-GREEK COINAGE WEIGHT, AND SUCCESSIVE RECATEGORIZATION OF DENOMINATIONS (ADAPTED FROM HOOVER, 2013).

<u>Denomination</u> <u>(Hoover, 2013)</u>	<u>Approx. Size</u> <u>(Hoover, 2013)</u>	<u>Study's</u> <u>classification</u>	<u>Standard</u> <u>deviation</u>	<u>Median Weight</u> <u>for study</u>
AA	706.5 – 907.46 cm ²	AA1	N/A	N/A
AA	784 - 900 cm ²	AA2	1.41	811 cm ²
AA	530.66 – 706.5 cm ²	AA3	N/A	N/A
AA	676 - 900 cm ²	AA4	N/A	756 cm ²
A	615.44 – 706.5 cm ²	A1	21.59	615.44 cm ²
A	256 – 625 cm ²	A2	63.06	420 cm ²
A	706.5 cm ²	A3	N/A	N/A
A	400 – 900 cm ²	A4	67.88	473.5 cm ²

A	400 - 576 cm ²	A5	N/A	N/A
A	784 - 900 cm ²	A6	N/A	N/A
B	314 – 452.16 cm ²	B1	52.18	398.6 cm ²
B	314 - 576 cm ²	B2	51.02	484 cm ²
B	254.34 - 452.16 cm ²	B3	59.91	342 cm ²
B	452.16 – 530.66 cm ²	B4	28.30	510.65 cm ²
A/B	324 – 676 cm ²	A/B	62.31	506 cm ²
C	196 – 361 cm ²	C1	N/A	221 cm ²
C	256 – 400 cm ²	C2	86.54	324 cm ²
C	400 – 484 cm ²	C3	N/A	440 cm ²
D	176.63 cm ²	D1	N/A	N/A

D	78.5 – 153.86 cm ²	D2	19.79	196 cm ²
D	78.5 – 113.04 cm ²	D3	N/A	N/A
C/D	256 – 324 cm ²	C/D	N/A	289 cm ²

TABLE A2: THIS STUDY’S ASSESSMENT OF BRONZE INDO-GREEK COINAGE SIZE, AND SUCCESSIVE RECATEGORIZATION OF DENOMINATIONS (ADAPTED FROM HOOVER, 2013).

While these two tables above are missing a reasonable amount of data, represented by *N/A*, this incomplete assessment is still quite significant, as it allows one a theoretical glimpse of the local economy during the Indo-Greek period. A fact that can be seen in **Figures A.1** and **A.2** found below.

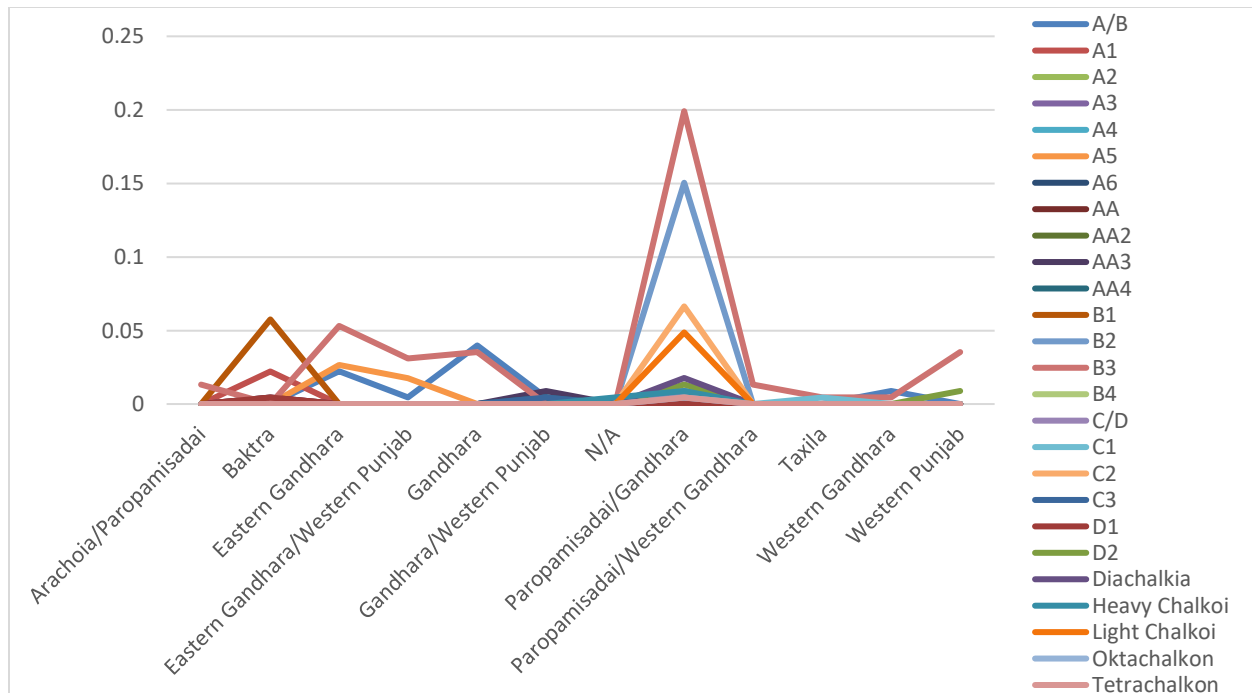


FIGURE A0.1: THIS STUDY'S GIVEN VARIATION OF INDO-GREEK BRONZE COINAGE, ASSESSED THROUGH PRIOR NUMISMATIST'S ESTIMATES OF APPROXIMATE MINT AREAS.

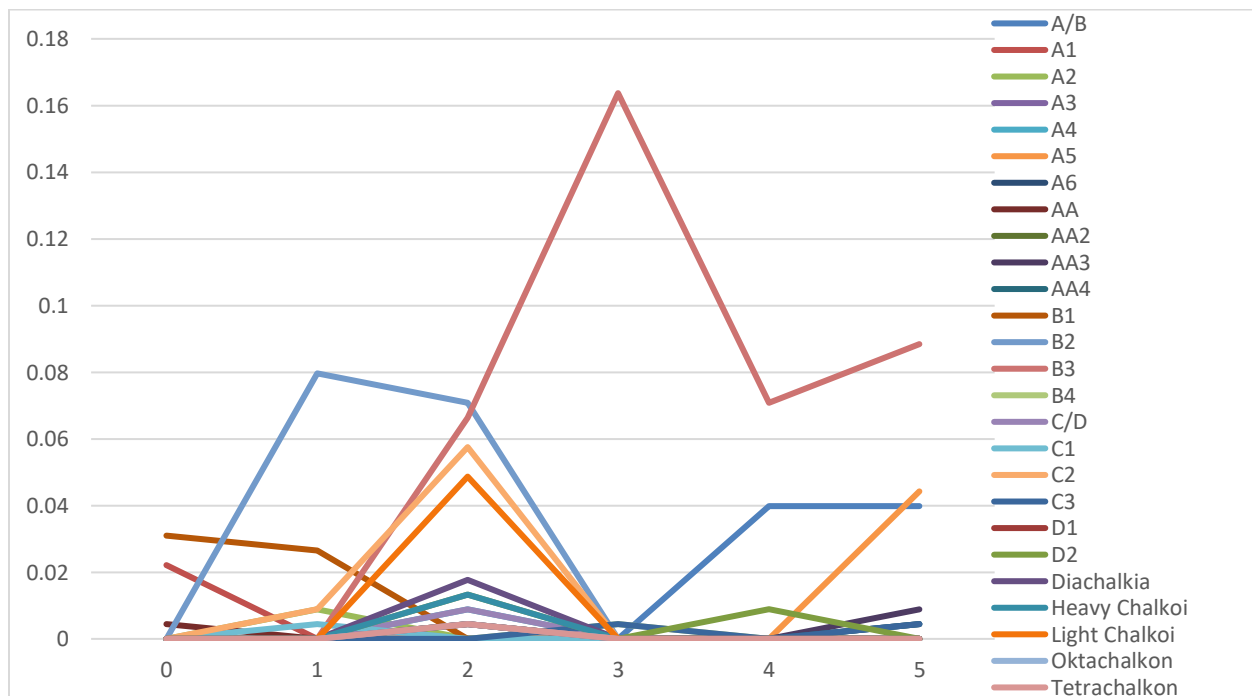


FIGURE A0.2: THIS STUDY'S GIVEN VARIATION OF INDO-GREEK BRONZE COINAGE, ASSESSED THROUGH THE DESIGNATED GENERATIONS OF THIS STUDY.

Bronze Coin Overview

Figures A0.1 and **A0.2**, while containing highly debated information, do regardless show a likely assessment on the set denominations of bronze coinage within the Indo-Greek period. As the exact denomination names of bronze coinage have notably been lost through time, which is why the highly abstract names have been utilized in this study's discussion.

Bronze Coin Discussion

Figures A0.1, while not initially helpful at first glance, does provide a rough outline of consistent denominations of bronze coins in existence throughout the Indo-Greek area of rule. A matter that is amplified if one were to look at the areas of interest shown in **Figure 3.2**, though for a short description there is a definite pattern of coin denominational difference upon the crossing of the Hindu Kush mountain ranges, much like the silver coinage.

This prior interpretation was confirmed by **Figure A0.2's** assessment; wherein one can indeed see a rise and fall of bronze coin denominations set in this study, within the first two generations of this study. The *B Series* coinage offers the best outlook of this change, due to the immediate incline of coins of the *B2* type in the 1st Generation, followed by a successive decline in the 2nd Generation due to the appearance of *B3*, *B2's* natural successor. One can further see the rise and fall pattern with *B2's* complete disappearance in 3rd Generation, while the *B3* coin denomination thereafter reaches its own point of zenith; which is shortly followed by *B3's* sharp decline in the 4th Generation.

While there are admittedly no written sources detailing the 'rhyme or reason' behind these events, if one looks at the face value of these various bronze coin denominations this study has implemented, one can see a firm lack of strict denomination regulations like there were on silver Indo-Greek denominations. Such a lack of regulations could be due to a variety of factors,

the most prominent of which would be the corrosive state of ancient bronze coins surviving today, such as adhering to the demands of the populace, or even the shortages of base metals at the given time. However, it does remain possible that this study's given bronze denominations are an outcome of the corrosive nature of coinage, which has inhibited any attempts to properly measure a coin's original form and weight; and is why **Tables A1** and **A2** have been issued previously. Despite the previously given issues, it is the belief of this study that these set bronze denominations reflect the direct needs of the local population. As mentioned before, within the background section of this study, the prior Indian economy possessed silver coinage in a great majority and lacked a locally used base metal for lower valued coinage. Therefore, it remains probable that upon the 1st Generation of Indo-Greek rule there would be a have been a growing desire to use a bronze coinage system in Gandhāra, a process of thought that is reflected above in **Figure A0.2**.

APPENDIX B: CULTURAL VARIABLES OF LESS IMPORTANCE

Introduction

This section includes the excess cultural variables, which upon their completion proved to be less distinguished than the main 9 variables found within the main discussion of this paper. However, in spite of the status of these variables: *Die Axis Orientation*, *Portrait Style vs. Standing Figure*, and *Monogram Absence* still offer a unique perspective of Indo-Greek culture. Below, these three variables shall now be charted and discussed.

It should be noted that the first of these variables: die axis orientation, has used 719 of the 869 coins ascribed to the Indo-Greek kings of study, found within Bopearachchi's 1991 catalog; and has thus relied upon a separate database. Despite this grand difference, much of the variables presentation remains the same as the ones above, due to the percentage of occurrence still being of importance. As for the two remaining variables of this section: *Portrait Style vs. Standing Figure* and *Monogram Absence*, the database of 709 coin types/monograms have still implemented. Overall, it cannot be overly emphasized that these three cultural variables did indeed offer some insight into what the Indo-Greek culture experienced, though admittedly not to the degree the main six cultural variables of the previous discussion have done.

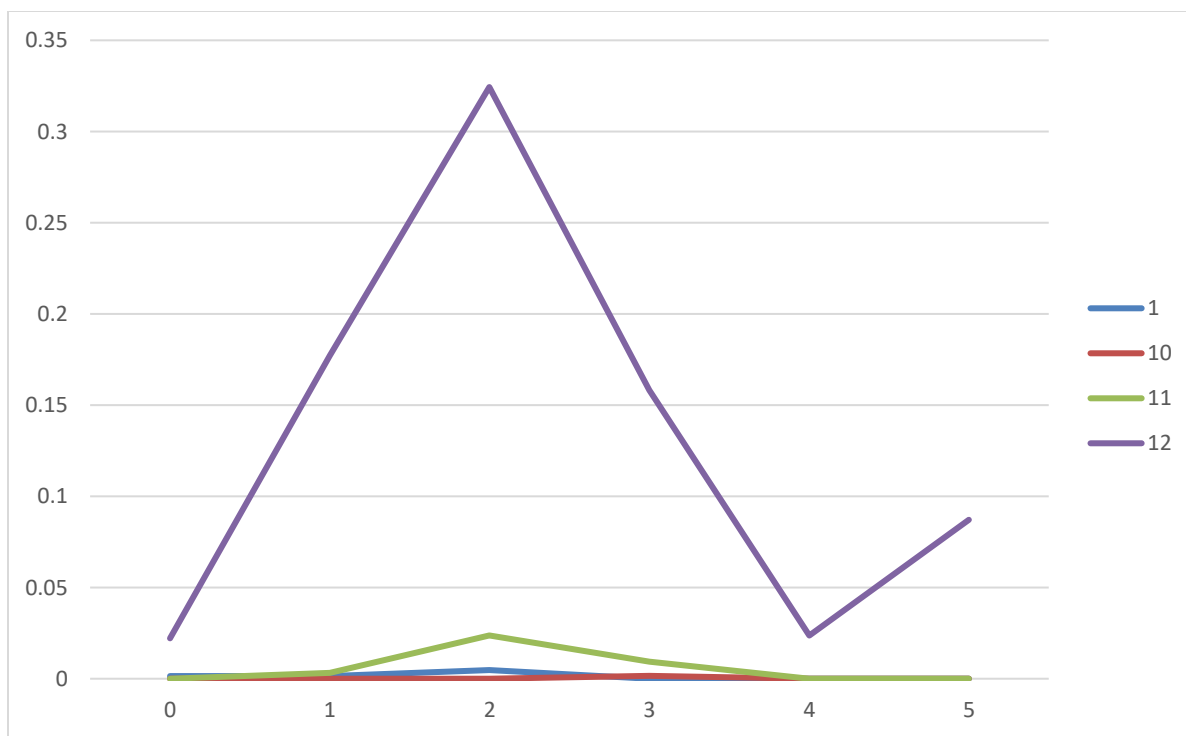


FIGURE B0.1: THE VARIANCE OF DIE AXIS ORIENTATION AMONGST THE SILVER COINAGE OF THIS STUDY.

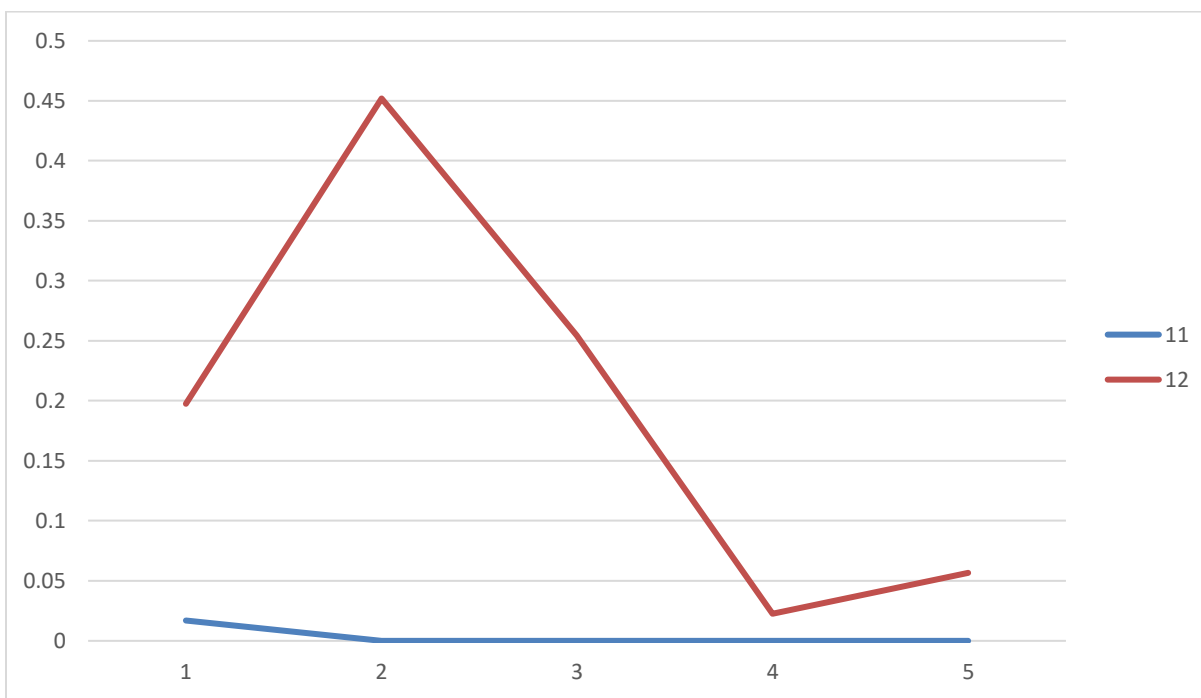


FIGURE B0.2: THE VARIANCE OF DIE AXIS ORIENTATION AMONGST THE BRONZE COINAGE OF THIS STUDY.

Die Axis Orientation Overview

A die axis orientation is how a coin is orientated in relation to the obverse and reverse sides of a coin. For example, if the obverse side stays upwards, with the reverse side also remaining upward, then the coin has an axis of 12 o'clock. The variable of die axis orientation can be viewed as both an economic and cultural variable, within this data discussion section the latter option has been chosen, despite the prior categorization of the die axis as an economic variable.

Die Axis Orientation Discussion

As one can see from **Figures B0.1** and **B.02**, the die axis orientation altered very little over the course of the Indo-Greek period; with only four variation types being seen in the database of this study, those being: *12*, *11*, *10*, and *1 o'clock*.

Starting with the silver coinage (**Figure B0.1**), one can see the great rise in non *12 o'clock* die axis coinage during Generation 2, which by itself would suggest that there was a larger production of coinage during this period. This prior statement is assumed due to the implication of there being more perceivable 'mistakes' from the previously desired *12 o'clock* die axis, due to the increased production rates. When **Figure B1**'s results are coupled with **Figure 5.7**'s display of silver coinage shape variation, there emerges a possibility on why the die axis orientation varied more in the 2nd Generation than in any other generation seen within this study. As **Figure 5.7** details the rise, and subsequent fall, of square silver coinage during the 1st and 2nd Generations respectively. Therefore, it would appear that upon the 2nd Generation there was an inclined 'learning curve' on the proper alignment for circular coinage; which after all is significantly harder to align in comparison to square coinage. This possible reason for the 2nd Generation's 'problem' in the retainment of a *12 o'clock axis* is highly significant, as it would

suggest that the coin minters in Generation 2, be them Greek or Gandhāran, had not been thoroughly trained in the traditional Greek minting of coins. This is not to say there is a significant loss in the Greek practice of minting coins, as from Figure B0.2 alone, one can gather that the Greek notions of coinage remained both strongly implemented and practiced in Indo-Greek times. This prior statement is made solely on the basis of there being difficulties in the retainment of a *12 o'clock* die axis orientation for Indo-Greek coinage, and is not a hardened theory by any means; however, this study has still interpreted such a difficulties of retaining a *12 o'clock* axis as not being a simple coincidence.

