ASPECTS OF THE GENETIC RELATIONSHIP OF THE KOREAN AND JAPANESE LANGUAGES

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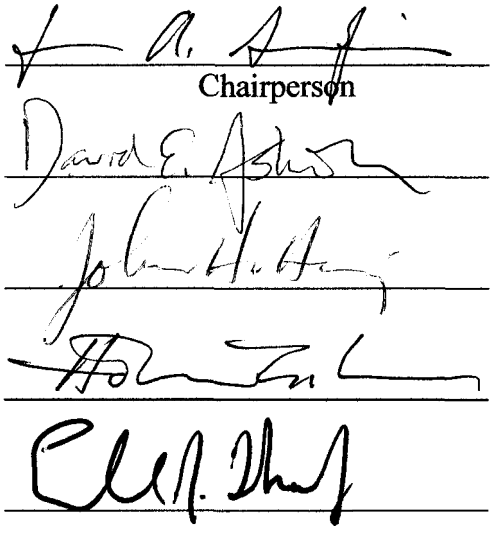

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Abstract

I offer evidence from a variety of fields in order to strengthen the hypothesis that Japonic and Korean are linguistically genetically related to one another. Non-linguistic evidence supports the hypothesis that the Japonic language was introduced into the Japanese Archipelago approximately 2,500 years ago over a thousand year period, where a culturally and technologically advanced group began migrating into the Japanese Archipelago from the Korean Peninsula through Northern Kyushu. A constant and steady influx of Continental culture, language, and people, resulted in the near-complete extinction of the original language.

The linguistic evidence comes from Middle Korean texts, written in the Silla-descended language of the 15th century—the kingdom that overwhelmed the Puyŏ, Koguryŏ, and Paekche territory and languages, thought to be more closely related to Japonic—and 8" century Old Japanese texts. I hypothesize that there were two "thalossocracies": one with Izumo and Silla, and the second with Yamato and Paekche/Kaya. Japonic elements were incorporated into the Silla language when Silla folded Kaya and Paekche into the new kingdom. In the same way, Yamato incorporated Silla-type elements into itself when Yamato overtook Izumo. I introduce evidence that supports Serafim's Labiovelar hypothesis; i.e. MK ***k*** : OJ ***p***, reconstructing PKJ $*k^{w}_{1}$. I also found a "reverse" correspondence set: that is, MK ***p*** : OJ k, for which I reconstruct $*k^{w}_{2}$. I hypothesize that this reverse correspondence is due to dialect borrowing. When Silla conquered the Korean Peninsula, it incorporated into itself Kaya, Paekche, and Koguryŏ, which were closer in genetic relationship to Japonic, and therefore would have ($*k^{w}$ >) ***p***. As these three languages were overcome, dialect borrowing likely occurred, which means that words withp instead of ($*k^{w}$ >) ***k*** were borrowed into Silla, sometimes replacing and sometimes forming doublets with words retaining k. The second posited case of dialect borrowing occurred when Yamato overtook Izumo; since Silla had close contact with Izumo, words with ($*k^{w}$ >) ***k*** were borrowed into Yamato, replacing, and sometimes forming doublets with, some words with p. Further research will surely lead to more understanding of the measurable effects of dialect borrowing and Proto-Koreo-Japonic.

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Abbreviations

AJ	Archaic Japanese
ATR	Advanced Tongue Root
CM	Comparative Method
EMK	Early Middle Korean
HC	***Hunmin cŏngum***
HCH	***Hunmin cŏngum haylae***
IR	Internal Reconstruction
J	Japonic
KWC	Kim Wan-Chin
LMC	Late Middle Chinese
LMK	Late Middle Korean
MJ	Middle Japanese
MK	Middle Korean
NI	***Nihon shoki***
NJ	Modem Japanese
OJ	Old Japanese
OK	Old Korean
PA	Proto-Altaic
PJ	Proto-Japonic
PK	Proto-Korean
PKJ	Proto-Koreo-Japonic
PM	Proto-Manchu
PMT	Proto-Manchu-Tungusic
PR	Proto-Ryukyuan
PT	Proto-Tungusic
T&K	Thomason and Kaufman
TL	Target Language
YKM	Lee Ki-Mun
YB	***Yongbi ŏch'ŏn'ga***

Part A. Introduction to the Dissertation

1.0 Introduction

The nature of the relationship between Japanese and Korean has been the source of speculation and argument for some time. Initial inquiries made sweeping claims with little evidence to verify their work. While other language families had been neatly categorized, there was no consensus in the linguistic community regarding Japanese, and to a lesser extent, Korean. Lewin (1976) argued that even if there were a genetic relationship between the two languages, it was so remote that it was beyond provability with the comparative method.

In 1966, Samuel Martin published the first comprehensive reconstruction of Proto-Koreo-Japonic, including sound correspondences and a complete list of reconstructed proto-segments. This landmark work paved the way for any further linguistic studies regarding this area. Up until Martin's work (1966), scholars had only cited a handful of possible etymologies to support their claims; and due to the lack of concrete correspondences and sound changes, these claims remained in the realm of speculation. Martin's foundation became the springboard from which other studies could continue, furthering our understanding of the Koreo-Japonic relationship.

Instead of the great flurry of advancements one would expect after such a scholarly work, however, only the occasional paper, such as Mathias (1978:3), broke the silence of the two decades that followed. This climate continued until Whitman's (1985) dissertation, which has become the second major landmark in Koreo-Japonic research. In addition to utilizing comparative reconstruction, Whitman incorporates internal reconstruction within both Japanese and Korean, using these results to reconstruct

proto-Koreo-Japonic. Whitman's criticism of Martin's work is the lack of intermediary stages needed to make the proto-language more believable. Whitman adduced a set of detailed sound changes in each language, rather than depending mostly on correspondences, as Martin did. One of Whitman's most notable advancements in this area was what has become known as "Whitman's Law," a set of rules for loss of medial **r* and **m* in the Japonic line.