Moving on to bronze coinage (**Figure B0.2**) one can view a small percentage of *non 12 o'clock* die axis coinage being found in the 1st Generation, though oddly from the 2nd Generation onwards such coin traits are quickly diminished. When **Figure B0.2**'s data is coupled with the variable of bronze coinage shape, displayed in **Figure 5.8**, one can again decipher a probable reasoning for why there was a limited amount of deviation from the *12 o'clock* die axis. As **Figure 5.8** shows the rise of the square bronze coinage upon the 1st Generation, which contains only a small percentage of circular coinage. Upon further investigation, there appears to have been only 3 bronze circular coins that are accounted for within Generation 1, and as it happens these 3 circular coins, are all of the *11 o'clock* axis type. The meaning of these finds can be counted as further proof for the lessening importance of the traditional Greek ways of minting, though as mentioned above this is simply to state a decline of importance for learning circular minting styles and does not advocate the traditional signs of acculturation.

Overall, these previous variable interpretations of die axis are far from conclusive, as the interpreted 'mistake' of *non 12 o'clock* die axis coinage is ultimately subjective in nature; and

could very well be dismissed in future studies, due to the offset die axis orientations having occurred even in conservative Greek societies, such is even seen in **Figure B0.1**'s *1 o'clock* coin of Generation 0. In spite of the admitted subjectivity of these interpretations, and nature of prior offset die axis coinage, the correlation between the rise and fall of coin shapes and die axis 'mistakes' should not be considered a mere coincidence. As it remains quite likely that there was a 'learning curve' between the two shaped coin dies of square and circular, with the latter undoubtedly being the more difficult to implement, a proper *12 o'clock* coin die axis, which adheres to Greek tradition, and thus the Greek schema of coinage. With the last phrases stated, it remains clear that the Greeks did not purposefully stray from their cultural roots regarding their coinages' die axis orientation, which was to be expected in this study, due to the concept not being implemented on the prior Indian coinage, that of the so-called punchmarked coinage. Regardless, this variable has indeed been useful in this data set's analysis, as it has displayed a cognitive process of thought when coupled with the variable of coinage shape above; which in some regard was influenced by Dr. Holt's '*Cognitive Numismatics*' mentioned briefly in the introduction of this thesis.

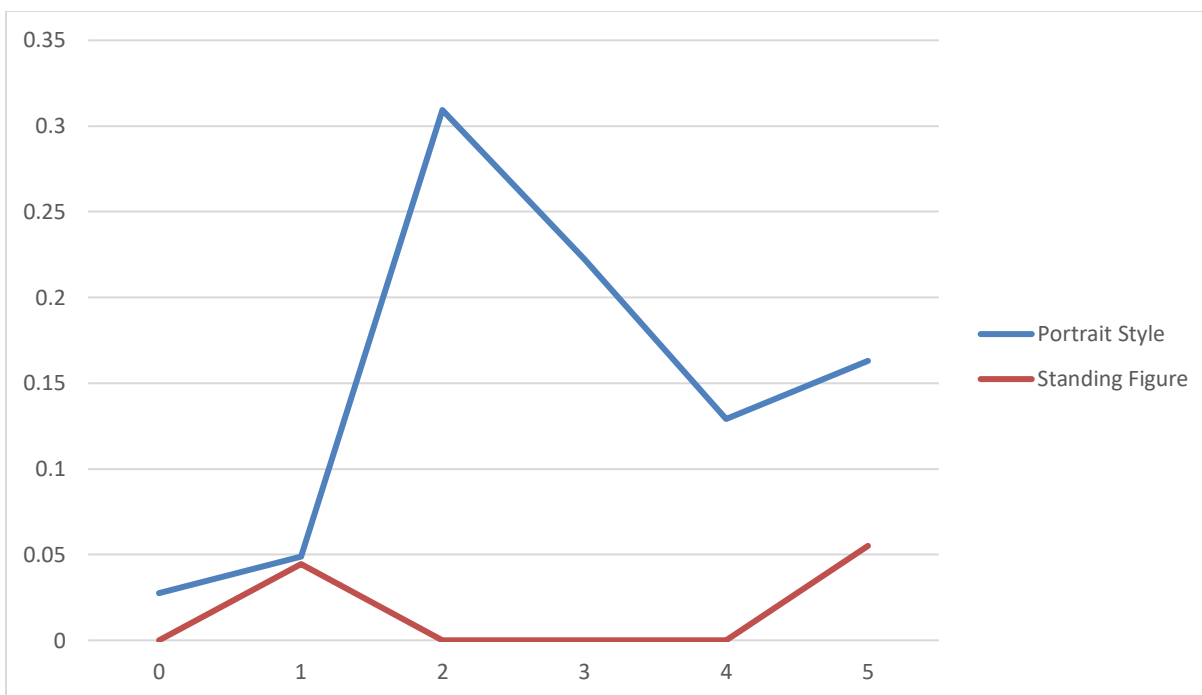


FIGURE B0.3: THE ARTISTIC FIGURE POSITION OF SILVER COINAGE OVERSE TYPES.

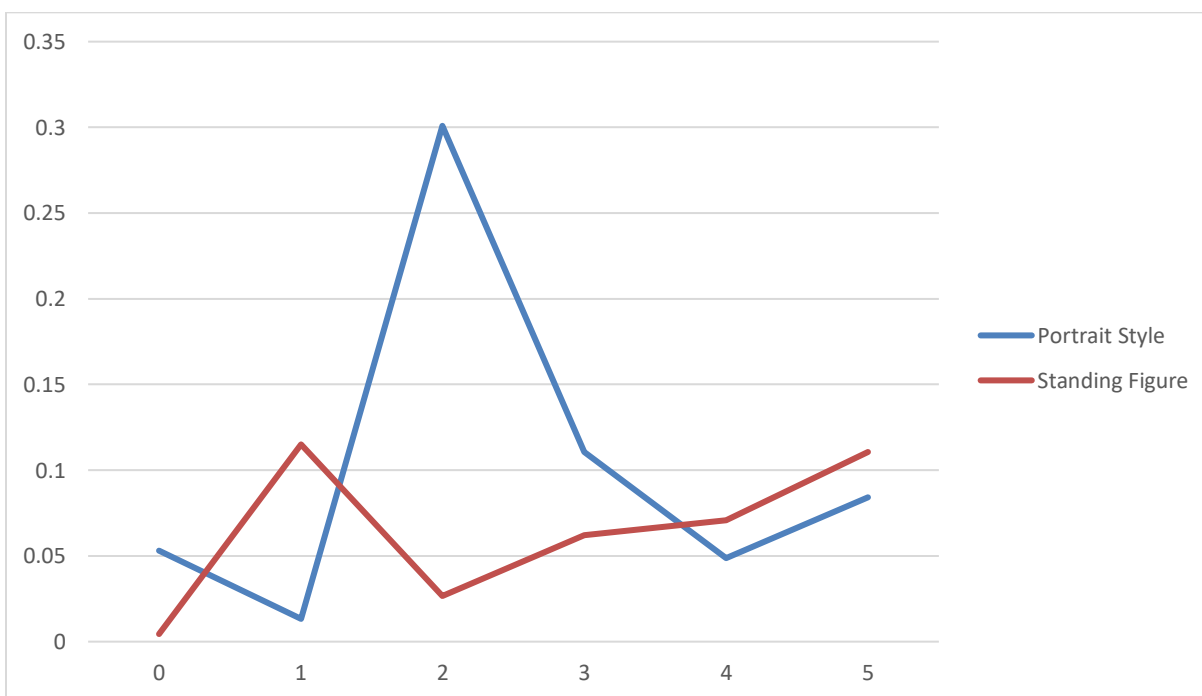


FIGURE B0.4: THE ARTISTIC FIGURE POSITION OF BRONZE COINAGE OVERSE TYPES.

Portrait Style vs. Standing Figure Overview

The appearance of portrait vs. standing figure obverse styles is an adequate representation of the artistic values of the two cultures of this study. With the portrait aspect representing the dominant style of Hellenistic period Greek coinage, while the standing figure allows a representation of the prior Indian coinage schema to a relative degree. There is some issue with this comparison, as standing figures have been represented in previous Greek coinage, and is why the context of this variable has been limited to the obverse side solely, for both bronze and silver coinage, due to the grand dominance of the portrait style obverse type in the Hellenistic period, mentioned multiple times above.

Portrait Style vs. Standing Figure Discussion

Silver coinage, seen in **Figure B0.3**, yet again displays the theorized etic perspective, which can be seen in the 1st Generation's incline of the Gandhāran trait of the *Standing Figure* that is successfully followed by the unfaltering popularity of *Portrait Style* obverse types on silver coinage. This outcome is quite significant, as it provides further affirmation of this study's political identity of the Indo-Greeks, as during the 1st Generation there appears to have been an attempt to identify the newly founded Indo-Greek Kingdom as an Indian state. Moreover, upon the 2nd Generation, there seemingly was a subsequent resurgence of 'Greek pride', which changed the prior Indian political state to a Greek one. Such a change was likely brought upon by Eukratides I's successful invasion of the already established Indo-Greek kingdom, along with Menander I's further conquests east of Taxila. With both acts having been mentioned, albeit briefly, within the classical accounts of the Indo-Greeks. While much, if not all, of Indo-Greek history, remains a subject of debate, the data above provides some degree of evidence for such historical events. Though it is also possible that the Indian subcontinent, as whole, relinquished

in power on its own accord, and thus allowed the Greek way of coinage to prosper. Whatever the case may be, it becomes quite evident that the Indo-Greek kingdom from the 2nd Generation onward remained ‘Greek’, at least in regard to political identity, which thereby affirms the outward (etic) perspective this study has upheld.

Figure B0.4 offers a very similar outlook to the two prior bronze cultural conclusion, due to the similar occurrences in the 3rd and 5th Generations, which has ultimately provided further evidence of the acclaimed pattern of acculturation during the latter Indo-Greek generations. Despite the figure’s similarity to **Figure B0.3**, there are also some unique inclusions found on bronze coinage, with one of these unexpected aspects being 2nd Generation’s continued usage of the *Standing Figure* obverse type; an outcome which gives the impression of the Greeks having acculturated to Gandhāran practices, from the 1st Generation onwards. This regarded acculturation process noticeably increases upon each successive period of *Standing Figure* popularity, that ends with the rise of the 5th, and final, Generation. This interpretation gives added precedence to the acculturation process, as again to call the Indo-Greek culture a ‘hybrid’ one is simply oversimplifying the cultural process.

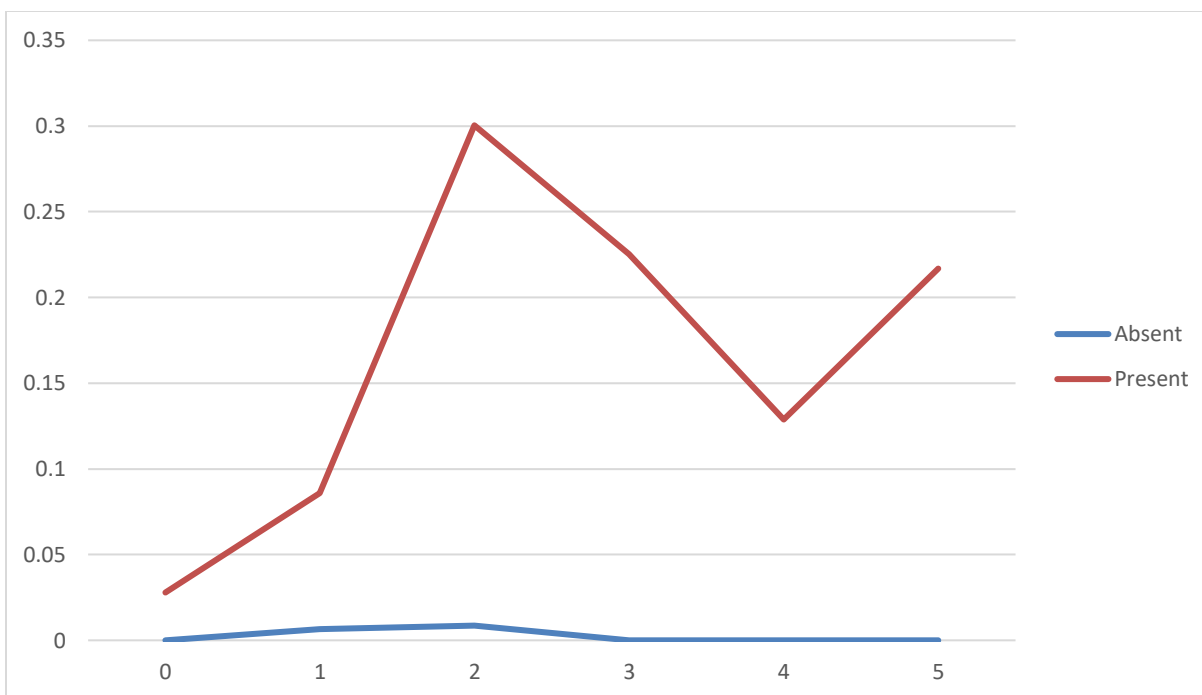


FIGURE B0.5: THE APPEARANCE OF MONOGRAMS WITHIN SILVER COINAGE.

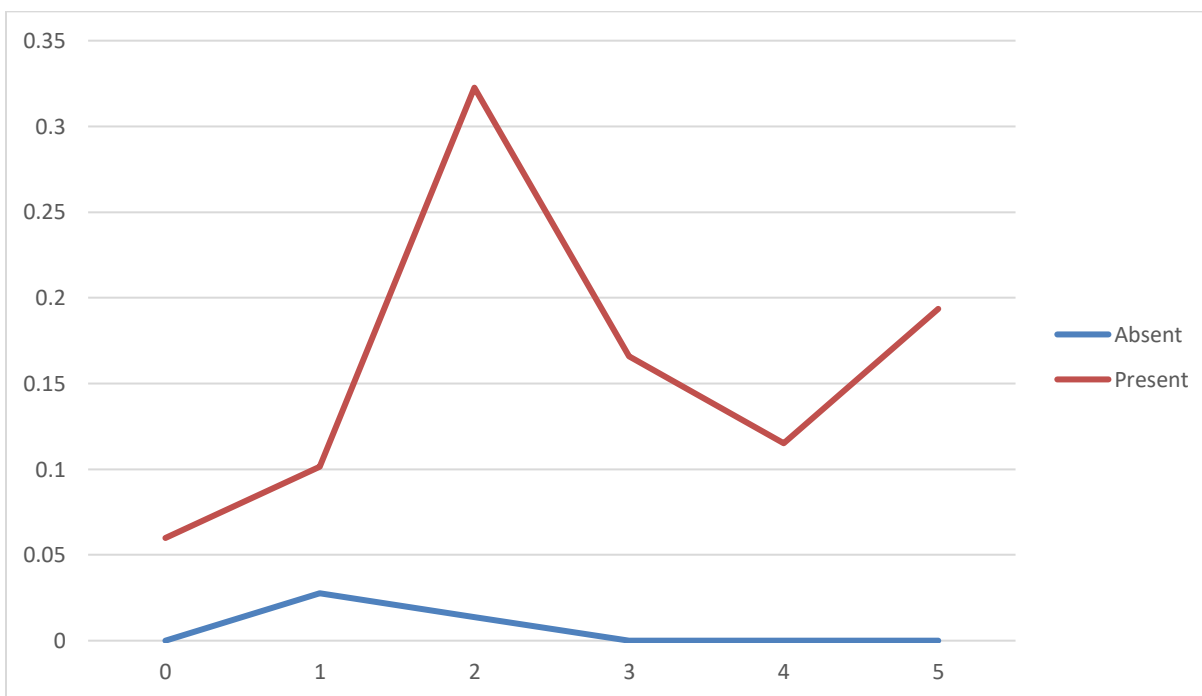


FIGURE B0.6: THE APPEARANCE OF MONOGRAMS WITHIN BRONZE COINAGE.

Monogram Absence Overview

A monogram, if one can recall from this thesis's introduction, is, in essence, an ancient coin's mint mark; though one that is implemented by the magistrate, the mint overseer, rather than a mint facility itself. Out of all the variables of this study, monograms are without question the most debated subject matter of Indo-Greek studies, and it is for this reason that this variable has been treated with extreme caution in this study. As the aspect of a monogram is undeniably a highly Greek trait and does aid in the process of assessing the patterns of acculturation through coinage. As one, in theory, could analyze if the schematic variable disappears and reappears through time, and wither it is linked to the acculturation process at large, which is a highly probable outcome. It was for this reasoning that the variable of monogram appearance was assessed, though the final product of the variable's analysis is far from conclusive, as one shall soon discover below.

Monogram Absence Discussion

Silver coinage's assessment of the monogram appearance variable, seen in **Figure B0.5**, exhibits an extremely similar outlook to the prior silver cultural variables. Evidence for this statement can be seen in the inception of monogram absence within the 1st Generation, followed by the decline of monogram absence in the 2nd Generation, and thereafter monograms are seen to appear a 100% of the time. Such evidence points again to the display of the etic (outsider's) political perspective, a conclusion that has already been gathered above, though the key aspect of Greek coinage, the monogram, furtherly suggests that this study's theory is correct.

Moving on to the emic perspective, accessed through **Figure B0.6**'s assessment of bronze coinage, one can see that there was a declining absence of monograms from the 1st through the 3rd Generations; of which the 1st Generation possessed a significantly higher amount of

monogram absences compared to the later Generations. However, these glimpses of a possible acculturation process are not to last, as there are notable gaps in the acculturation process, which has been seen in abundance in the other cultural variables. Therefore, due to the lack of monogram absence in the 3rd Generation and beyond, the variable of monogram appearance was found to be lacking in its ability to assess the full Indo-Greek period levels of acculturation. Despite this general outcome, the variable has provided some evidence for the 1st Generation Indo-Greeks having acculturated to Gandhāran practices, though to what extent and practices, outside of coinage, remains unknown.

APPENDIX C: LINGUISTIC DATA

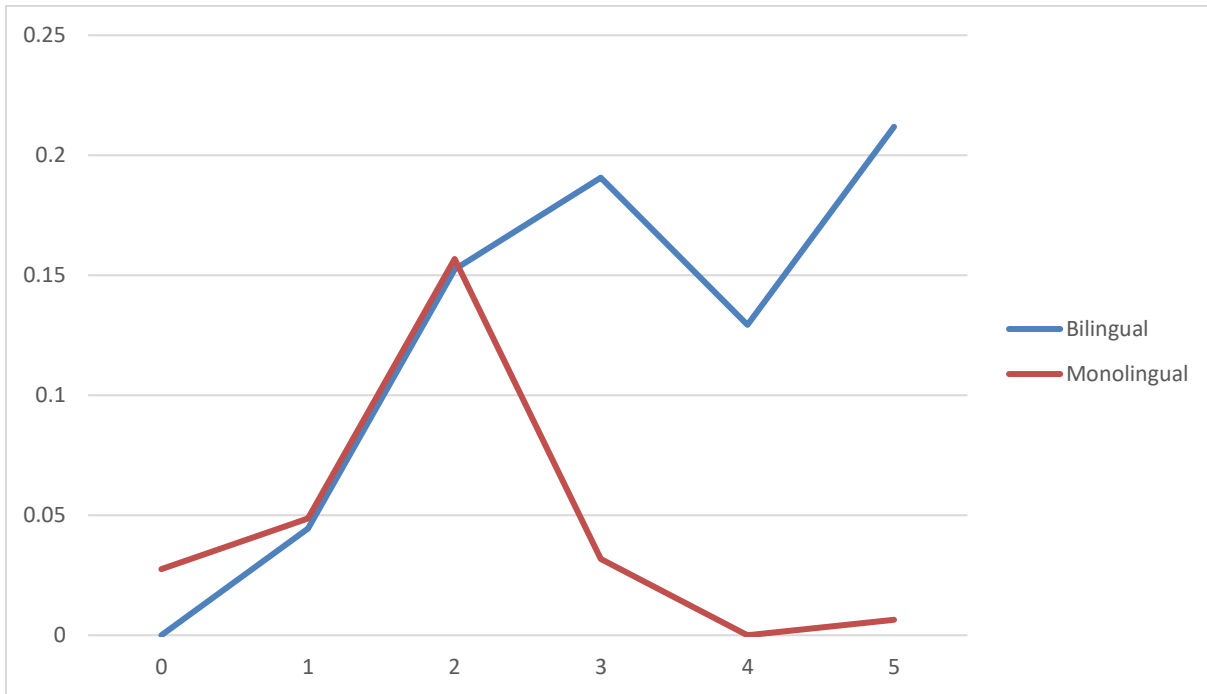


FIGURE 0.1: THE BASIC LINGUAL INFORMATION FOR THE SILVER COINAGE OF THIS STUDY.

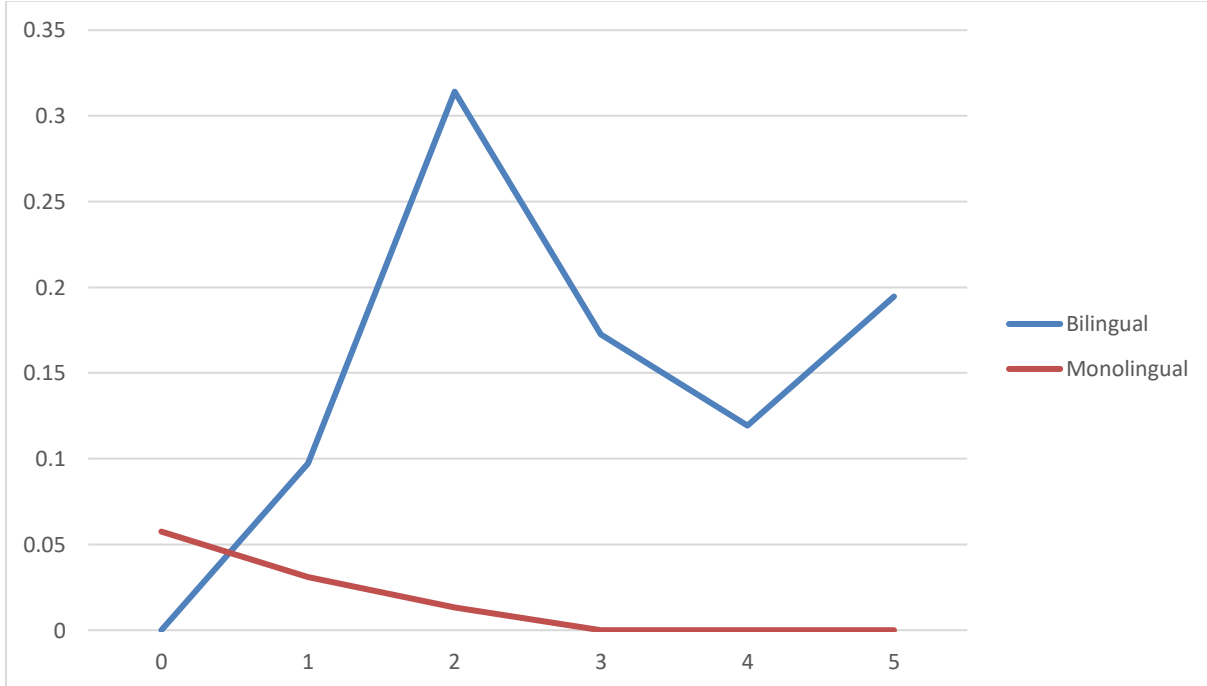


FIGURE C0.2: THE BASIC LINGUAL INFORMATION FOR THE BRONZE COINAGE OF THIS STUDY.

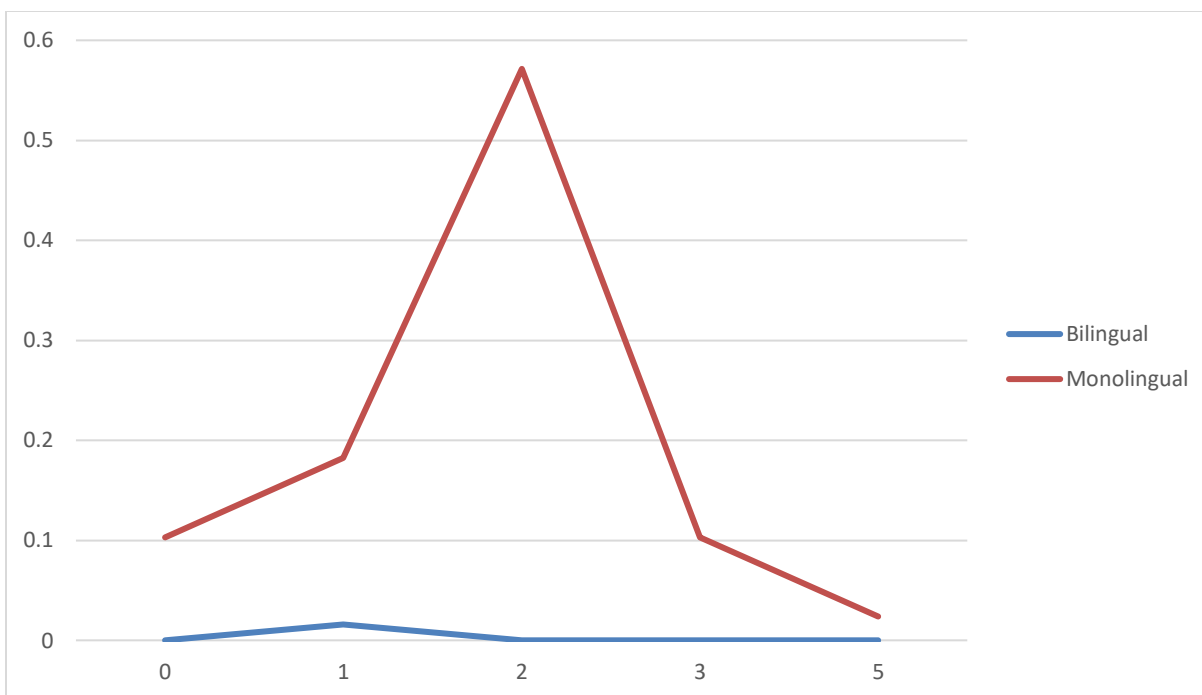


FIGURE C0.3: A MORE IN DEPTH LOOK AT THE LINGUAL INFORMATION, CONCENTRATING UPON SILVER COINAGE OF THE ATTIC STANDARD.

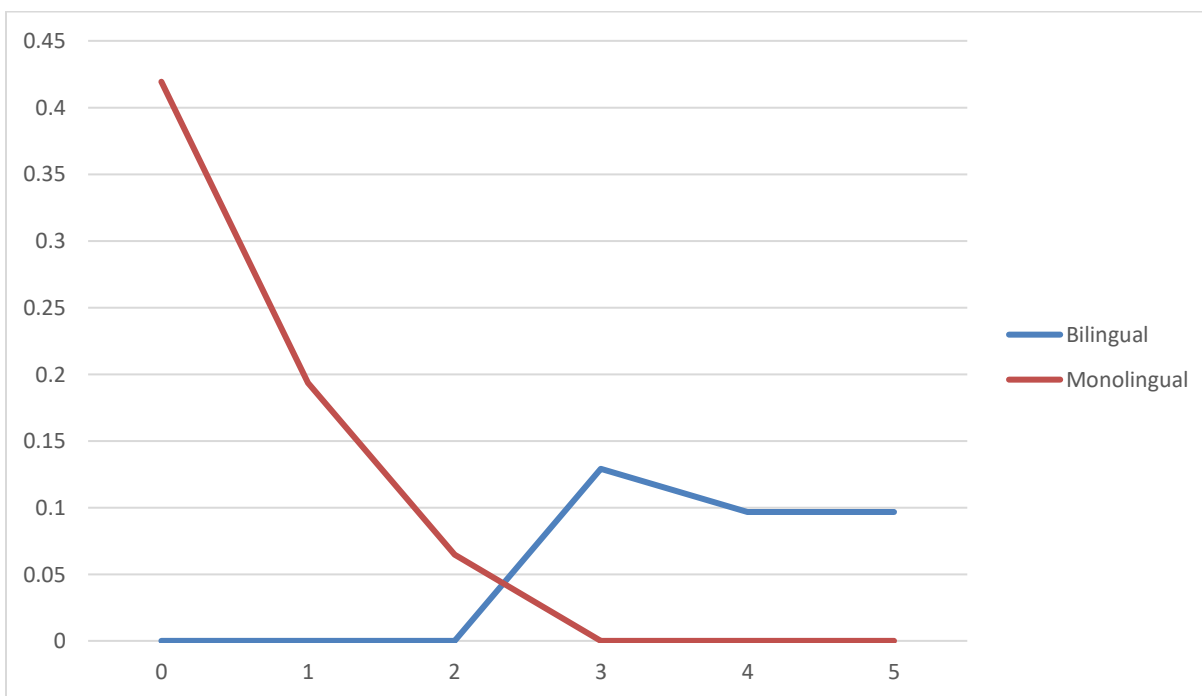


FIGURE C0.4: A MORE IN DEPTH LOOK AT THE LINGUAL INFORMATION, CONCENTRATING UPON BRONZE COINAGE OF THE ATTIC STANDARD AND GREEK MODULE.

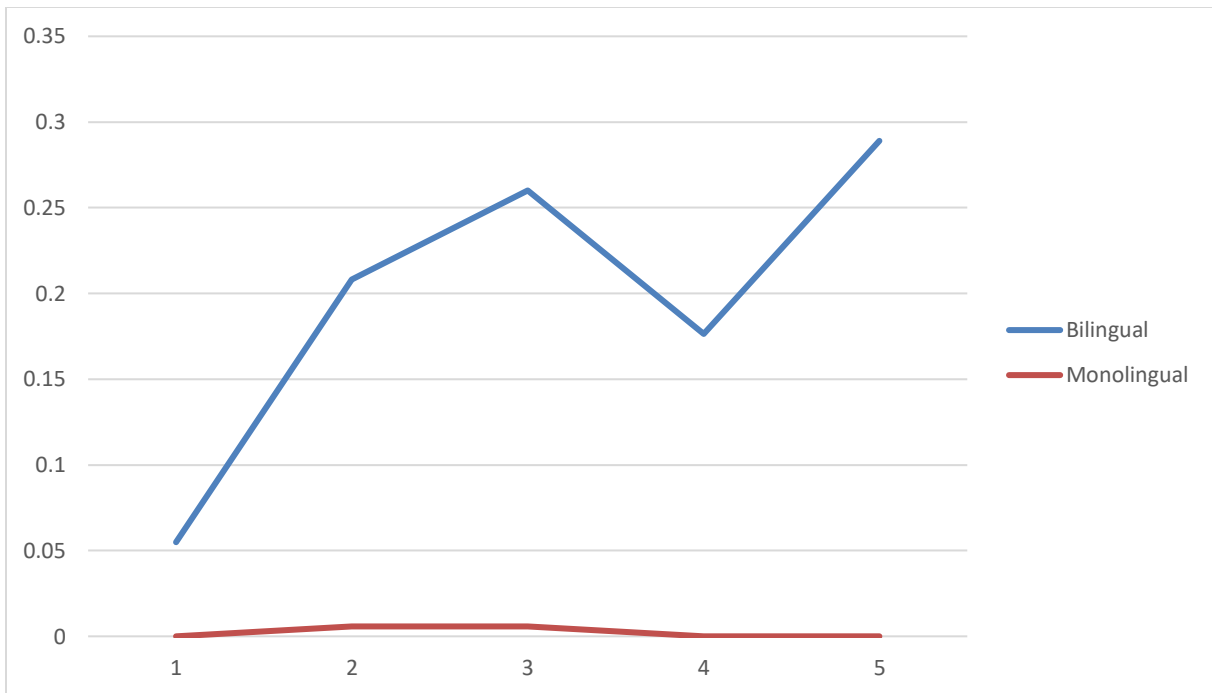


FIGURE C0.5: IN DEPTH LOOK AT LINGUAL INFORMATION FOR SILVER COINAGE OF THE INDIAN STANDARD.

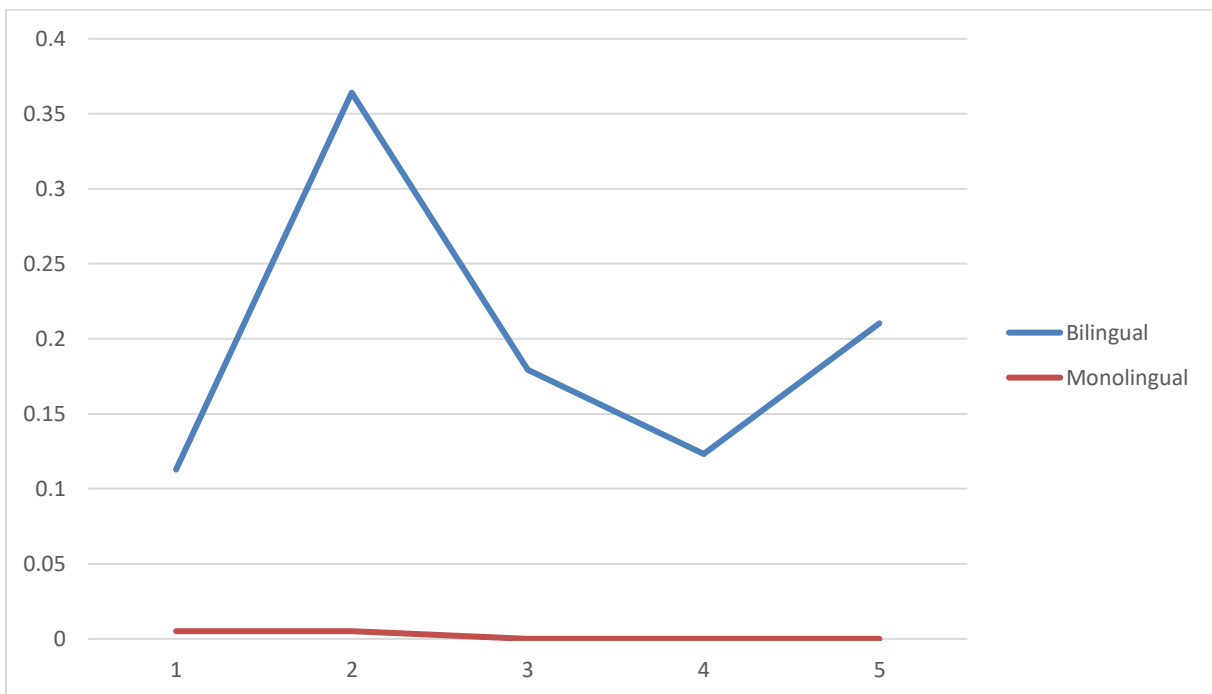


FIGURE C0.6: IN DEPTH LOOK AT LINGUAL INFORMATION FOR BRONZE COINAGE OF THE INDIAN MODULE.

Monolingual vs. Bilingual Overview

As stated in the figure descriptions above, the linguistic variable of *Monolingual vs. Bilingual* represents one of the most basic variables falling under this linguistic section. However, in spite of the variable's simplicity, it remains highly powerful, due to variable's insight of the function of language on Indo-Greek era coinage. And while the American coinage examples, found within this thesis's introduction, do indeed confirm a 'grain of salt' mentality to a language's functionality on coinage. The factor remains that the Indo-Greeks are the first to implement bilingual coinage in human history, and it is for that reason alone that this variable discussion below is viewed as being noteworthy.

Monolingual vs. Bilingual Discussion

Figures C0.1 and **C0.2** display a continued outlook of the theorized separate functions of silver and bronze coins respectfully, which can be seen in their presentation of implemented languages over time. This information is of great importance, due to the first bilingual coinage in existence likely having possessed a unique function. In fact, one can assume with good reasoning, due to the economic conclusion found in the main section previously, that bilingual coinage served as a reaction to the pre-existing coinage system in ancient India. Moreover, it remains highly likely that the Greek invaders overtook the prior Indian trade system, mentioned during the Mauryan section above; as the use of bilingual inscriptions gives precedent to this study's theory of the Greeks being the Mauryan successors in an economic sense. While this statement was made during the previous sections, it was admittedly mere conjecture before the conduction of this study; though it has since been provided evidence, of which this linguistic information has furtherly expanded.

In the instance of silver coinage (**Figure C0.1**), one can find a continuation of the economic conclusion, in which there was the theorized trade westward towards the Greek world that can be seen in the continued usage of Greek *Monolingual* coin inscriptions in small quantities. A matter that shall be clarified in further detail below within the next variable section of languages see **Figures C0.7-C0.10**. Continuing with **Figure C0.1**'s discussion, one can also see the grand popularity of *Bilingual* coinage, which is of great significance as it would again separate this Greek territory from the rest of the Greek Hellenistic world, due to other Greek kingdoms simply using monolingual Greek inscription for their coinage. Therefore, on a political basis, there would appear to be a unique establishment of what the Indo-Greek coinage signified to the outside world, as again if one recalls the two primary purposes of ancient coinage in Greece. Such purposes were to firstly establish a unique identity for their select province, known in the Classical period of Greece as the polis (City-State); while as a secondary aim, coinage was also to provide profit for its respected polis. Furthermore, when this linguistic information is coupled with the unique weight standards, with each standard having possessed its unique function and area of use, as theorized in the economic section, another pattern emerges that provides an even clearer context of trade during the Indo-Greek period. An instance of this can be seen in **Figure C0.3**'s display of silver coinage of the Greek Attic standard, whereupon, there is an unquestionable dominance of monolingual coinage, with only a small blimp of *Bilingual* coinage seen in Generation 1. On an emic basis of interpretation, such a change indicates a subsequent change in political ideology, as again the 1st Generation seems to have adhered to prior Indian policies, at least to some minor degree, which can be seen in the presence of bilingual silver coinage, reaching its zenith within the 1st Generation. As for the monolingual Attic coinage, it remains highly probable that the monolingual coinage continued due to the

likelihood of trade with the other Greek Kingdoms in the west; and considering the length of the *Silk Road* (See **Figure 2.1**). As it would have no doubt been a sensible decision to continue the prior Greek coinage, in terms of both weight and linguistic aspects, if one were to conduct trade with their fellow Greeks in the wider ‘Hellenized world’. The final piece of the puzzle can be seen in **Figure C0.5**, which displays the linguistic information for the silver coinage of the Indian standard, all of which were inscribed with bilingual inscriptions.