Just as Whitman added to the field by including internal evidence fiom Korean and Japonic, I intend to add to the picture of Koreo-Japonic by including a consideration of dialectology and language contact. There are many benefits to enhancing the picture with other fields, including dialectology, archaeology, anthropology, and historical documents regarding this likely relationship. Within the linguistic realm, dialects can tell us much about the history of a language, especially if used in conjunction with the above internal and comparative evidence.

Outside of linguistics, other fields offer important pieces of the puzzle for inclusion into the picture. Clearly, language, culture, and ethnicity are three separate entities; however, this does not mean that this information should be ignored. A stronger argument is one where each element supports the other. For example, the Horse Rider Theory claims that a wave of northern mounted horsemen swept through the Japanese Islands, subduing and conquering as they moved south and east. This scenario, however, is not supported by linguistic evidence.

Gari Ledyard proposes that a group fiom the distant north came south, conquered, and then melted into the landscape without a trace. It is unlikely that a group able to conquer an entire population vanished without a trace. In this dissertation, I

explore and expand upon ideas proposed by Thomason and Kaufman (1988) regarding language contact. Based on the intensity and duration of contact, we can predict the linguistic effect on the target language that the indigenous population is shifting to. In this dissertation, dialectology, archaeology, anthropology, historical records, and even mythology have been synthesized to paint a bolder picture of the language history of this region.

1.1 Background Information

There was a migration from the Korean Peninsula over an approximately 1000-year period, starting approximately 2500 years B.P. The emigrants from the Korean Peninsula were technologically superior to the inhabitants of Japan, bringing with them metal and tool technology, farming techniques, war trappings, building construction and city layout, and bureaucratic and political organization. Rather than a single sweeping take-over, the migration continued over several centuries in multiple waves. And although there were likely small battles and skirmishes between the new arrivals and the indigenous population, it is also clear that the two groups often lived in cooperation, with the populations beginning to mix. DNA, skeletal, and dental research shows that modem Japan shows a population cline, with the heaviest concentration of a continental population in Northern Kyushu, the likely point of entry for the new population, and the concentration of an older, southern population increasing the further south and north one goes.

Since the migration was from several dialect regions, and since even the language from the same region would have changed over the 1000-year period, this left its mark on the linguistic situation in the languages descended from proto-Koreo-Japonic,

henceforth PKJ.

1.2 Outline of the Dissertation

In the first part of this dissertation, I review archaeological, anthropological, historical, and linguistic evidence related to the regions of Korea and Japan. I show how the pieces of evidence from each area complement each other, rather than contradict each other. I assert that the archaeological, anthropological, historical, and linguistic evidence support the overall picture of a long, steady migration from the Korean Peninsula, with that population mixing with and overtaking the indigenous population, with all of the population introduced at the main point of entry, Northern Kyushu.

In the first chapter of the Background Section, Part B, I review anthropological and archaeological evidence regarding the Korean Peninsula and the Japanese Islands. Next, I cover various theories regarding contact between early Japan and Korea, such as the Horse-Rider Theory. Also in this section, I cover Thomason and Kaufinan's theories regarding language contact and the expected linguistic outcomes of contact. In the next section, I review the historical documents and creation myths regarding the early kingdoms in Korea and Japan. The historical records contain some fact, some myth, and a good deal of political justification of the kingdom in power at the time.

Following that, I briefly discuss the linguistic methodologies used in this dissertation. I then review the linguistic situation of Old Japanese (henceforth, OJ) and Middle Korean (henceforth, MK). And finally, I review the work that has been done regarding Proto-Koreo-Japonic (henceforth, PKJ), specifically the work of Samuel Martin and John Whitman. This concludes the Background Section, which is the foundation for my dissertation.

Part C is where I introduce my hypotheses and give the linguistic evidence to support them. In order to gain a greater understanding of the linguistic situation, I entered the OJ dictionary, Jidai-betsu *kokugo dai-jiten*, and approximately 85 percent of the MK dictionary, Koe *sacen*, into databases.

This compilation allowed me to make comparisons more easily. It was also the inspiration for my hypothesis and extensions of Serafim and recently Osada's hypotheses regarding labiovelars, and o f p and m, and ***t*** and k. I found what I believe are dialectal borrowings that have survived due to semantic specialiazation. In other words, a slightly different dialectal form will be allowed to co-exist with a form in the central dialect *if* it has a slightly specialized or different meaning. Otherwise, it will be forgotten.

For example, I assert that the MK forms nyek 'direction, side' and nyep 'side, **flank**' are dialectal variants showing a p , k alternation in MK and / or MK dialects. Both forms survived because of differences in semantics. The dialectal variations were borrowed back into the main language with slight semantic specialization.

Serafim (1996) claimed that Proto-Koreo-Japonic had labiovelars; that is, a MK k : OJ p correspondence in the proto-language. I expand upon this theory and offer my own additions. For example, I relate MK nak- 'right, correct' and OJ nap- 'straight, correct', reconstructing PKJ *nak^{w}-. This shows a MK k : OJ ***p*** correspondence in final position. **An** example of this correspondence in initial position would be MK kay- 'clear up' and OJ ***par-*** 'id.'; I reconstruct PKJ ****k^{w}ar-***. I also claim that due to dialectal mixing, this correspondence also occurs in reverse, although not as frequently. **An** example of such a reverse correspondence, MK ***p*** : OJ k, would be MK ***phoy-*** 'chop, split' and ***kar-*** 'cut'; I reconstruct PKJ *k^{w}or-.