Therefore, the context of Indian standard drachms and tetradrachms, mentioned above in **Figure 5.6**’s discussion, furtherly appear to have a sense of a set function in a strict Indian area; with the reasoning for this conclusion being found in the specified weight standard and linguistic patterns, all of which support the conclusion of the Indo-Greeks’ Indian standard coinage having taken the place of prior punchmarked coinage. Moreover, such a conclusion leads to a further belief of the Indo-Greeks having controlled the southernmost silk road of the Early 2nd – Late 1st century BCE, at least in the context of the immediate Indian subcontinent. This prior conclusion has been theorized by prior numismatists and archaeologist for well over two decades, of which the previously mentioned archaeologist Paul Benard was an avid supporter (Benard, 1994).

Moving on to bronze coinage, the linguistic change from monolingual to bilingual is quite easier to describe and understands. A fact that can be seen upon the 1st Generation, due to there being a consistant preference of bilingual bronze coinage. Such an outcome reflects this study’s belief of the function, and cultural outlook, that Indo-Greek bronze coinage possessed; which becomes even more apparent when the bronze coins are viewed upon their respected ‘weight standards’. As in the instance of bronze coins of the Greek weight standards, seen in **Figure C0.4**, one can see a dynamic shift between monolingual and bilingual coinage appearing by the 3rd Generation. This shift correlates with the previous cultural variables and supports

their conclusion of the Greeks having acculturated to Gandhāran practices during, or shortly after, the 2nd Generation. Whether the Greeks spoke the local language (Gandhāran) remains to be seen, though again if the religious account of the *Milindapañha* is to be believed, the Greeks had, at the very least, some knowledge of Gandhāran. Bronze coinage of the Indian Module ‘weight standard’, seen in **Figure C0.6**, remained mostly bilingual, with the small exception of one coin during the 1st Generation. This prior figure’s outcome was highly expected, due to the shape aspect of the Indian module coinage all being square, which is due to this study’s ascribed modular weight standards, that are based upon their shape and not their estimated weight system. Though due to this study’s assessment of the shape variation within Indo-Greek coinage, seen above in **Figures 5.7-5.10**, it remains likely that the shape gives an indication of the weight standard.

There are indeed many more items could be discussed within this variable section, though in the attempt to make matters more conclusive and easier to comprehend, more figures have been added below, which display the variance of languages ascribed on Indo-Greek coinage.

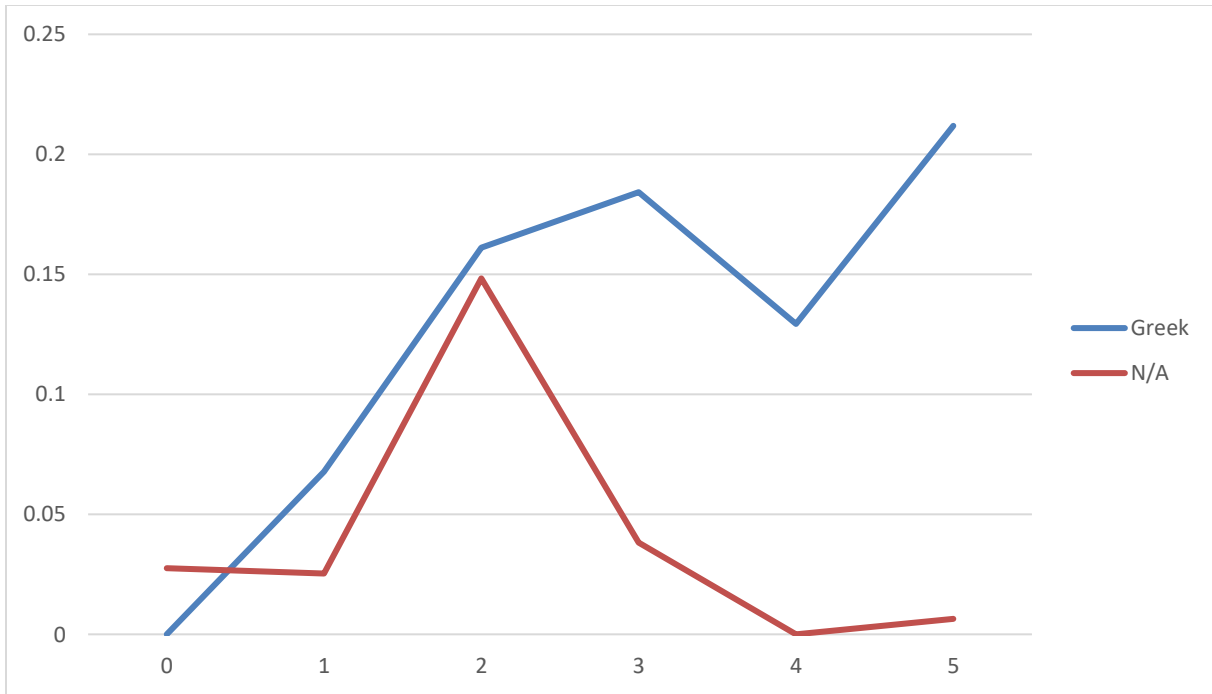


FIGURE C0.7: THE SUBSEQUENT LANGUAGES APPEARING ON THE OBVERSE SIDE OF SILVER COINAGE.

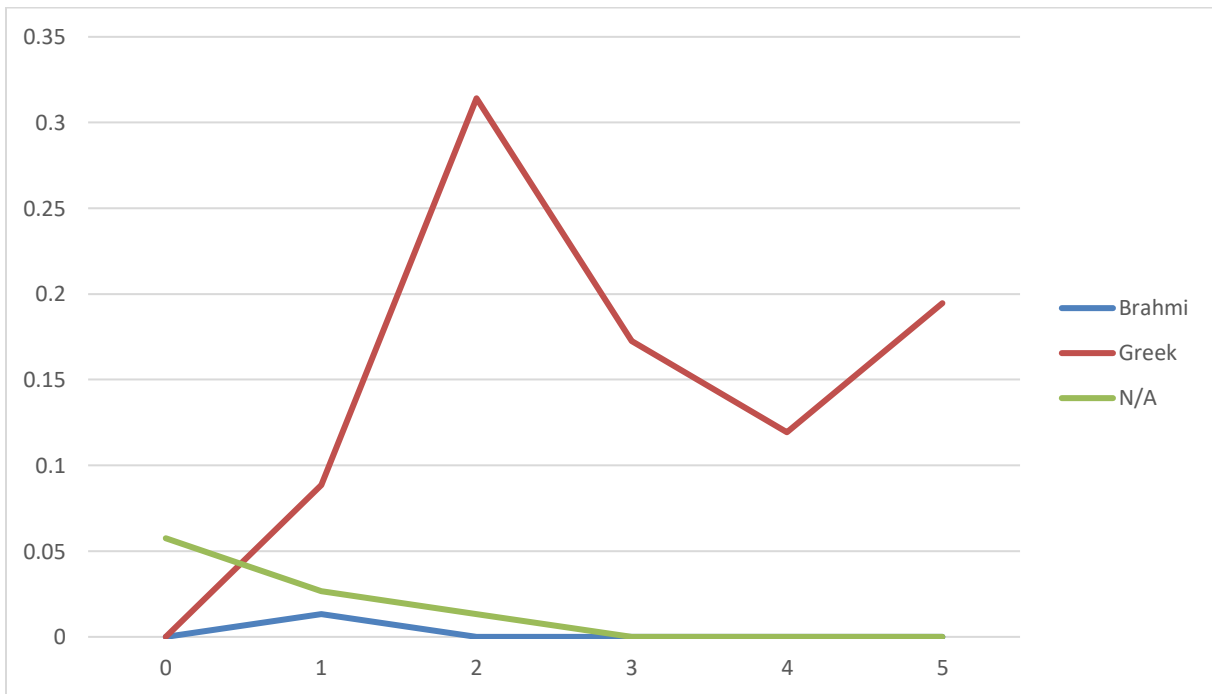


FIGURE C0.8: THE SUBSEQUENT LANGUAGES APPEARING ON THE OBVERSE SIDE OF BRONZE COINAGE.

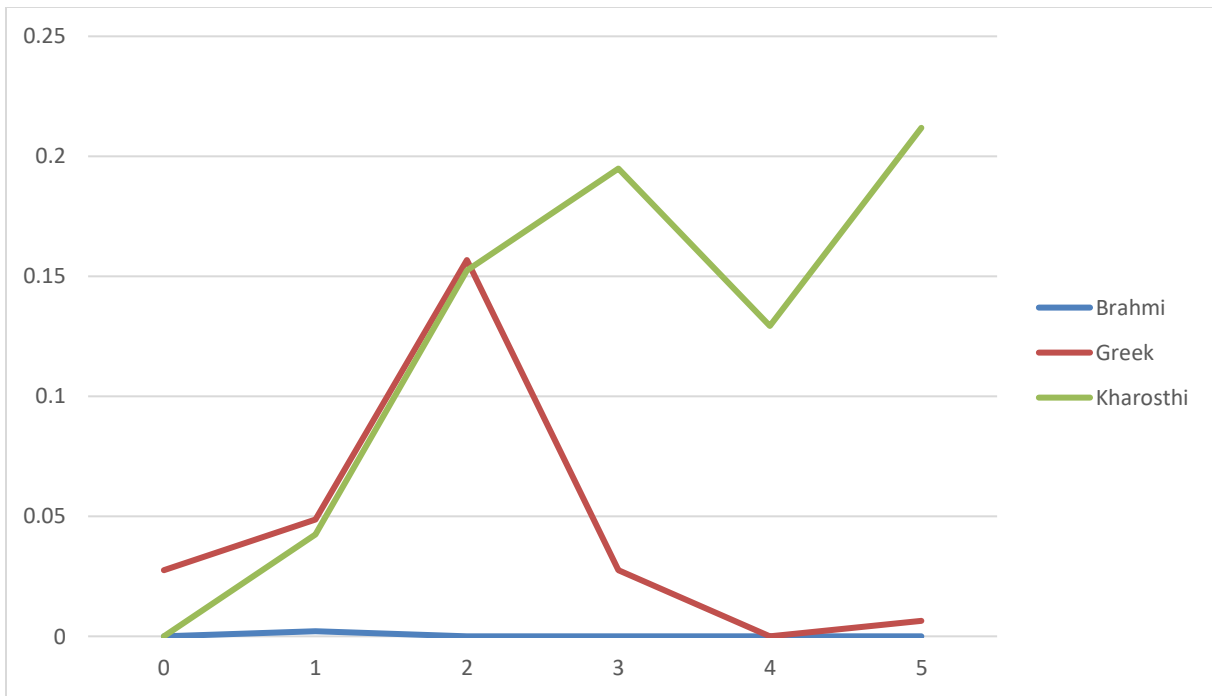


FIGURE C0.9: THE LANGUAGES APPEARING ON THE REVERSE SIDE OF SILVER COINAGE.

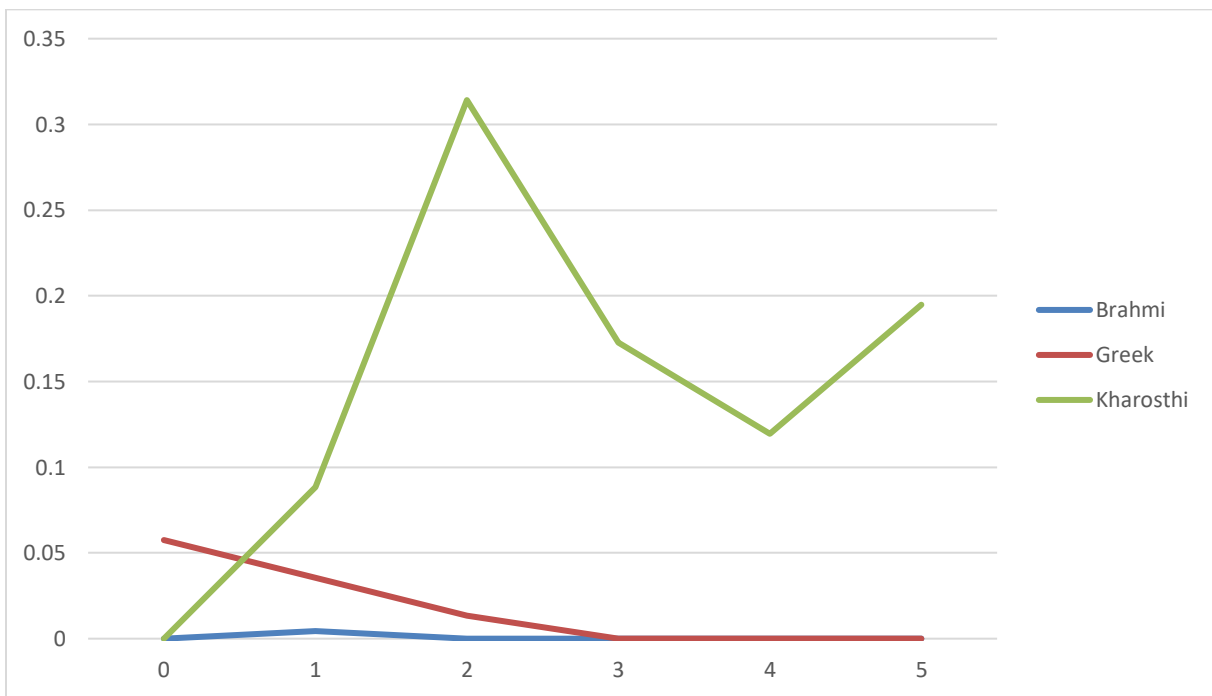


FIGURE C0.10: THE LANGUAGES APPEARING ON THE REVERSE SIDE OF BRONZE COINAGE.

Indo-Greek Writing Systems' Overview

The four figures above (**Figures C0.8 – C0.10**) demonstrate the three varieties of written scripts used on Indo-Greek coinage; and has been furtherly classified by metal type, along with the scripts' appearance on the respected coin sides of obverse and reverse. Before beginning the individual interpretations of each figure, it is necessary to briefly go over the three scripts that appear on Indo-Greek coinage. The first and most common of these scripts was Greek, which was used on prior Greek coinage, and was often prescribed on the reverse side of a coin; at least during the Greek periods prior to the Indo-Greek coinage of study. The other two scripts are Brahmi and Kharosthi, with both having originated in India, and neither of the scripts having been inscribed upon early Indian coinage, which is due to the factor of punchmarked coinage having been a non-lingual coinage. One crucial item to mention before the formal discussion of these four figures is that there can be little accordance with inscribed language on coinage and whether a society used the implemented language. Moreover, there can also be little assessment as to whether the average individual possessed the ability to read the said languages, and is a statement that can even be ascertained in American coinage today. As mentioned in the introduction section, the American nickel possesses both Italian and Latin phrases, and yet very few modern Americans can speak, or even read either language. Therefore, within this section, it remains prudent to treat the Indo-Greek society in a similar manner of caution, though there will still be some manner of speculation involved.

Indo-Greek Writing Systems' Discussion

Now to begin, ancient Greek silver coinage typically followed a set pattern of the absence of an inscription on the obverse side of a coin, represent above by *N/A*, followed by a *Greek* inscription on the reverse side. It is with these concepts in mind that one can see a differentiation

from the traditional Greek schema of coinage, which outside of coin shape, represents one of the biggest departures Indo-Greek coinage made from the traditional Greek system of coinage.

From **Figure C0.7**, one can see the clear evidence of the departure from the Greek schema, as *Greek* inscriptions were being inscribed on the obverse side of silver Indo-Greek coinage from the 1st Generation onward. Despite the change of *Greek* inscription area, the traditional Greek schema of not implanting an inscription on an obverse remained, and it is with the Attic standard coinage that one can see a continuation of the Greek way of coinage. Though, as mentioned above, there was an immediate decline of the Attic standard coinage after the 3rd Generation, and is an outcome that has previously been interpreted as being a result of the Indo-Greeks having been cut off from the rest of the Greek world, due to the rise of Rome and Parthia in the 1st century BCE. Moving on to the Indian standard silver coinage, which as seen in the prior **Figure C0.5** was unanimously bilingual, one can further gather from **Figure C0.9** that the only ‘real’ option for the reverse written system, for a silver coin of the Indian standard was *Kharosthi*, due to the Indian standard coinage possessing *Greek* on the obverse side. Therefore, it becomes certain, that from the earliest beginnings of Indo-Greek bilingual coinage, there was a set system of Greek on the obverse and Kharosthi on the reverse. Such an integrated system, when factored with Kharosthi’s origin in Gandhāra during the Persian period of rule, give the impression of the Indo-Greeks’ need to appeal to a new set of individuals; of which the most likely candidate was the Mauryan merchant class. Such a concept has been mentioned previously, though this variable has allotted even more evidence for its correctness. As on a cultural level, to change from a schematically embedded monolingual inscribed coinage to a bilingual one seems very strange when not given ample reason for the change to occur, which is why the full discussion has waited until now. And while there is no record of the merchant class

having used Kharosthi in the time before Indo-Greek rule, one can say with ample reasoning that the writing system was used at the very least for the task of record keeping. Possibly in a similar instance of Sumerian tax records, which is the earliest, and most common function of ancient writing. In fact, if one were to look at the archaeological accounts four hundred years after the Indo-Greek period, during the 4th and 5th centuries CE, one would find that Kharosthi served as the primary writing system for the record keeping of trade within the region (Whitfield, 2004:149). Therefore, the prior theory is far from being an outlandish one, as it gives both an ample reasoning for the Indo-Greeks' use of Kharosthi on the reverse side. In addition, to providing a basis for Kharosthi's use during the nascent years of the formal *Silk Road*, which again falls shortly before the Indo-Greek period in 202 BCE. Sadly, however, there are no Kharosthi tax records surviving today that can either disprove this previous conjecture or approve it. Regardless, the quick adoption of *Kharosthi* by the Greek invaders, seen in the 1st Generation is still highly irregular, and was a direct confrontation of the traditional Greek schema, which leads to a need for a Greek incentive to make such a change, and what better incentive than the control of trade both east and west on the Han commercialized silk road?

With the bronze coinage of the Indo-Greek period, there is a similar outcome to silver, though slightly more differentiated. An example of such differentiation can be found in the 1st Generation, with a small amount of Greek coinage possessing Brahmi inscriptions on both the obverse and reverse. Adding to this irregularity, is the fact that the coinage did not contain Greek characteristics, nor inscriptions, other than the name of the Greek king (Agothokles); and while this is admittedly only a small amount of the overall coinage, it is nevertheless still highly significant, due to its display of local influence (Hoover, 2013:31). Another example of bronze coinages' differentiation from silver, can be seen in the usage of Brahmi during the 1st

Generation, which is a nonlocalized writing system used on Ashoka Edicts, that were implemented throughout ancient east India (Salomon, 1995). It is due to this connection with the previous Mauryan empire, that the 1st Generation's adoption of the Brahmi script likely displays the continued influence of Mauryan culture during the initial stage of Indo-Greek rule. Though again to what degree the respected script of Brahmi was used outside of coinage remains to be seen. However, due to the well attested popularity of the Kharosthi script, it would appear that Kharosthi remained the most popular of the two local writing systems. Outside these mentioned differences, bronze and silver coinage both possess a similar pattern, due to Greek being inscribed on the obverse side and Kharosthi having been implemented on the reverse, which adds perspective to their probable area of use in the Indian subcontinent.

Overall, the variable of writing systems has offered a substantial amount of evidence for the previous conclusions this study has compiled, as both the economic and cultural interpretations have been offered merit in the four figures of this section. It would be for this reasoning that this appendix section of linguistics has been formed, due to it providing both aspects of Indo-Greek coinage, while also providing its own unique outlook as well. The last variable falling within the formal subject of linguistics is Indo-Greek coin legends, which shall now be discussed below.

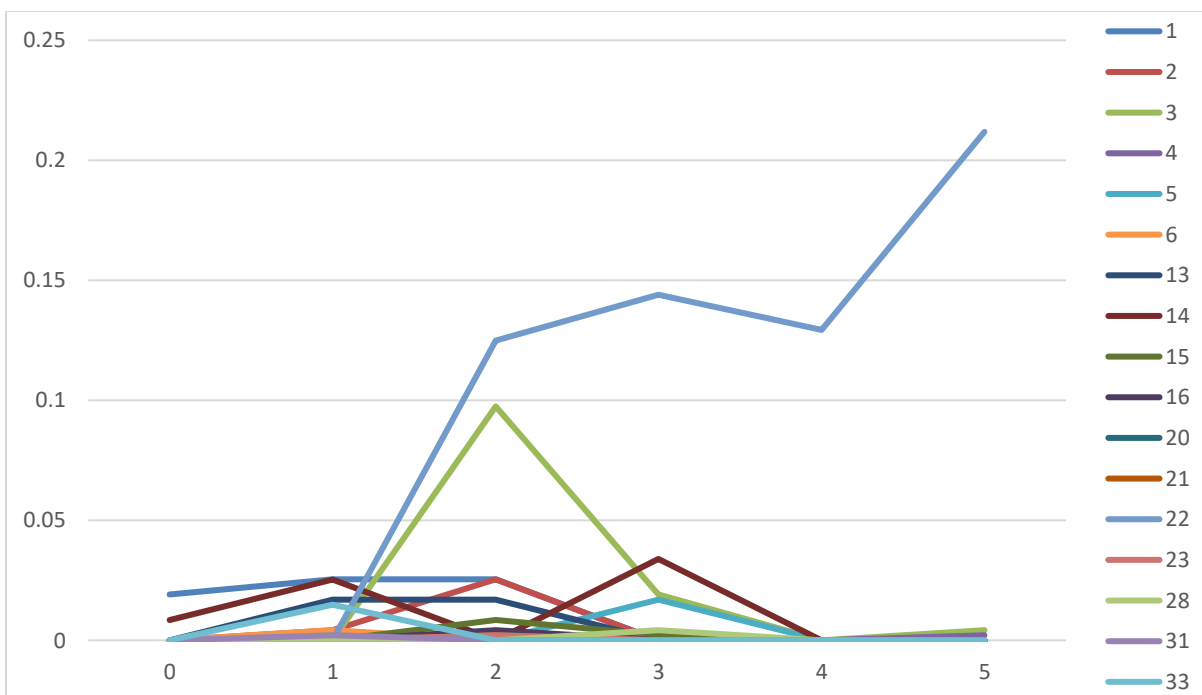


FIGURE C0.11: THE VARIOUS SILVER COIN LEGEND TYPES, GROUPED BY THIS STUDY'S ARBITRARY NUMERICAL CATEGORIES.

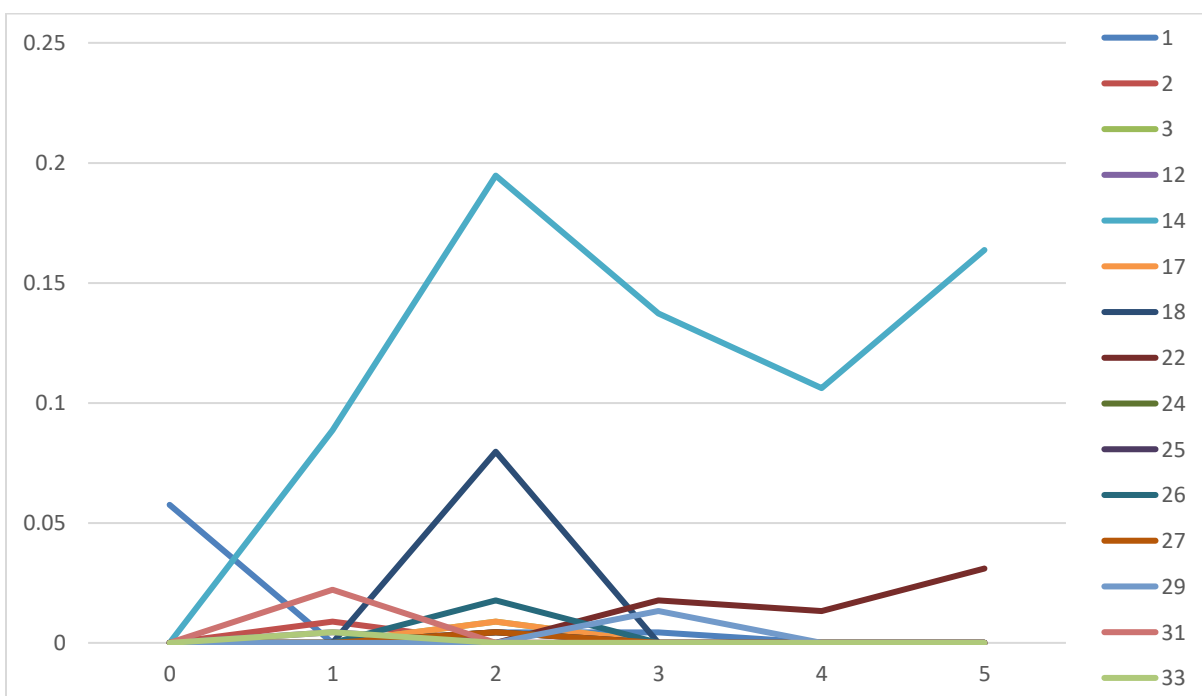


FIGURE C0.12: THE VARIOUS BRONZE COIN LEGEND TYPES, GROUPED BY THIS STUDY'S ARBITRARY NUMERICAL CATEGORIES.

Coin Legend Overview

A coins' legend is simply the orientation of a coin's written inscription, be it left to right or clockwise, both represent a description of a legend types. While the abstract numbers seen in two figures above are highly arbitrary, they nevertheless are usefully in their indication of a cognitive pattern, due to their concentration on strong patterns. It should be noted, that the two discussions below will only be discussing which legend types were the most frequent, and in doing so explicitly explain its orientation. Though for a general understanding of the variety of coin legends, the double-digit numbers abstractly represent a bilingual inscription, while a single digit number, subsequently, represent a monolingual inscription legend.

Coin Legend Discussion

Silver coinage, shown in **Figure C0.11**, exhibits the previous etic viewpoint, with the 1st Generation possessing multiple legend types of interest. Of all the 1st Generation 's legends, legend types *1* and *14* are by far the most popular. With the most popular legend orientation within the 1st Generation being type *1*, which was an extremely conservative Greek legend orientation that implemented Greek inscriptions only on the reverse side of circular coinage in a vertical fashion. Legend type *14*, the second most common legend orientation in the 1st Generation, was visibly designed for square coinage, as it is a legend type that was oriented around each quadrilateral side, with the noted exception of the bottom side. The exact orientation for type *14*'s obverse and reverse sides are Obverse: *up, across, and down* and Reverse: *up, across, and down*. It becomes clear that the latter of these two legend types described above was the result of the 1st Generation's 'experimentation' with bilingual inscriptions, as upon the 2nd Generation type *14* quickly dies out, at least in silver coinage. The 2nd Generation quickly implemented legend type 22, which remained the dominant reverse type

for the remainder of silver Indo-Greek coinage, and by the 4th Generation became practically the only legend type of use for silver coinage. The orientation of legend type 22, is half clockwise and counter clockwise, giving a ‘sunset’ appearance on the coin that was used on circular coinage solely. Like the bilingual reverse types above, the orientation of the obverse legend for type 22 was left to right, with the reverse being right to left. This aspect of a ‘sunset’ legend orientation, was not a new legend type for traditional Greek coins as in legend type 6 there was a similar monolingual inscription. In fact, the type 6 had previously been implemented within the 1st Generation, specifically upon the two coins of the Indo-Greek King: Agathokles. Therefore, the induction of type 22, and its successive dominance can be viewed as an adoption of a prior Greek schema for the silver Indo-Greek coinage; which when viewed through the implemented etic lens, again suggest a Greek outlook of political appearance, and is a view that is strengthened upon the analysis of bronze coinage.

Bronze coinage, seen in **Figure C0.12**, displays the argued emic outlook to the letter and can be vividly seen in the figure’s full discussion. The two bilingual legend types of popularity were type 18, and the previously mentioned type 14, the latter of which quickly came to dominate bronze coinage; an act that can be seen quite clearly in the **Figure C0.14** above. As for type 18’s description, its orientation on the obverse side is upwards, on the leftmost side of the coin, and then two inscriptions written left to right, with one of the across inscriptions written on the top most section of the coin, and one located on the



FIGURE C0.13: ABOVE ARE THREE HARRAPAN SEALS, DETAILING THE COMMON ‘LEGEND’ TYPE OF THE TOP ACROSS INSCRIPTION TYPE, THOUGH A VARIETY OF OTHER TYPES EXIST. (ADAPTED FROM STONE, 2017)

bottom. The reverse inscription of type 18, there are two inscriptions located at the top and bottom of the coin, in a similar fashion the obverse, though the across inscription is now right to left, there is also the noted absence of the left most upward inscription seen on the obverse side. Type 18 notably died off upon its rise during the 2nd Generation, the reasoning upon the short duration of type 18 has yet to be discovered, though it is notable that type 14 is quite like type 18 through the aspect of implementing inscriptions on the outer most portion of squared coinage. This commonality brings about the likely connection these two previous coin legend types possess with early Indian ‘legend’ types. As although punchmarked coinage was a non-lingual, if one were to look back at Harappan seals, see **Figure C0.13**, one would find a striking similarity to the types 14 and 18. Moreover, if one were to see the extent of ancient Harappan civilization, see **Figure C0.14**, one would also find that the area of the Indo-Greek kingdom, over millennia later, falls within the domain of the Harappans. This two pieces of evidence make this prior assumption far from mere conjecture. Moreover, if this previous theory is correct, then

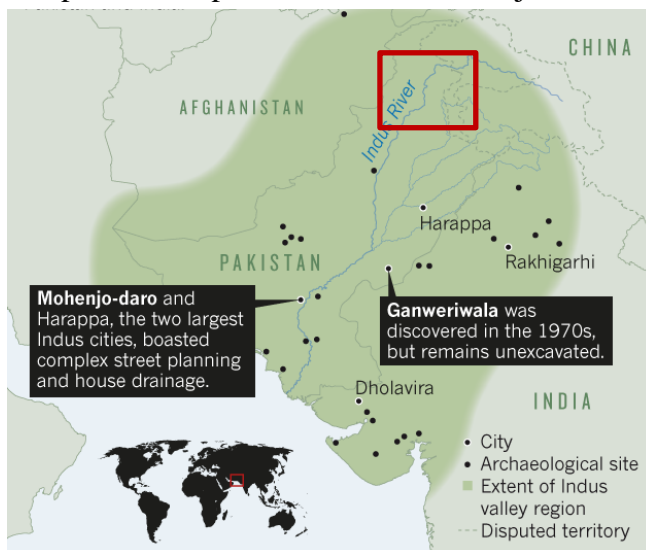


FIGURE C0.14: ABOVE IS A MAP DISPLAYING THE EXTENT OF THE HARRAPAN CIVILIZATION. NOTE THE RED SQUARE DISPLAYING THE ANCIENT AREA OF GANDHĀRA (ADAPTED FROM ROBINSON, 2015)

the emic (insiders’) perspective of the native Gandhāran dominance of local culture continues to be upheld within this variable. If by chance the connection is a mere coincidence, then it is likely that the Greeks naturally implemented the legend types of 18 and 14 over the course of many ‘trial and error’ attempts. An ongoing trail and error process that can be seen in the multiple legend types of the 1st and 2nd Generation.

It is for this reasoning, in addition to the Indus script having yet to be deciphered, that there ultimately is an unclear picture of the development of bronze bilingual legend types. Though on the basis of cultural continuation, and the previous other variable results, the former connection to the Harappans is this study's favored explanation.

Linguistic Conclusion

Overall, the figures of this section have affirmed the two underlying theories of this study's main subject of economic adoption and cultural 'hybridization' or 'assimilation.' And while the actual culture of the Indo-Greeks remains cryptic, due in part to coinage representing only a small degree of the period's material culture, these linguistic variables above have at the very provide a solid consensus on the culture's developmental stages.

APPENDIX D: RULER VARIABLES

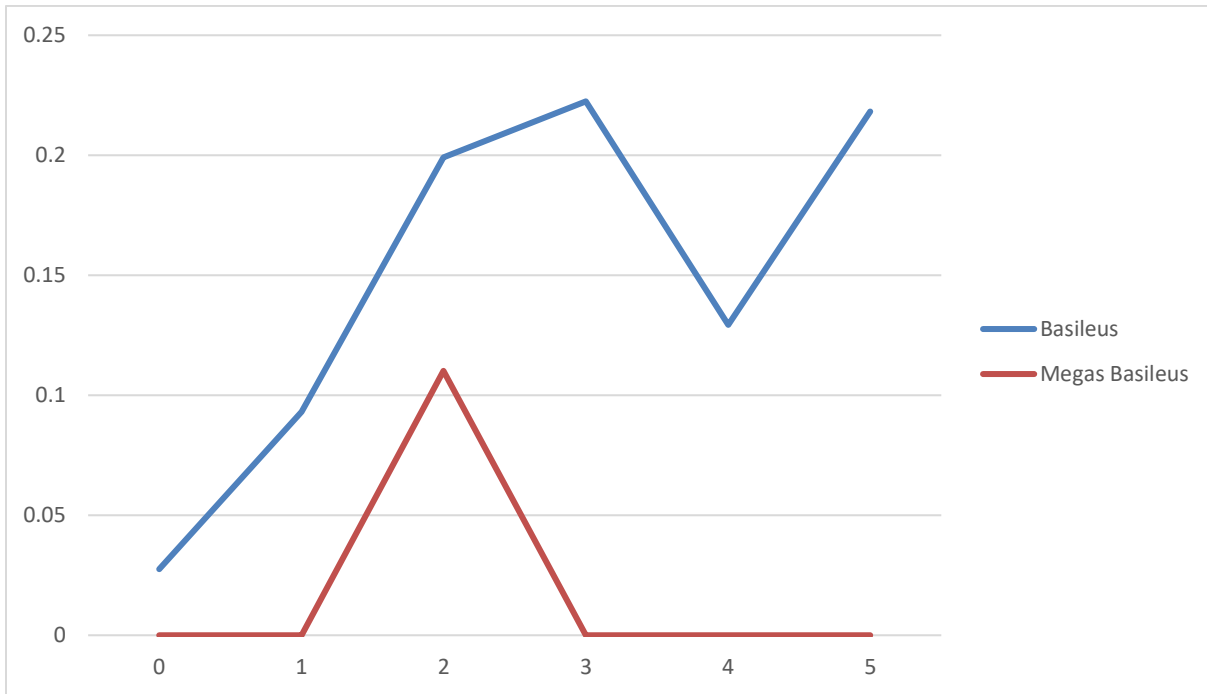


FIGURE D0.1:THE GREEK TITLE OF THE RULER ON SILVER COINAGE, SEEN OVER THE SIX GENERATIONS OF THIS STUDY.

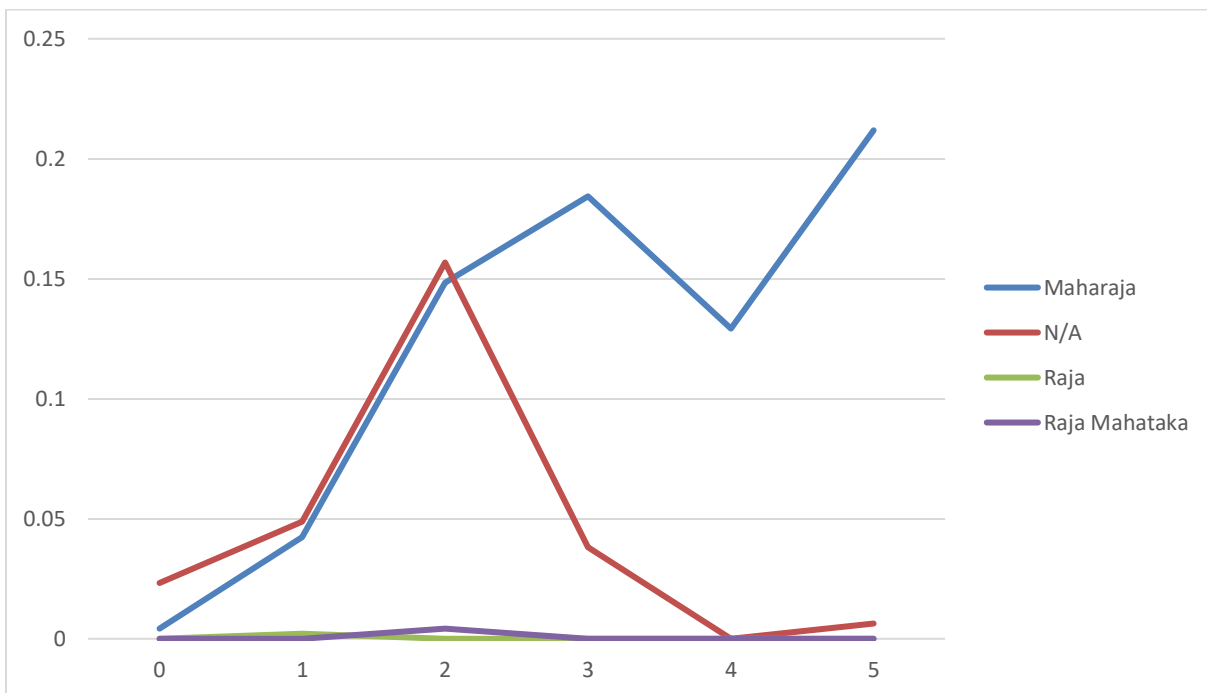


FIGURE D0.2: TITLES OF THE RULER IN BRAHMI AND KHAROSTHI ON SILVER COINAGE.