I also expand upon Martin and others' claim of medial and final obstruent lenition in MK, resulting in an *l*, only from an original ***ln***. This pattern allowed me to find cognates, such as MK ***pwul-*** 'blow' and OJ ***puk-*** 'id.', for which I reconstruct PKJ ****purk-***. An example of MK medial t lenition is MK kul 'word' and OJ ***ko$_2$to$_2$*** 'id.', for which I reconstruct PKJ ****kutu***.

It is my hope that this dissertation will offer further insight into the overall PKJ picture by expanding upon hypotheses presented by others and by presenting some of my own. The field of Koreo-Japonic has proved more difficult than that of other language families due in part to the linguistic and political situation of the region. The frequent upheaval on the Korean Peninsula coupled with the constant waves of migration into the Japanese Archipelago, starting at Kyushu and expanding outward to the south and east, has created a chaotic-seeming lineage for PKJ. In addition to taking into account the effects of one language colliding in contact ***en masse*** with another, one has to acknowledge the continued relationships from one region to another, with many links across the waters. It is for these reasons and others that the link between Korean and Japonic has been somewhat obscured. Analyzing the effects of dialectal contact and mixing, we can come up with consistent explanations for the variations. It is my hope that this work will illuminate our understanding of this time in history just a little more, as I have also been guided by the footsteps and ideas of others.

Part B. Background Information

In the following sections, I will review anthropological, archaeological, historical, mythological, and linguistic information relative to the nature of the relationship between the Korean Peninsula and the Japanese Archipelago.

1.0 Anthropological Evidence

1.1 Early Humans in the Japanese Archipelago

Christy Turner (1989), an American anthropologist, has divided the people of Asia into two dental types which he terms 'Sundadont' and 'Sinodont' based on the incidence of eight morphological dental traits. The Sundadonts include the inhabitants of Taiwan, the Philippines, Indonesia, Thailand, Borneo, Laos, and Malaysia. The Sinodonts are the inhabitants of China, Mongolia, eastern Siberia, Native Americans, and the Yayoi Japanese.

Turner's research (1989:97) indicates that the Jomonese were closely related to the Sundadonts, as well as the Ainu, while mainland Japanese are closely related to Sinodonts. Turner asserts that three populations migrated to Japan but only two left descendents. The first migration was the late Pleistocene Jomon people; the second was a Yayoi Sinodont migration approximately 2,500 years ago. A third group, termed the Amur group, reached Hokkaido 1,500 years ago but failed to survive to modern times.

1.2 Dual Origin with Admixture Hypothesis

Both Turner (1989:97) and Hanihara (1991:245) propose a dual origin with admixture hypothesis for the Japanese population. Turner asserts that dental anthropology is reliable, noting that teeth evolve slowly, preserve well, and have several independent traits that can be compared on the roots and the crowns. His studies (1989:105)

show that "the Japanese gene pool takes its primary origin from mainland Sinodonts. However, there is enough divergence...to conclude that Jomon-Ainu genes were introduced into the gene pool of the Yayoi-Japanese wet-rice agriculturalists." Both Turner and Hanihara hold the view that "the modern Japanese had a complex but basically dual origin, one that is rooted heavily in the mainland Sinodont population, and with a secondary and lower genetic contribution from the Sundadont Jomonese-Ainu aboriginals" (Turner 1989:105).

Turner (1989:105) states that most archeologists and ethnoarcheologists rely only on such materials as trade goods to evaluate cultural contacts and cultural dynamics, ignoring evidence from human skeletal and dental remains. He notes that skeletal and dental remains are an important resource for evaluating the nature and degree of contact between the Yayoi-Japanese and the aboriginal Jomonese-Ainu. He has also developed a measure of dental morphological microevolution termed 'dento-chronology' (1989:106). Based on his calculations from worldwide dental evolution, Turner states that the Yayoi-Japanese branched from mainland Asians approximately 2,500 years ago.

Turner (1989:106) suggests the South China coastal region as the source of the Yayoi migrants. His research indicates that there was less gene flow from the Jomonese-Ainu into the Yayoi-Japanese population. In other words, the native population of the Jomonese received far more Yayoi genes than the other way around. Turner (1989:107) asserts, based on dental comparison, that the Jomonese population came from Southeast Asian late Pleistocene, or Sundadont, stock.

> Sundadonts expanded northward along the East Asian continental shelf to Japan before the end of the Pleistocene when Japan was markedly isolated from the mainland by the post-glacial worldwide 100 meter rise in sea level. The relatively small divergence between Jomonese and

> Southeast Asia matches archeological evidence that shows marked cultural isolation between Japan and the mainland until the **arrival** of the Yayoi-Japanese beginning about 2,500 years ago. The dental evidence indicates a dual primary origin for the present-day peoples of Japan (1989:107).

Hanihara (1991:245) concurs with Turner and proposes a dual structure model for the population history of Japan. Hanihara hypothesizes that a Yayoi population from Northeast Asia migrated and mixed with the original Jomonese population, originating in Southeast Asia. He states that the admixture between both populations is still not complete but continues today; that is, different rates of admixture can be found from area to area in Japan.

Hanihara (1991:247) also notes that the distribution pattern of ABO blood group genes, cranial measurements, stature and other such measurable elements show a distinct cline from western to eastern Japan. In northern Kyushu and the Chugoku and Kinki districts (western Japan), stature is higher and the above-mentioned characteristics match those of northeast Asian populations; conversely, the Japanese in the east and in the Ryukyus more closely resemble the Jomonese.