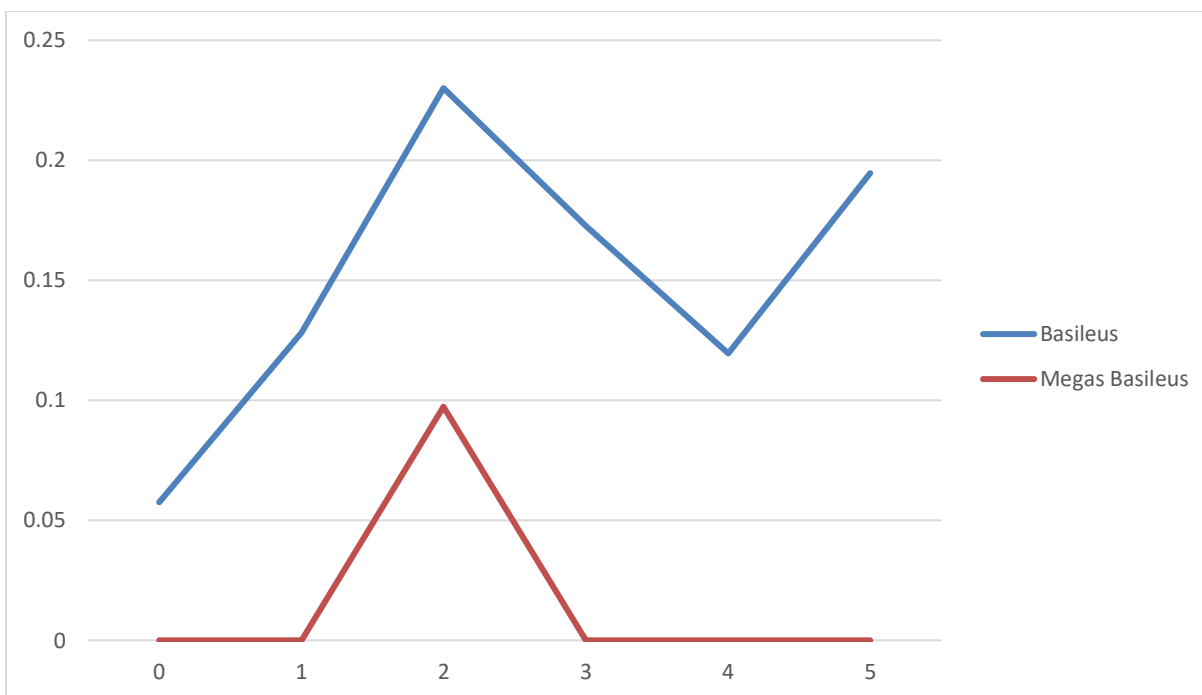


FIGURE D0.3: THE VARIATION OF TITLES FOR INDO-GREEK RULER IN GREEK ON BRONZE COINAGE.

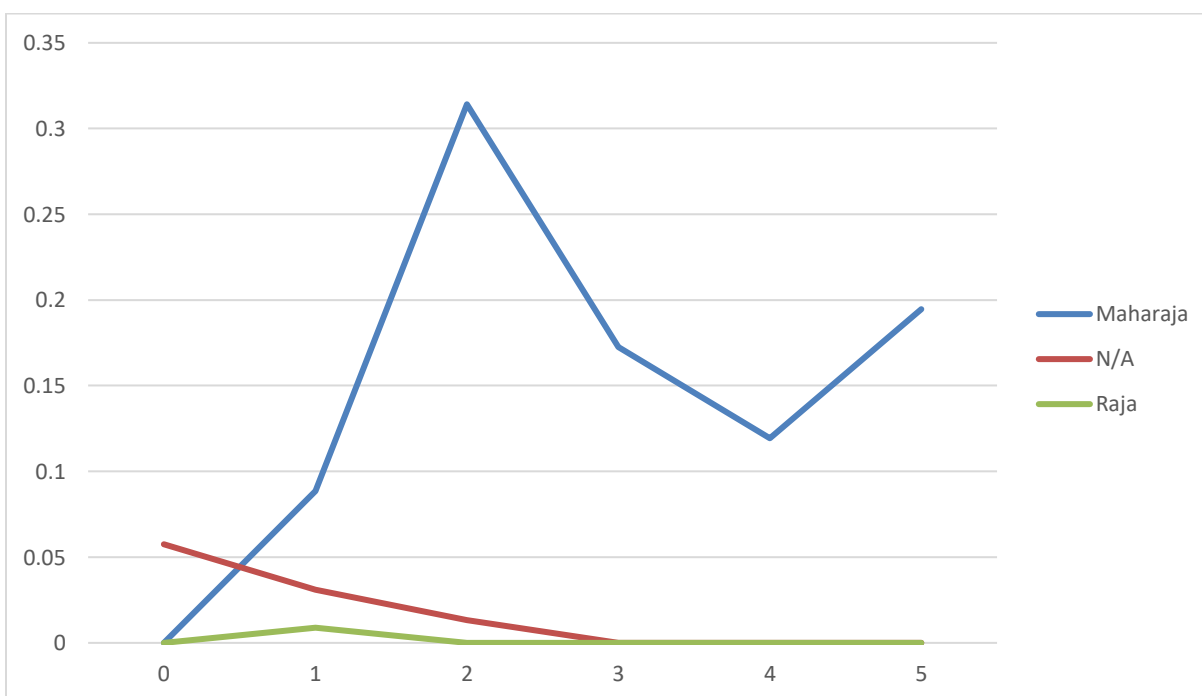


FIGURE D0.4: TITLES OF INDO-GREEK RULER IN BRAHMI AND KHAROSTHI ON BRONZE COINAGE.

King's Title Overview

The first variable of this section displays the title of the Indo-Greek Ruler, which was implemented both in Greek and also in the local scripts of Kharosthi and Brahmi, seen in. This variable's aim was not only to see if there remained a pattern found within the previous variable sections but also to discover if there was a correlation between the Gandhāran and Greek names for the Indo-Greek ruler. Before this discussion can begin, however, there is a need to explain what these ruler names mean. In Greek, the term *Basileus* translates roughly in English to 'King,' while the term *Megas Basileus*, translates to 'Great King' (Hoover, 2013:46). In Brahmi and Kharosthi, the title of *Raja* means 'King', while the term *Maharaja*, is 'Great King', and the final term of *Raja Mahataka* means 'Great King' as well (Hoover, 2013:26 and 47). Now that the terms have been properly described, one can now see that there are essentially two titles, that of 'King' and 'Great King'; a simplification that shall aid in the clarity of this discussion below.

King's Title Discussion

Now to begin, within silver coinage (**Figures D0.1 and D0.2**) one can see that there is indeed a pattern between the Greek: *Basileus* and the Gandhāran: *Maharaja*; which denotes that the terms became synonymous during the Indo-Greek rule; despite the terms' differences in meaning, as was explicitly detailed above. Why, and how, this came about has been the subject of much debate in Indo-Greek studies. Some have argued that the term of 'Great King', when presented in Greek, was a hallmark of Persian times (Hoover, 2013:46). In which, the Persian ruler often regarded himself as 'King of Kings' (*malik-al-muluk*) due to the great extent of the Persian Empire, and the various kingdoms that it held (Oakley, 2006:172). This popular explanation, however, does not satisfy the reasoning behind the Gandhāran's usage of *Maharaja*, or 'Great King'. In fact, if one were to speculate for the arising of the *Maharaja*, one would no

doubt see that it is upon the 3rd Generation that the title officially becomes more popular; which creates a link back to the prior cultural, and economic interpretations in the prior sections of this thesis. As for why the term Maharaja became common, a likely reasoning can be found in this study's theory of the Indo-Greeks having taken over the Indian subcontinent; as there is, at the very least, a substantial amount of evidence that the Indo-Greeks overwhelmed the prior Mauryan empire on the economic front. A fact that can easily be seen in the economic section found in this thesis, and also in the subsequent fall of punchmarked coinage, which presumably occurred shortly after the Indo-Greek invasion. The demise of the punchmarked coinage has been deemed, in multiple other publications, as being a result of the rise of Indo-Greek currency (Gupta, 2014:62). Such a process of thought has been aided by the bronze discussion of this variable below, but before that discussion can begin, one must also ask why the Greek term *Basileus* was of continuous usage? The answer can be found in Greek culture, as beside the outlying term of *Megas Basileus*, implemented by Eukratides solely, the cultural tradition of *Basileus* was upheld by the Indo-Greeks. The study's theory upon why the term was upheld, does not stem far from what other numismatists in the past have stated. As it remains likely that the Greek concept of *Hubris*, a Greek term meaning '*excessive pride*', remained the primary reasoning for the Indo-Greek rulers hesitation of implementing the title of 'Great King', as it was considered highly taboo (Hoover, 2013:46). Therefore, one can find a through reasoning behind the continued usage of *Basileus*, while the Indo-Greek rulers were simultaneously being mentioned as a Maharaja in Gandhāran, often times even on the same coin. One last thing of note for the silver coinage discussion is the *N/A* variation seen in **Figure D0.2**, which by a good majority, represents the monolingual coinage of the Attic standard, and gives added precedent to the context of the Attic standards' usage outside the Indian subcontinent.

On to bronze coinage, in **Figure D0.3** one can see a very similar instance of the usage of *Basileus* and *Megas Basileus*, which again is likely a sign of the ‘Great King’ title being taboo amongst Indo-Greek rulers. As for **Figure D0.4**, the previous *Maharaja* theory again finds merit, as within the 1st Generation the term *Raja*, or ‘King’, was first implemented, which seemingly gave rise to *Maharaja* after two decades of use. And while such matters are again of high debate in the field of Indo-Greek history, it is the belief of this study that this pattern of progress, from *King* to *Great King* in the Gandhāran context, firmly displays the rise of Indo-Greek prominence in the Indian subcontinent. This theory would mainly be due to the term of *Maharaja* being used for a king of great power and prestige, and is not synonymous with the term of *Raja*, which as mentioned in the background section of the thesis, was a title that was even given to the leaders of satrap, both in the Persian and Alexandrian periods. Therefore, once again there remains evidence for this study’s theory of there being a definite rise of Indo-Greek power, which this study views as being economical based, rather than being an imperial rise within the Indian subcontinent; though again this view delves in the realm of almost pure subjectivity.

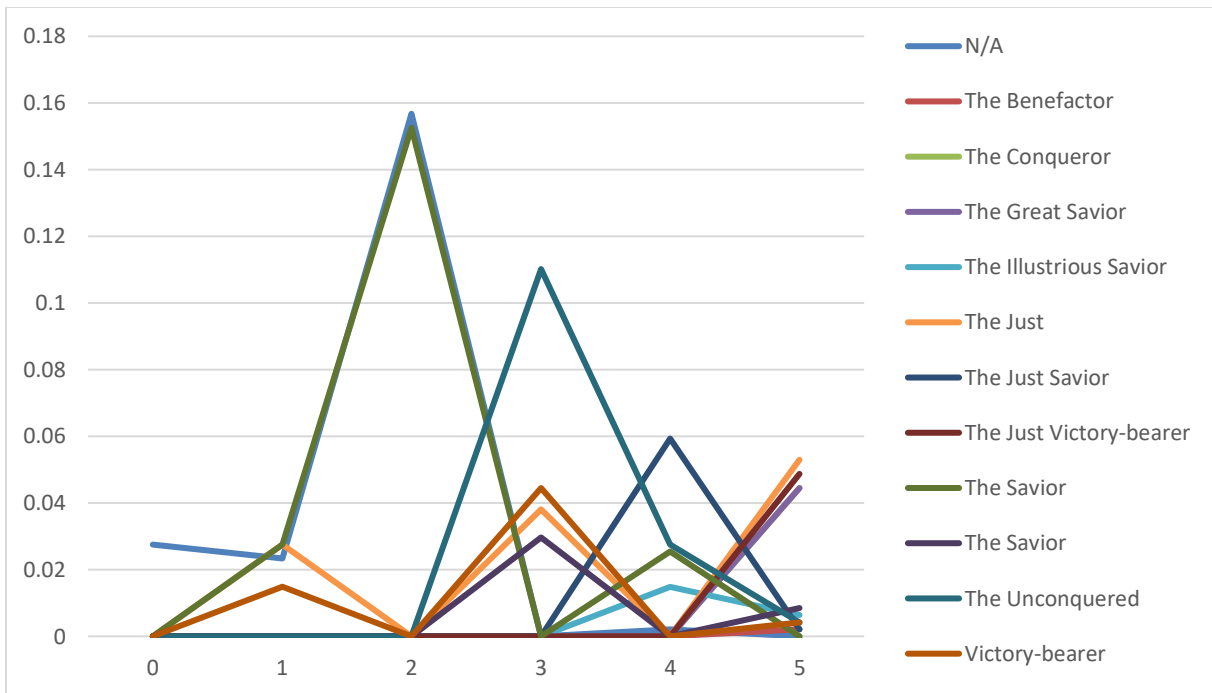


FIGURE D0.5: RULER EPITHET POPULARITY IN GREEK ON SILVER COINAGE, SEEN OVER THE SIX GENERATIONS OF THIS STUDY.

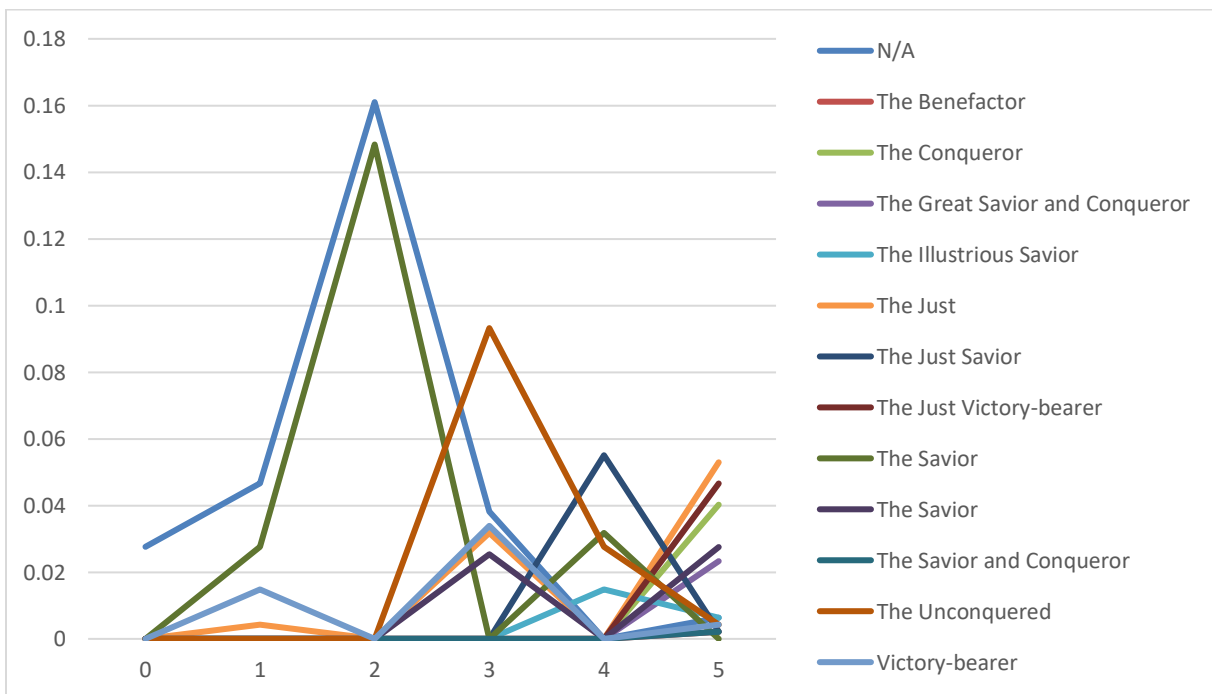


FIGURE D0.6: RULER EPITHET IN KHAROSTHI AND BRAHMI LANGUAGES ON SILVER COINAGE, SEEN OVER THE SIX GENERATIONS OF THIS STUDY.

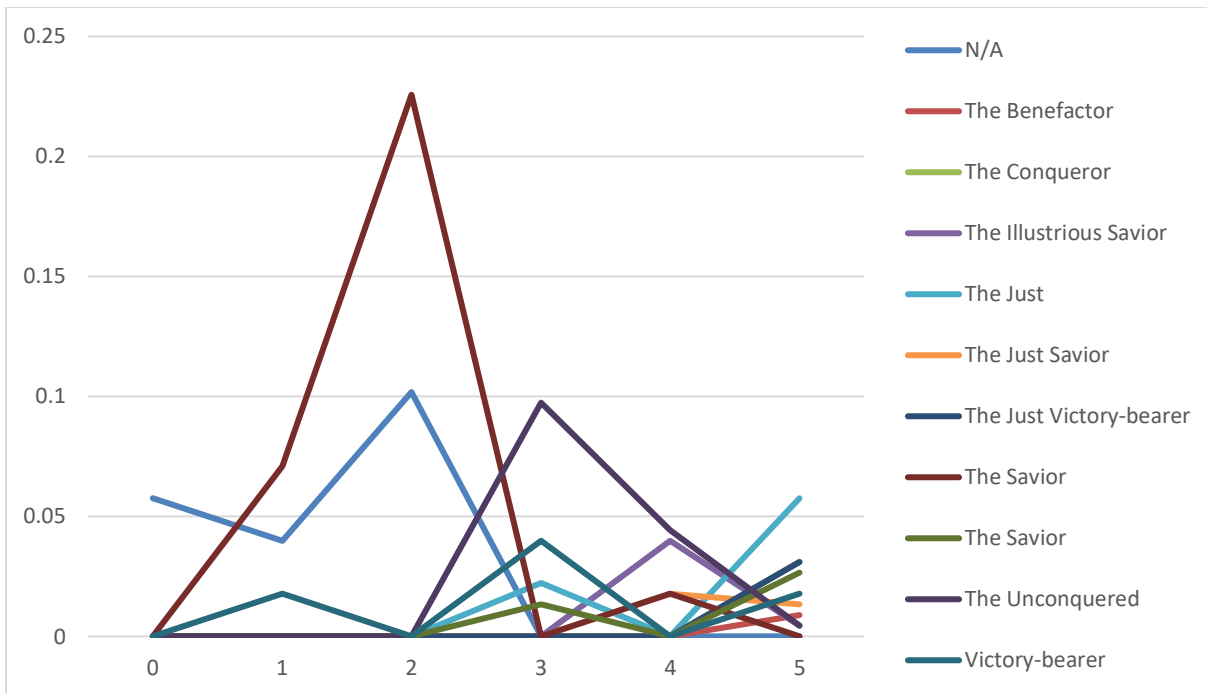


FIGURE D0.7: RULER EPITHET POPULARITY IN GREEK ON BRONZE COINAGE.

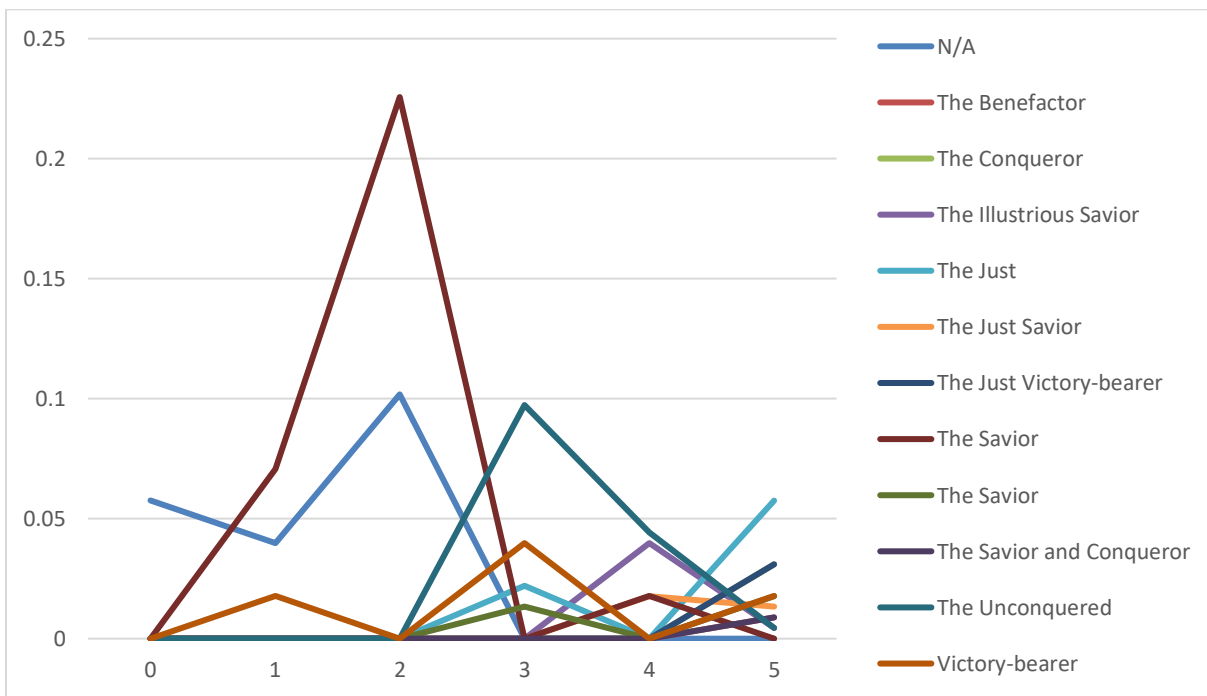


FIGURE D0.8: RULER EPITHET IN KHAROSTHI AND BRAHMI LANGUAGES ON BRONZE COINAGE.

Ruler Epithet Overview

Despite ruler epithets having been explained above, it remains prudent that the concept of an epithet should be described prior to the formal discussion of its figures. An epithet is a ruler's 'nickname', in a modern sense, and is believed to have been chosen by the ruler himself; though such matters are of high debate, as are the reasoning's behind why one epithet is chosen over another (Guillaume, 1990a:97-98). In fact, this subject matter has been the most subjectively criticized Indo-Greek variable in past studies, as through a historical lens, it has been used to 'make, or break' the opinion of certain Indo-Greek kings, due to the immense subjective nature of the meaning behind these 'nicknames' (Guillaume, 1990a:97-98). Bypassing this issue, it is important to note the differentiation in this study's approach for this variable, as this discussion below shall not attempt to explain an epithet's meaning, which without the historical context delves into the subject of pure conjecture. This discussion instead simply seeks a pattern of thought, and with it, the cultural process. Also, due to the nature of epithets likely being a matter of politics, rather than traditional cultural process, these descriptions below have been based upon **Figures D0.5** and **D0.6**.

Ruler Epithet Discussion

In the attempt of replicating the previous charts of ruler title, **Figures D0.5 – D0.8** were conducted to discern the difference between the rulers given epithet within the Greek and Gandhāran scripts, and while there are subtle differences between the two; overall, the epithets used in both scripts remain the same a majority of the time. As such, in this section, there was also the implemented split between metal types, with silver being represented by **Figures D0.5** and **D0.6**, and bronze being seen in **Figures D0.7** and **D0.8**; though, as one can see above, there is very little difference to be discerned.

Nevertheless, upon the 1st Generation, one can see the immediate rise of the two epithets *Savior* and *Victory-Bearer*, with the former having died off by the 3rd Generation while the latter skipped the 2nd Generation though appeared in greater popularity within Generations 3 and 5. In fact, during the 3rd Generation, two epithets of conquest seemingly rise in use, with those being the previously mentioned *Victory-Bearer*, and the newly arrived *Unconquered*. Upon the 4th Generation, one can see the revival of the *Savior* epithet, along with a newly christened epithet of *Just Savior*, which combined one of the lowly 3rd Generations epithets, with that of the previously dominant epithet of *Savior*. Finally, upon the 5th Generation one can see the rise of *Just Victory-Bearer*, which is another combination of the *Just* epithet; sequentially *Victory-Bearer* also appears in its 'pure' form and is followed thirdly by the *Savior* epithet.

These patterns of epithet choice seemingly evoke a cultural process and are in some ways similar to the cultural data of bronze coinage found in the main section of this study. However, due to the seemingly political nature of an epithet, mentioned explicitly above, it seems highly unlikely that the patterns of epithets are of relation to the acculturation process at large; and have thereby been excluded from the discussion of acculturation patterns. Furthermore, the nature of the meaning for an epithet is far too subjective to offer any actual value for this study. Though it is admittedly tempting to say otherwise, as in the instance of the *Just* epithet being connected with Buddhism, like the previous numismatist Narain has adamantly stated (Guillaume, 1990a:97-98).

In summation, within the variable of ruler epithets, there was little discernable differences between the local and Greek ruler title, outside of the already perceived linguistic distinctions mentioned in the prior appendix. It is due to this outcome that very little that could be objectively stated for the selection of a ruler's epithet.

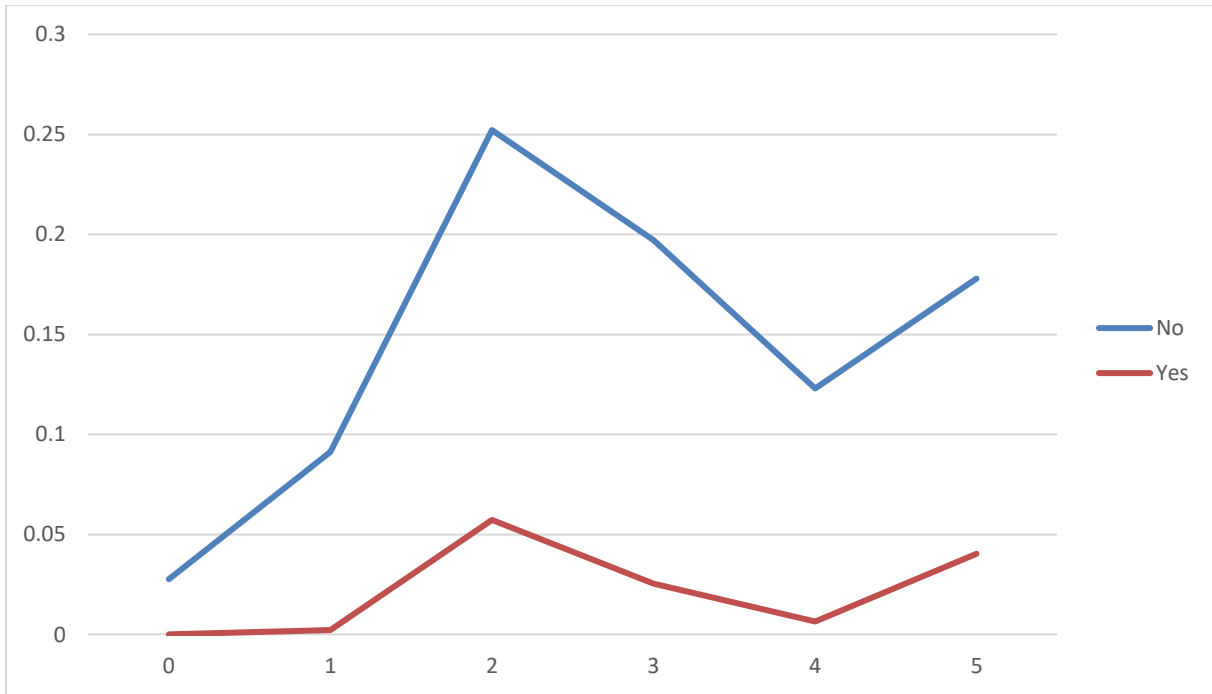


FIGURE D0.9: THE APPEARANCE OF WEAPONRY ON SILVER COINAGE, SEEN OVER THE SIX GENERATIONS OF THIS STUDY.

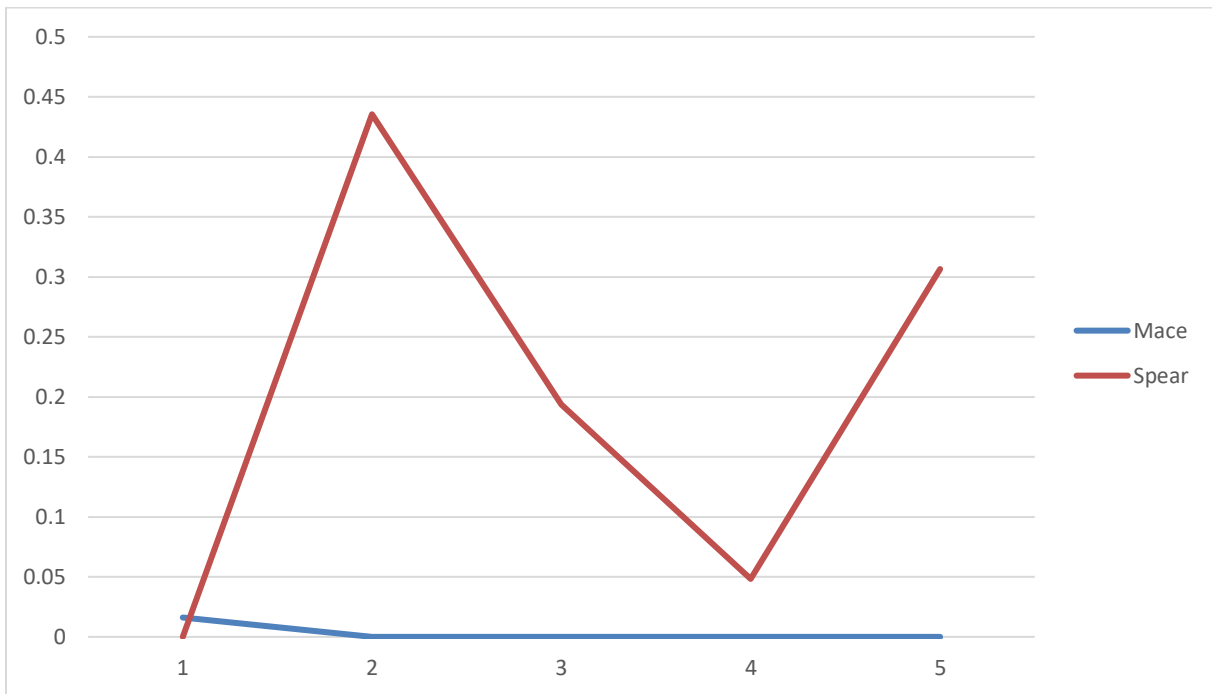


FIGURE D0.10: ABOVE IS A CHART DISPLAYING THE TYPE OF WEAPONRY ON SILVER COINAGE, SEEN OVER THE SIX GENERATIONS OF THIS STUDY.

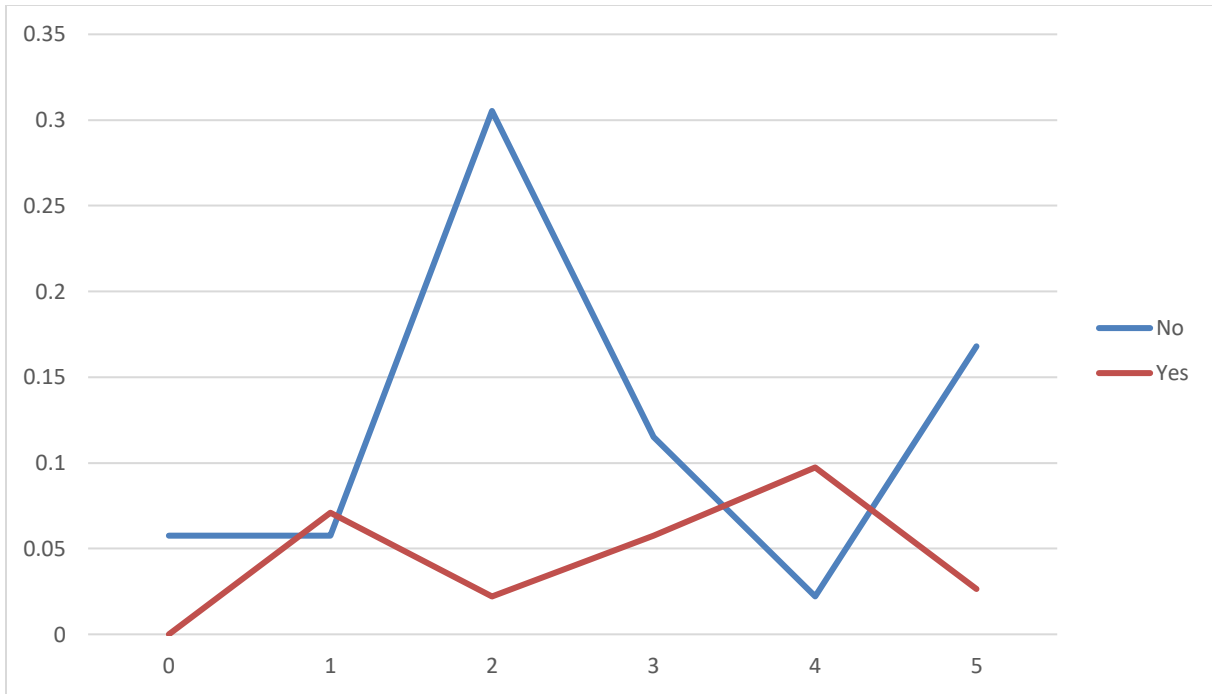


FIGURE D0.11: THE APPEARANCE OF WEAPONRY ON BRONZE COINAGE.

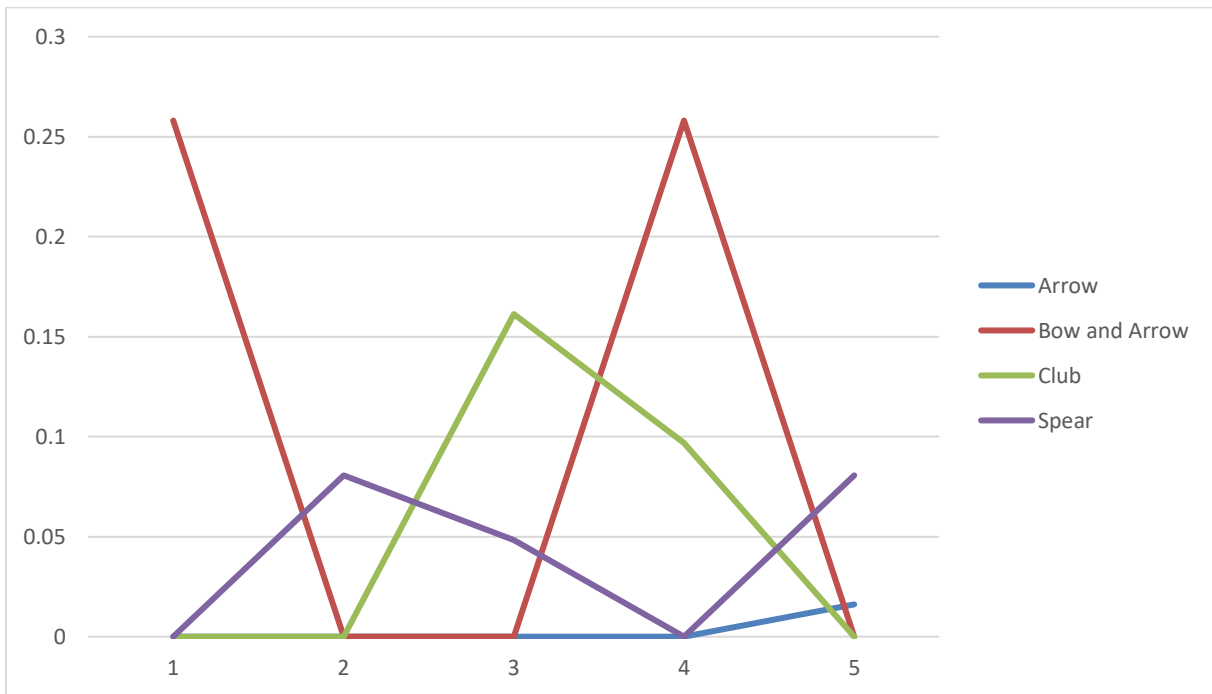


FIGURE D0.12: ABOVE IS A CHART DISPLAYING THE TYPE OF WEAPONRY ON BRONZE COINAGE.

Weapons' Variables Overview

During the onset stages of this research, it was hypothesized that the display of weaponry on the obverse side of a coin, was a sign of 'military might'. It was during the nascent stage of this research that the goal of this variable was to see if this was indeed the case, at least in accordance to the historically mentioned Indo-Greek kings of military might. In many ways, this prior hypothesis has been strengthened due to the adoption of this study's etic and emic perspectives, though it has also been heavily modified. One example of such modifications can be found with this variable displaying not only the weaponry seen on a ruler's portraiture but has also included all weaponry on Indo-Greek coinage, so long as the weaponry is displayed on the obverse side. This previous act was done to ensure a general outlook of thought, and although this variable is categorized as a '*Ruler*' one, there has ultimately been a goal of accessing the acculturation process; though there remains good reasoning behind its categorization as a '*Ruler*' variable, as one shall soon see below.

Weapons' Variables Discussion

On silver coinage, charted in **Figure D0.9**, one can see that by the 2nd Generation there is a grand spike in the appearance of weaponry, which rapidly diminished in the two-following Generations of 3 and 4, and then upon the 5th Generation rises again in prominence. If one were to interpret these result within the etic (outsider's) perspectives, used in the main variable discussions of this thesis, one could see that there is a likely reasoning for the presence of weaponry. As the prominent rise of weapon appearance, shown in the 2nd Generation, signaled the rise of Greek political dominance within the Indo-Greek kingdom at large, and is likely why there was the immediate prevalence of the *Heroic Bust of King* obverse type seen in **Figure 5.11**. The *Heroic Bust of King* obverse type being a unique stylized portrait that displays the king with

an upraised Spear. In **Figure D0.10**, one can see the unquestioned popularity of a *Spear* on silver coinage, which supports the function of weaponry being used as a status symbol of the king's dominance over the region; and thus, displays the reasoning behind why this variable was constituted as '*Ruler*' variable.

The appearance of weaponry on bronze coinage, seemingly fluctuated throughout time, as shown in **Figure D0.11**. Oddly, the presence of weaponry on bronze coinage conflicts with silver, an act that can be fully seen at the lowest point of weaponry appearance on bronze coinage being the 2nd Generation, which is the exact opposite of silver coinage, which reached its height within the 2nd Generation. This previous factor, suggests an entirely different function for weaponry on the obverse of bronze coinage; and is why this section has also been treated as a non-ruler variable. Moreover, besides the noted *Spear* weapon type displayed in **Figure D0.12**, the rest of the weapon types appear in the hands of famous deities on coinage, due to Indo-Greek kings solely being depicted with spears. With the given reasoning of a possible cultural outlook given, the possible reasoning behind these patterns can now be formally discussed.