Hanihara (1991:247) asserts that the Ainu and Ryukyuans resemble each other more closely than they do the Japanese population of Honshu, Kyushu and Shikoku. Based on his analysis of cranial measurements, Hanihara estimates that the total number of migrants from the Asian mainland was from approximately 400,000 to over one million from the beginning of the Yayoi age (See: Archaeological Evidence Indicating Contact section) up until the 8th century, or over a period of one thousand years.

Based on dental, cranial, and other methods of assessment, Hanihara (1991:247) concludes that Japan's population is heterogeneous, not homogeneous in origin. And,

contrary to earlier theories, the migration from the Asian mainland had to be quite substantial since the morphological characteristics and gene combinations of modern Japan show dominant northeast Asian elements. In order for this to occur, the migration had to be greater than the existing population, thus disputing earlier claims of a small, negligible migration.

Hanihara (1991:246) asserts that, based on the changes in skeletal morphology, a large northeast Asian population "appeared abruptly in northern Kyushu." Hanihara also notes that the Jomonese population showed relatively small variability in cranial measurements, whereas the incoming Yayoi population showed a wider range of variability. The difference between these two groups is more evident in remains from the Yayoi age between northern Kyushu and other regions.

Hanihara's (1991:249) schematic model of the microevolutionary course of the Japanese is as follows:

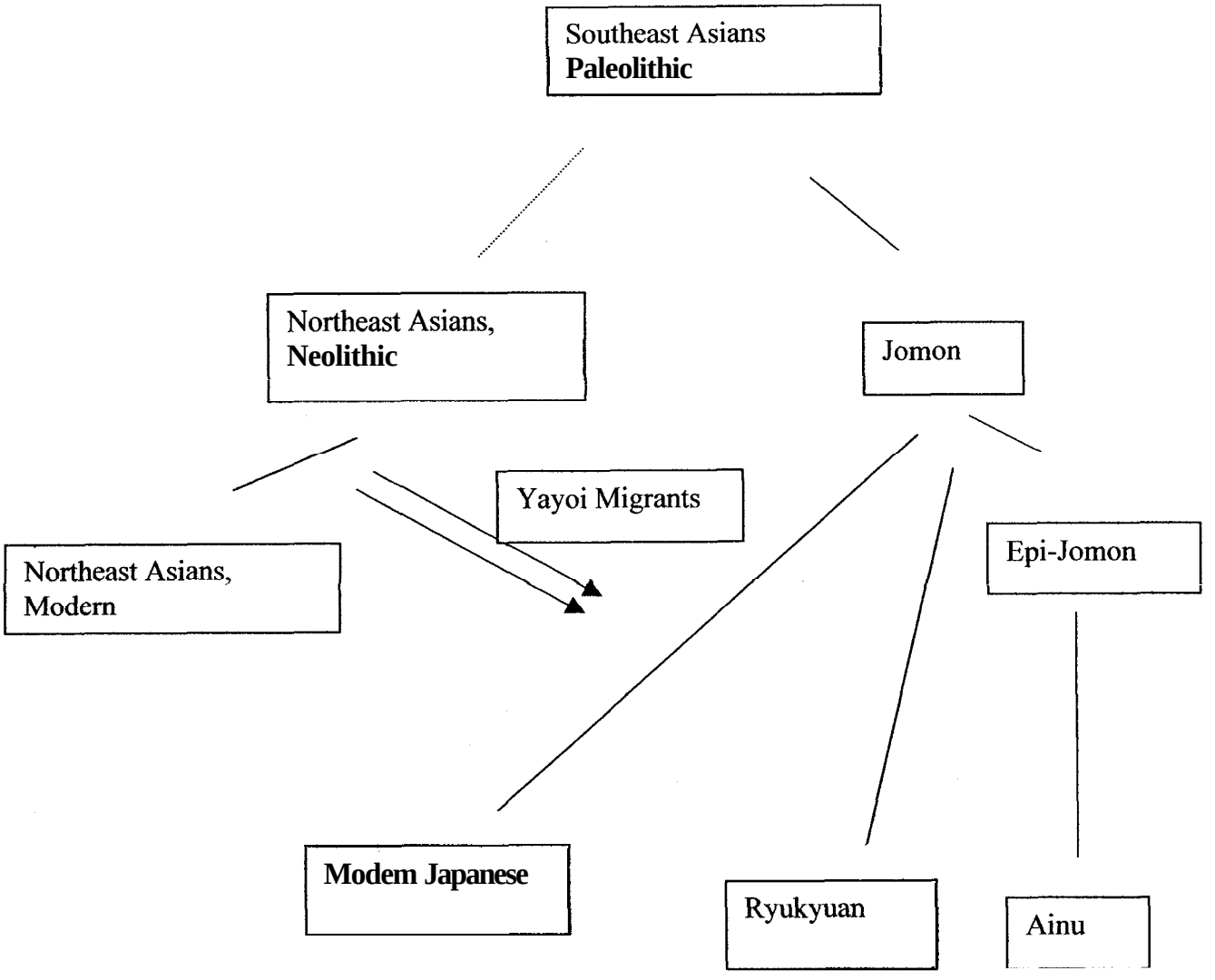


Table 1: Hanihara's Schematic Model of Japonic Microevolution

1.3 Non-human Evidence

Other, non-human, evidence parallels the conclusions drawn above. Moriwaki (Yonekawa et al., 1988) found similar distribution patterns in dogs and mice in Japan. That is, studies on dog types (Tanabe 1990:161) show that there were two dog gene flows into Japan: the first from southeast Asia (via Taiwan and the Ryukyus) brought to Japan 10,000 – 12,000 years ago by Jomonese, and the second a dog of Korean origin brought into Japan 1,700 – 2,300 years ago by migrants from the Korean peninsula. Mitochondria1 DNA data from wild mice (Yonekawa et al., as quoted in Tanabe 1990:171) also show the same distribution with dogs. Yonekawa concludes that Southeast Asian wild mice were distributed first in Japan and that another variety from northeast Asia came in with migration through/from the Korean peninsula, the latter type being distributed in the middle and southwest regions of Japan.

1.4 Rice Culture

The first rice paddies appeared in northern Kyushu in the 4th or 5th century BC (Sahara 1992:42). Some scholars view this as the last stage of Jomon, while others, including Sahara, view it as Initial Yayoi or Yayoi pre-I. Northern Kyushu sites include Nabatake in Karatsu, Saga Prefecture, and Itazuke in Fukuoka, Fukuoka Prefecture. Most of the rice grown was red rice, which is close to wild varieties and is very hardy and cold resistant. Initially, in early Yayoi, rice was stored in pits; soon after, however, raised-floor storehouses held the Yayoi people's grain.

Sahara (1992:42) views Japanese rice as originating from the lower reaches of the Yangtze River in China. He also notes that it did not come directly to Japan from

China but came through the Korean peninsula into northern Kyushu (1992:42). In the Yayoi I period (or Early Yayoi), from the 4th to 3rd centuries BC, we find a full-fledged rice-growing culture that has spread throughout western Japan.

Over 200 ancient rice paddies have been discovered on Kyushu, Shikoku and Honshu; twenty of these are from the Yayoi period. Most of the fields are small in size, approximately two square meters. Sahara (1992:41) quotes Sasaki (1989:433) regarding the sudden appearance of rice culture technology in Japan. Sasaki asserts that it was not a slow progression of primitive techniques gradually advancing over time, but rather "[f]rom the first stage, quite advanced techniques of irrigation and drainage were in existence, and not just marshy areas but locations which needed irrigation were utilized [for paddy fields]."

All of the above evidence indicates that a large population of migrants came in from northeast Asia, starting about 2,500 years ago and continuing for over a millennium, slowing down towards the end. The current population of Japan has its origins from two population groups: the first, an indigenous group of Jomonese from Southeast Asia, and the second, a migrant group from northeast Asia. The mixture of these two populations continues even today, with a greater occurrence of Jomonese-type qualities in the Ryukyus and Northeast Japan, and conversely a greater occurrence of northeast Asian-type qualities in western Japan, with the highest incidence in northern Kyushu.

Several studies on dental and cranial evidence show further evidence regarding population movements in the region. Based on cranial measurements, Hanihara (1991:133) claims that the Jomon population is ethnically distinct from the Yayoi population. Jomon skulls, according to Hanihara, show a closer affiliation with

Southeast Asians and Yayoi with northeastern China (Manchuria). Cranial studies by Pietrusewsky indicate that "Jomon and Ainu crania are distinct from modern Japanese and other East Asian populations (1991:9)."

Turner (1991:97) expands the above studies into a "dual origin with admixture hypothesis" for Japan. Turner labels the Jomon population as Sundadonts and the Yayoi population as Sinodonts. Microevolutionary dental rates, according to Turner, indicate that migrants branched from the mainland and entered into the Japanese population. The Yayoi immigration was so extensive that populations from northern Kyushu up through the main island have definite Sinodont characteristics, whereas Okinawans and Ainu represent remnants of the earlier Sundadont culture.

Ossenberg's research (1990:68-69) also confirms that the dental pattern called Sundadonty, representing Southeast Asians, Micronesians, and Polynesians, is also shared by un-admixed Ainu and Okinawans. Ossenberg claims these patterns indicate "ancient demic diffusion commencing with the Yayoi era at about 300 B.C. when an immigrant population from continental Asia entered the archipelago in north Kyushu and expanded eastward, assimilating the aboriginal inhabitants (1990:69)".

Skeletal studies also indicate a similar pattern. Yarnaguchi (1991:53) finds that the skeletal remains of Jomon people were very different from modem Japanese. "Drastic physical changes occurred to the Japanese inhabitants during the Yayoi and Kofun periods under strong genetic and cultural influences of the immigrants from the mainland who introduced agriculture and other technology to these islands." Yarnaguchi (1990:57) further states that these "...drastic changes which occurred to the skeletal morphology of the inhabitants of the Japanese islands in the post-Jomon periods

were caused by strong genetic and cultural influences of the immigrants from the mainland who introduced the continental civilization based on rice farming...during the Yayoi (300 B.C. to A.D. 300) and the Kofun period (A.D. 300-700)."

DNA samples taken from ancient Japanese bones, dated approximately 6000 B.P., also indicate that the Jomon population had a "close phylogenetic affiliation to Southeast Asians" (Horai 199:147). Omoto (1984) reports that ear wax genes and blood protein polymorphisms show the same pattern mentioned above.

1.5 Anthropological Conclusions

From this above evidence we can conclude that the Jomonese, the indigenous population in Japan, were ethnically (and also linguistically) unrelated to the incoming continental population. The two populations, over the course of many waves of migrations, have merged, with the mixing process not yet complete even today. This shows that a significant but unrelated continental group came into Japan, mainly through Northern Kyushu.

2.0 Prehistoric Contact between the Korean Peninsula and Yamato Japan

The political entities known today as Japan and Korea did not exist until relatively recent, protohistoric, times. Both the regions of Japan and Korea have been populated by various tribes, states, and kingdoms, with the political situation changing dramatically and frequently over time. Unification of each region into any semblance of the modern states occurred in prehistory. Knowledge of each region's historical development will expedite understanding of contact between them.