Figure D0.12's overview of weaponry, vividly displays the grand popularity of the *Bow and Arrow* within the 1st and 4th Generations; in addition, to the rapid appearance of the *Club* in the 3rd and 4th Generations. While this research has attempted to display the overlying process of acculturation within a general sense, it has now become necessary to provide more in-depth information to understand the context of the two weapons' appearance. The *Bow and Arrow* seen within Indo-Greek coinage is often shown with Apollo, or that of his sister Artemis, both of whom possessed an affinity for bows, due to their patronages to the art of archery (Stančo, 2012: 36 and 41). It has been argued in past research that the cults of both Apollo and Artemis were not 'taken in' by the natives of Gandhāra, due to the absence of sculpture material from the

region (Stančo, 2012: 36 and 41). Therefore, it would seem, that this prior interpretation is correct; and one can see this in the appearance of the *Bow and Arrow*, as offering mere glimpses of a ‘pure’ Greek religious movement in the 1st and 2nd Generations, which subsequently dies off in time. Moving on to the sudden appearance of the *Club* in 3rd Generation, the weapon’s connection is to that of Herakles, who seemingly became an associate to Buddha; and cultural change that can be seen most notably in Herakles’ transformation into Vajrapani, who was seemingly both the “*Protector of Buddha*”, while also being the “*God of Thunder*” (Stančo, 2012:140-145). The context of Herakles’ sudden presence upon the 3rd Generation gives the possible outlook for the connotation of Herakles’ transformation into these latter local roles; which is an act that gives further support to the Greek and Buddhist interactions detailed within the *Milindapañha*. Moreover, if one took these two views into account, with the *Bow and Arrow* appearance representing conservative Greek religion, while the *Club* represents the growing religious hybridity, one can see a similar pattern to **Figure 5.20**’s display of ‘Buddhist’ Gesture appearance. This outcome is primarily based upon the similar rise of ‘hybrid’ elements in the 3rd Generation. Such interpretations are however, extremely subjective, despite their support of the previous findings in this research; as the fact remains, that the true meaning of such items is lost to us today.

Overall, the variety of weaponry found on Indo-Greek coinage all fall under the context of Greek mythology and tradition; with the only noted exception of this being the *Mace* found in the 1st Generation, which was wielded by the supposed Indian God: Balarama-Sankarshan. Therefore, one could say for good reasoning that the Gandhāran influence on weaponry was extremely limited, and ultimately concludes this variable’s limited outlook of acculturation, which has notably been found in prior variable discussions above.

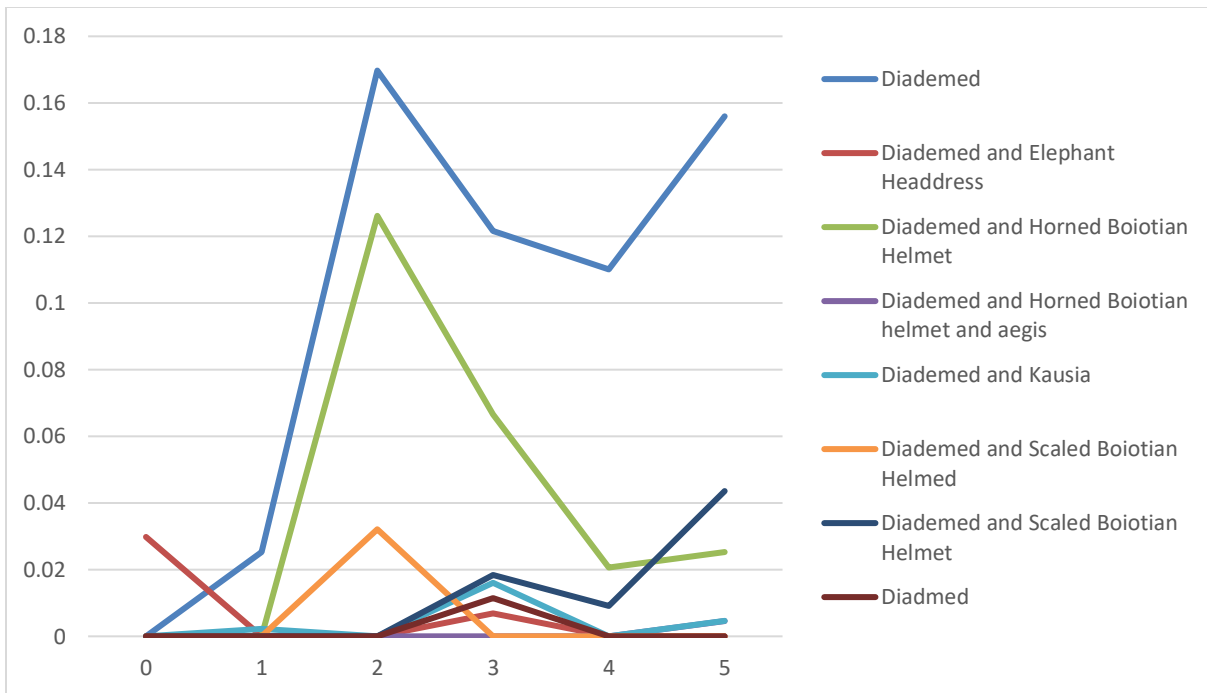


FIGURE D0.13: THE VARIATION OF RULER HEADDRESS TYPES FOUND ON SILVER COINAGE, ASSESSED VIA THIS STUDY'S GIVEN SIX GENERATIONS.

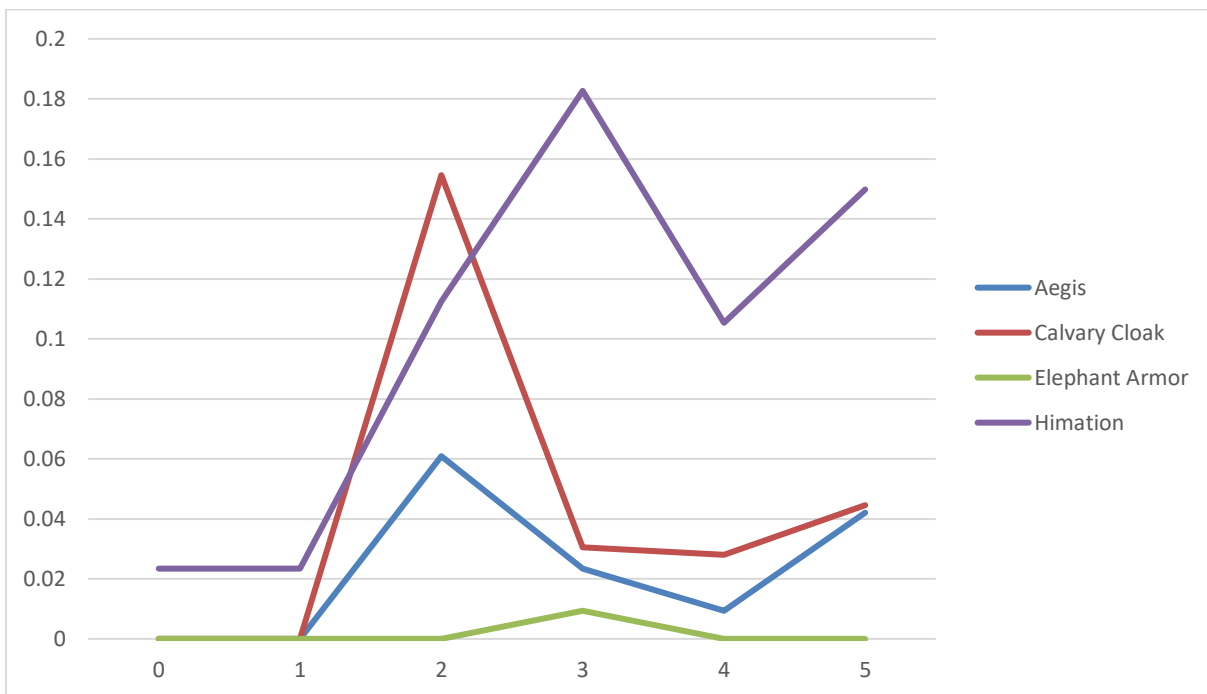


FIGURE D0.14: THE VARIATION OF RULER GARB TYPES FOUND ON SILVER COINAGE, ASSESSED VIA THIS STUDY'S GIVEN SIX GENERATIONS.

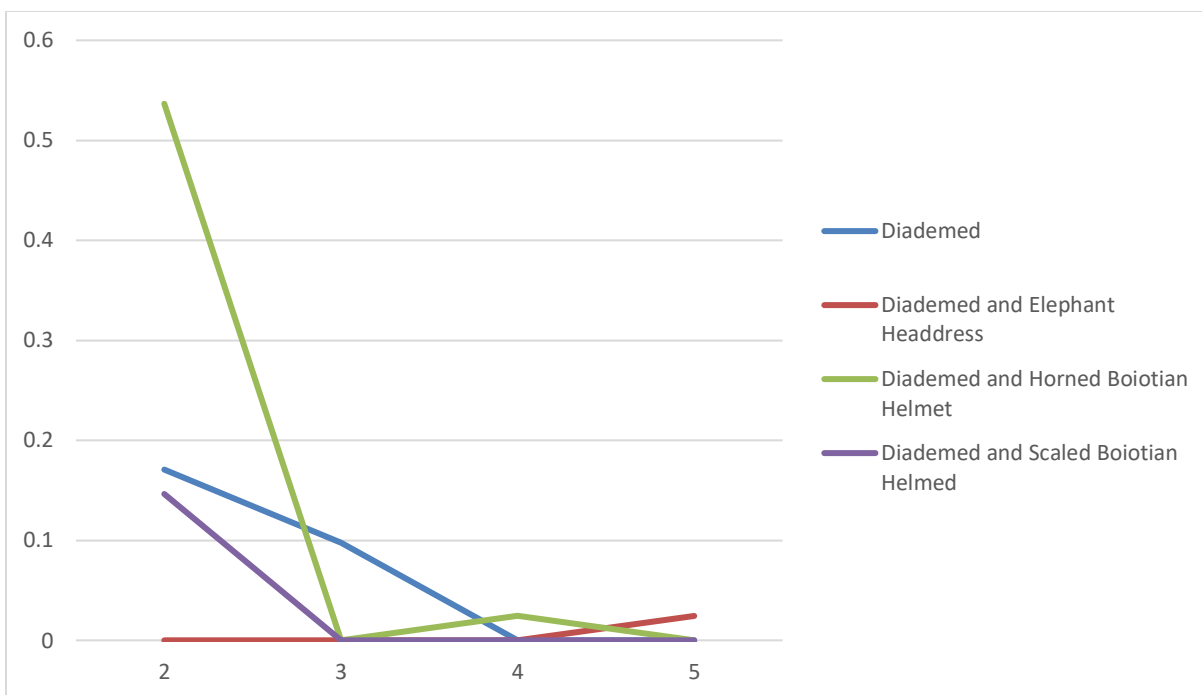


FIGURE D0.15: THE VARIATION OF RULER HEADDRESS TYPES FOUND ON BRONZE COINAGE.

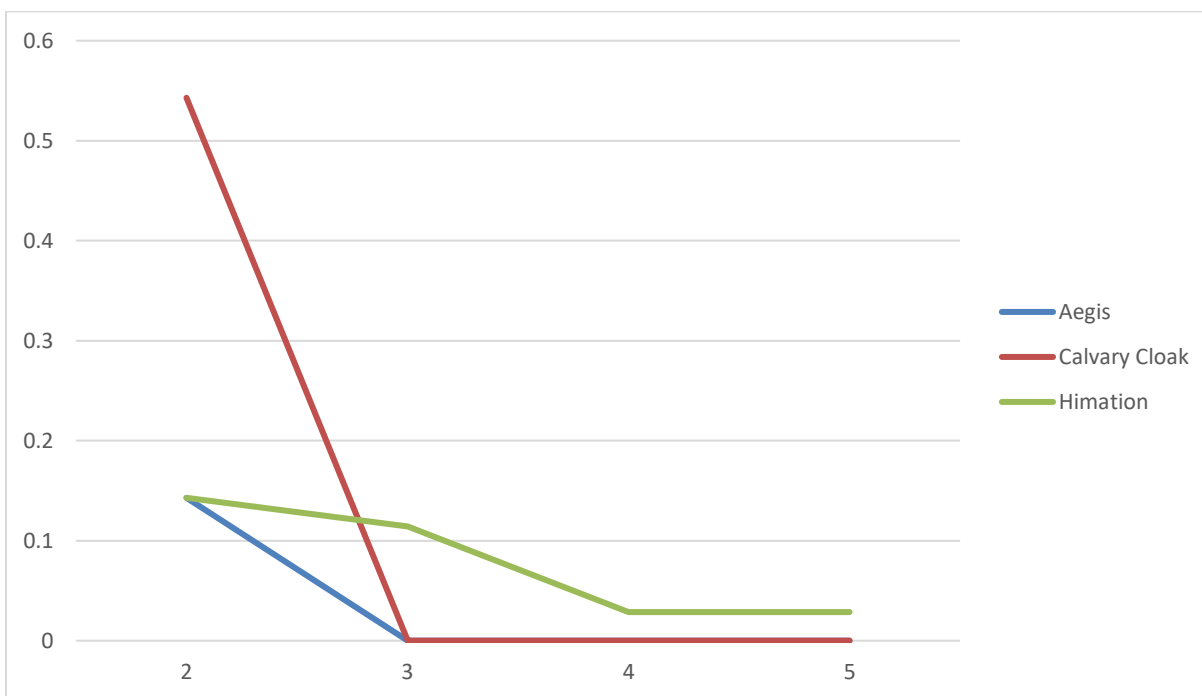


FIGURE D0.16: THE VARIATION OF RULER GARB TYPES FOUND ON BRONZE COINAGE.

Clothing of Ruler Overview

Like the variables of ruler title and epithet above, the variable of clothing varied very little based on the two metal types of bronze and silver coinage. Nevertheless, there does appear to be a rough pattern within the context of the silver coinage, which further confers the etic perspective of this research; and shall be discussed below. Prior to this variable discussion, it again becomes necessary to discuss the basis for these figures above. For both silver coinage: **Figures D0.13** and **D0.14**, and bronze coinage: **Figures D0.15** and **D0.16**, there was a split between the headdress and body garb of a ruler. This split was done to ensure a more accurate, and clean, analysis of the clothing of the various Indo-Greek rulers, whose items shall now be detailed.

For the variable headdresses, the diadem remained an essential item of a ruler, and is a symbol of authority from Alexander's lifetime to his Hellenistic successors; and has thus been viewed as fundamental part of the Greek schema of Hellenistic coinage (Metcalf, 2012:213). Next in popularity, is the *Boiotian Helm*, and its two variations of material: *Horned* and *Scaled*; and was a helm design of renowned use during Alexander's lifetime, due to its unimpeded view of the wearer's surroundings (Anderson, 1961:148). Thus quickly becoming standard equipment for cavalry units even a century after Alexander's death. The following ruler headdress, in order of popularity, is the *Elephant Headdress*, which as mentioned during the background section above, was implemented posthumously on a coin containing Alexander's portrait (Metcalf, 2012:212). Such a coin was minted by: Ptolemy I around 319 BCE, and was an obverse type that seemingly commemorates Alexander's conquest in India (Metcalf, 2012:212). This motif expression of an 'Indian' conquest, appears to have been replicated by the Indo-Greeks, namely Demetrios I, who time of rule fell within Generation 0 of this thesis's research (Hoover,

2013:18). The last headdress in the appearance of popularity would be the *Kausia*, which is of more cryptic origin. In fact, the matter of its development is heavily contested due to a lack of royal portraiture on Greek coinage prior to the Hellenistic era of study. However, the common consensus is that the ‘hat’ became a symbol of Greek royalty within the 1st generation of Alexander’s successors, during the latter part of the 4th Century BCE (Kingsley, 1981; Kingsley, 1984). Therefore, it appears that all the ruler headdresses of the Indo-Greek period, at least the ones on their coinage, were of Greek tradition; and thus, are absent the effects of acculturation, with the mild exception of the *Elephant Headdress*, which was implemented prior the Indo-Greek kingdom’s establishment as noted above.

As for a ruler’s garb, the *Himation* appears to be the most common; though one should note, that the aspect of Indo-Greek garb is considerably less clear, due to the limited view of the ruler’s torso on coinage. Nevertheless, if one were to look at the simplistic nature of ancient Greek clothing, there lies essentially two main garments: the himation (outerwear) and the chiton (underwear), which were often worn together (Waldman, 2006:363). Moreover, while this study’s ascertained assumption of *Himation* may be incorrect, the pattern of a similar clothing appearance is not, at least within the limited view coinage offers. The second most popular Indo-Greek garb would be the so-called “*Calvary Cloak*”, a military cloak that is often accompanied by a Boiotian helmet, which provides a brief display the military dress that the Indo-Greeks employed (Holt, 2012:12). Another item of military dress would be the *Aegis*, which is a noted Greek item that has been in use since the Homeric age, or is at very least mentioned in the accounts of the *Iliad* and *Odyssey* (Sage 2002:7). The actual item of an *Aegis*, is open for interpretation, as sometimes the implications are of that of a shield, though in the case of the Indo-Greeks it makes an appearance in a more armor-like fashion, similar to that of a breast plate

or cuirass (Hoover, 2013:65). The last item of Indo-Greek garb would be the *Elephant Armor*, which can be viewed as a more ‘hybridized’ version of the traditionally Greek aegis, as the shoulder of the cuirass sports an elephants head design (Hoover, 2013:85).

Clothing of Ruler Discussion

Now to begin the actual discussion of the figures. In both **Figures D0.13** and **D0.14**, there is a sudden appearance of ruler clothing within the 2nd Generation, which as seen in **Figure 5.11** is due to the subsequent increase in the royal portraitures on silver coinage. Moreover, due to this sudden change, one can find the typical characteristics of a ruler, that in the prior generation were greatly diminished due to the more native obverse types on silver coinage, which creates the effect of the etic perspective being correct; as by the 2nd Generation one can see clear evidence of the Indo-Greek kingdom becoming a ‘Hellenized’ state. Though as one has seen in the cultural variables above, in particular within the bronze coinage, this prior statement is far from being a reflection of the acculturation process. Furthermore, while these previous charts provide hints of the unique ‘melting pot’ culture of the Indo-Greeks (e.g. *Elephant Helmet*, *Elephant Armor*), ultimately these appearances fail to express the full cultural process (acculturation) that has no doubt occurred, though it is interesting to see such splotches of the acculturation process ‘here and there’. One last item of interest, is the considerable decrease in ruler armor, after the 2nd Generation, which included the two great kings of conquest: *Eukratides I* and *Menander I*. The prior decrease was followed quickly by the more ‘conservative’ *Himation* dominance in the 3rd Generation onward. This change suggests a less aggressive political attitude of conquest overall, but as one can see in Figure D0.14 with the appearance of *Elephant Armor*, and reappearance of the *Elephant Headdress* in **Figure D0.15** that are exceptions to this general rule.

Ruler Conclusion

In summation, this study's analysis of Indo-Greek ruler variables has been found lacking in the desired assessment of the acculturation process, which as this study has shown in the prior sections can indeed be viewed. Furthermore, this study's assessment of ruler variables has also discovered firsthand how limited ruler concentrated studies can be; and like history's early concentration of major historical figures, this study has found a subsequent similar need to focus on other elements.