The nature of the relationship becomes more complex in light of the number of political changes on the Korean peninsula. Silla, the kingdom that conquered Paekche and Koguryŏ with the help of Tang China, and which later drove out Tang forces to unify the peninsula, originally stemmed from the Saro tribe, one of the twelve tribes of Chinhan. Middle Korean is a direct descendent of the Silla language, and therefore, the Saro dialect. Lee Ki-Mun (1972), henceforth YKM, based on evidence gleaned from place names and surnames listed in the Samguk-sagi and the *Samguk-yusa*, hypothesizes that the languages of Paekche and Koguryo share considerably more apparent similarities to Japonic than to Silla. Considering the linguistic situation, the number of cognates found for Middle Korean, representative of one particular dialect of Silla, and Old Japanese, representative of 8'' century Nara dialects, is surprisingly large.

As mentioned in the introduction, language, ethnicity, and culture are three distinct entities. Instead of ignoring non-linguistic evidence because of this fact, we can gain much from ethnic and cultural information if we handle it correctly. One of the best known theories regarding contact between Japan and Korean is known as the Horserider Theory.

2.1 The Horserider Theory

Kida Sadakichi first proposed his hypothesis, "The theory of the common origin of the Japanese and Korean peoples" in 1921 (Hong 1994:32, Kirkland 1981:109). Egami Namio, a specialist in Asian history and North Asian nomadic confederacies, extended Kida's theory by claiming to incorporate archeological evidence at a symposium in 1948. The content of Egami's paper, later published under the title "The Japanese people: The origin of its culture and the foundation of the Japanese state," became known worldwide as the "horserider theory." Most works credit Egami as the founder of this theory, although Egami (1964) himself acknowledges Kida's work as the basis for it.

2.2 Egami's Claims

Egami asserted that the archeological evidence in Kyushu and the Korean peninsula indicates a sudden and dramatic change during the late Kofun, or Tumulus, period in Japan. He revised the traditional dates of the Kofun period and linked early Kofun with late Yayoi culture, describing this group as peaceful agriculturalists. Suddenly, the late Kofun period shows an explosion of warrior-culture artifacts, including weapons and horse trappings. Even dominant art forms, such as the clay ***haniwa*** surrounding burial tombs, depicted equestrian warriors. Egami contended that a peaceful agrarian culture would not import such a violent warrior culture on its own and that the archaeological change is too rapid to be indigenous; rather, evidence indicated "the subjugation and control of Japan by military force" (Egami 1973:60-63).

Egami avoids naming the warriors, making, instead, vague reference to Chin Kings mentioned in the Chinese record *Sanguo zhi*. He treats the invaders' origin as inconsequential, focusing instead on what happened after they entered Kyushu

and spread throughout Japan. In fact, he devotes much of his paper, in a seemingly unrelated prologue, to describing nomadic tribes of the steppes and the endless warring of the time. He becomes more specific after stating that invaders settled into the Korean peninsula, and relates important Korean-Japanese contacts to those described in the Nihon shoki and Kojiki. Egami claims that it was Emperor Sujin that crossed from Korea at Kaya [Jpn. Mimana] over to Kyushu, and that a few decades later, Emperor Ojin led his troops from Kyushu to Kansai to establish Yamato.

2.3 Ledyard's Thalassocracy

Egami's theory rocketed into the mainstream of scholarly discussion and even became accepted as fact in many circles. Other factions, especially groups with extreme nationalistic beliefs, dismissed the possibility entirely. In 1975, Gari Ledyard presented a modified version of the horserider theory. Unlike Egami, Ledyard clearly states who the invaders were: Puyŏ warriors that moved into the southern peninsula, conquered Paekche, and then swept into Kyushu to establish Yamato. Ledyard criticizes Egami for neglecting to fully examine the "Korean connection" in the origin of Yamato.

Ledyard bases his theory on the Nihon *shoki*'s account of a Wa [Japanese] invasion. According to this account, Wa invaded and conquered Silla in A.D. 369, along with other regions, which Wa grants to Paekche. Still other regions surrender spontaneously to the forces of Wa. Ledyard points out the implausibility of this account: **only** a **few years later, the *Nihon shoki* describes Silla *as* independent and not the** conquered kingdom described earlier. Many other points in the chronicle prove inconsistent and unlikely, such as the direction of the invasion itself, unlikely allies, and

the ability of a Wa force to subdue the powerful kingdoms on the Korean peninsula at that time.

2.4 Veracity of Historical Records

Ledyard reinterprets the Nihon *shoki*'s account as a borrowing from the ***Kudara*** ki [Paekche record]. Nihon shoki chroniclers often quoted from it directly and indirectly. According to the ***Kudara*** ki, Paekche conquered Mahan in A.D. 9. Ledyard points out that this is exactly 360 years, or six sexegenary cycles, different from the year 369, above, given in the Nihon shoki. Ledyard claims that the Nihon shoki writers borrowed the story to enhance and embellish Wa history in terms of conquests and power, renaming the victors and moving the conquest forward exactly six cycles.

Ancient historical documents give modern scholars great insight into the past; however, chroniclers often write history in favor of the ruler and kingdom they are commissioned by. Gardiner (1988) documents several instances of the Puyŏ, Paekche, Koguryŏ, and Silla foundation legends, where history has been rewritten to shine favorably upon the reigning kingdom, or to cover up embarrassing events. Foundation myths from Japanese sources also exemplify this protective pattern. For example, instead of a member of another tribe taking control of the kingdom, the new leader was found under a rock, came from a frog, emerged from an egg, came across the water on the back of a turtle, or descended from the gods in the heavens. The foreign influence of a new leader is by divine direction. The ancient historian justifies the losses by altering dates, names, and events so that they reflect favorably upon the ruling group.

Ledyard also introduces a unique concept of polity regarding these regions.

Instead of confining a political entity to land, Ledyard defines the whole territory including the water and islands as a thalassocracy, under the control of Wa. He bases his theory on the Kwanggaet'o Stele. According to the stele, Wa occupied Kaya, and therefore the Puyŏ conquered the thalassocracy by moving south through the peninsula and crossing over to Kyushu.

Ledyard agrees with Egami that Emperor Ōjin, also known as Homuda Wake, unified Japan (1975:250). Japanese accounts tell of how Ōjin's mother, Princess Okinaga Tarashi, after waging war in Korea, returned to Wa to give birth to her son. In order to keep from giving birth to Homuda in Korea, she placed rocks in her skirt until she reached Wa. Ledyard states: "[i]t is clear that Homuda's physical presence in Korea is implicit in the story, and that the legend-spinners were only able to get him born in Japan by gynecological legerdemain. Such were some of the problems of incorporating the traditions of the conquerors into the indigenous legends of Wa" (1975:247).

2.5 Edwards' Response

Walter Edwards (1983) gives a clear rebuttal to Ledyard's version of the horserider theory. He attacks Egami's terminology and division of the Kofun archaeological period, contending that the "sharp break" in the archaeological record does not exist. He accuses Egami of "sleight of hand" (1983:285) in his archaeological divisions, and contends that the archaeological record manifests a more continuous influx of continental artifacts, as opposed to a dramatic wholesale importation.

Edwards' hypothesis brings a new perspective to the historical and linguistic scenario. Rather than a single hostile invasion, he sees a constant and significant wave

from a technologically superior culture that absorbed the existing culture in Kyushu. He also contends that the relationship between Kyushu and the peninsula was more cooperative than hostile, and cites metallurgy as support for his argument. Up until Late Kofun, Japan depended upon Korea as a source of raw iron. Metal techniques, such as riveting and hinging, suggest the sharing of advanced continental metal technology (1983:289).

Edwards states that it would be "…naïve to view Japan as totally cut off from contact with continental culture at any time after the beginning of the Yayoi period. Ever since the introduction of the agriculture complex based on rice into Kyushu in the third century B.C., Japan had been receiving, either directly or indirectly, the influence of the more advanced mainland cultures" (1983:288). Other archaeologists, such as Gina Barnes (1988) and Colin Renfrew (1987), continue in this vein of interpretation of archaeological artifacts as representing peer relations and cooperative contact rather than strictly invasive campaigns.

Edwards counters Ledyard's 'thalassocracy of Wa', where the polity of Wa extended from Yamato to Kaya [Mimana], and Wa's alleged invasion of Kaya, by stating that it is "…a very serious question as to whether Japan was itself centralized enough at the time to conduct such an overseas campaign" (1983:270).

2.6 Hong's Perspective

In his article, Ledyard criticized Egami for the seemingly unrelated lengthy prologue about the movements of nomadic tribes. Hong perceives Egami's apparent digression as instead a conscious attempt to divert readers from any close connection to Korea proper. Egami refers to vague nomadic continental people that only stop over in Korea on

their way to Japan, the final destination. Hong contends: "...Egami's argument represents yet another effort to conceal direct Korean influences by referring to a mythical North Asian horseriding people and alluding to the traits of the Arabs, the Normans, and the Mongols. And yet, even as it stands, Egami's theory shocked most Japanese historians and pro-Japanese Western scholars" (1994:36).

Ironically, Hong criticizes Ledyard for also missing the 'Korean connection.' Hong contends that Ledyard's focus on the Puyii as the invaders eliminates direct Korean influences. Hong claims that it was the Paekche, not the Puyii, who took over the Yamato infant state and brought Japan into political maturity. Hong views the hypotheses of Egami and Ledyard as attempts to de-Koreanize the entire event, by portraying the Korean peninsula as only a resting stop. Hong acknowledges that Paekche was of Puyŏ origin (1994:64-65), but states that they had reached the Paekche region in 18 B.C. In other words, the Paekche, of Puyii origins, had been established in the peninsula for several centuries, as one of the early kingdoms of Korea.

Hong notes that no record or account exists regarding an invasion of Paekche by the Puyii, or any nomadic tribe during or before the fourth century (1994:67). Other contemporaneous invasions, such as the destruction of the Han colony of Le-lang by Koguryo in A.D. 313, have clear historical references, but there are none for a Paekche invasion. Ledyard claims that the invasion was so complete and devastating that no records were left behind. In response to the notion of complete obliteration without a trace, Aikens and Higuchi (1982:336) challenge the entire horserider theory in the following passage:

> It has been suggested that the wave of continental influence that entered Japan during the mid-Kofun times came about...as the result of an invasion by equestrian warriors from somewhere in central Asia. These would have been conquerors who, like the army of Genghis Khan in thirteenth-century China, dominated the country for a time, only to be ultimately absorbed into it with a complete loss of their former identity. This thesis...depends without warrant on unknown tribesmen emerging from an unknown land for unknown reasons, and then, having conquered Japan (and Korea on the way), melting into the scene so thoroughly that no document or tradition of their war conquest was left behind. It is, in short, an implausible theory, which only raises more questions than it bids to resolve.

2.7 Prehistoric Contact Conclusions

It is clear that an unrelated race came in great numbers and forever changed the course of Japanese history. The question that has been argued here is the degree of contact, how quickly the changes occurred, the origin of the immigrants, and the nature of the relationship between the immigants and the indigenous people. It is the opinion of this author that the waves of immigrants coming in from the Korean Peninsula were indeed greatly advanced in the art of war, in tools and weapons, and equestrian skills. It was not, however, a single wave of mounted warriors that came in one fell swoop to conquer the technologocially inferior inhabitants of Japan.

In the next section, we will examine the archaeological evidence, which indicates that the migration occurred over a thousand-year period, beginning approximately 2500 years ago. Rather than strictly a hostile take-over, it seems clear that there were long engagements of mutual cooperation, indicated by the racial mixing that began almost immediately. This is not to say that there were no skirmishes or battles of resistance, but it was not the one-time armed invasion portrayed by the Horse-Rider Theory.

More realistically, there were likely moments of cooperation and mutual

appreciation, and other times of conquering and resistance. **A** possible parallel example that we can look at is the influx of Europeans into North America. Europeans from different areas immigrated over an extended period of time into the region for various reasons, either to escape something left behind them, or the draw of a new land ahead of them. During this long migration, there were many treaties and moments of mutual cooperation. The Europeans brought new technology and advanced weapons of war, and the Native American Indians brought knowledge of the land and familiarity with the seasons, wildlife, and terrain.

3.0 Archaeological Evidence Indicating Contact

3.1 The Japan Archipelago

3.1.1 Jomon Archaeological Evidence

The earliest period in Japan's history is known as Jomon. Jomon itself has been divided into several subperiods. For purposes of this dissertation, the following dates are accepted (Tsuboi 1987:2):

Table 2. Jomon Period Dates

Incipient Jomon	12,000 - 10,000 B.P.
Initial Jomon	10,000 – 7,000 B.P.
Early Jomon	ca. 6,000 B.P.
Middle Jomon	4,500 – 3,500 B.P.
Late Jomon	3,500 B.P. – 3,000 B.P.
Final Jomon	3,000 – 2,400 B.P.

Archaeological evidence indicates direct contact between the southern peninsula and northern Kyushu possibly as early as Initial Jomon. Applique pottery, which preceded all other types in the stratigraphy of the Early Jomon period, appears both in northern Kyushu and southern Korea. Dated at 10,750 B.C., pottery shards excavated at Tsushima, the island of Japan closest to Pusan, and the Tongsamdong site on Yongdo Island in the Bay of Pusan clearly show contact (Kim 1983:13-14). As expected, disagreement abounds regarding which region influenced the other. Shards found in Japan actually appear to pre-date those found in Korea, indicating that Japan's applique pottery is earlier; new excavations, however, may later reveal the reverse scenario. Regardless of which direction the influence came from, the important fact remains that by this period, confirmed direct contact existed between the regions and technological innovations were shared back and forth.

Further evidence indicates the continuity of the relationship. Japanese Todoroki pottery, dated at the latter half of the fifth millennium B.C. (Kim 1983:15), also appears at both sites. Obsidian spalls, from known quarries in northwestern Kyushu, were found at Layer Four of the Tongsamdong site. Such obsidian mines do not exist on the Korean peninsula, except on the northern border near Mt. Paektu. Sobata pottery shards from late Early Jomon were recovered from Layer Three of the Tongsamdong site, dated at the second half of the fourth millennium B.C. (Kim 1983:16). Unlike other Jomon types of this period, Sobata pottery has distinctive short, bold lines. Sobata pottery distribution is limited to the northeastern coastal regions of Kyushu. Further, masks made from scallop shells with three punched holes have appeared both in northern Kyushu and at Tongsamdong.

Nishibaru pottery, a Late Jomon period type, dates back to 1850 B.C. in Layer One at Tongsamdong; in Japan, this pottery ranges from 1720 to 1280 B.C. Based on the above archaeological evidence, Kim asserts that "(c)ontinuous marine traffic between Korea and Japan throughout the Neolithic period as early as the fifth millennium B.C. or possibly earlier is proved by the discovery of intrusive Japanese shards and obsidian" (1983:18-19).

At the Magarita site, a Final Jomon site in Fukuoka, Japan, Korean style stone-covered graves were recovered. Also found were cooking pots with handles the same as found in many Korean sites, along with polished stone daggers and arrowheads manufactured on the peninsula. The Korean objects were mixed in with traditional Jomon chipped and polished ax and adzes. Agricultural implements were also found at the Magarita site, pre-dating the appearance of Yayoi Itazuke pottery.

3.1.2 Yayoi Archaeolonical Evidence

It should be noted that, based on archaeological evidence, Jomon culture reached from Hokkaido to Okinawa, whereas Yayoi culture extends only to the Tohoku region in northern Honshu, and to Kyushu and the Satsunan Islands in the south. This evidence correlates nicely with linguistic, cultural, and anthropological evidence. The Yayoi period shows continued contact between the Korean peninsula and Kyushu, Japan.

The Yayoi period marks the initial use of metals in Japan and wet rice cultivation. Bronze and iron objects appear almost simultaneously in Kyushu. Early metal objects were continental in origin, with casting done later on in Japan. Iron casts formed various objects, from practical items, such as knives, axes, and arrowheads, to decorative items, such as bells and ceremonial daggers. Tsuboi (1987:37) states that Japanese Yayoi artifacts were of the same casts as those found on the Korean peninsula. Ornamental bronze bells found in Japan sites are somewhat smaller than those made on the peninsula; the patterns and shapes of the bells, however, display a similarity too close to be considered indigenous coincidence.

Agricultural tools, such as axes and adzes for felling trees, and reapers for harvesting rice, show contact with the peninsula. Adzes found at the Nabatake site in Karatsu, Saga Prefecture, a very late Jomon site, based on their rock composition, were brought in from the Korean peninsula (Tsuboi 1987:37,42). In addition to tools, this period shows the sudden appearance of the loom and rapid diffusion of woven cloth.

3.1.3 Kofun Archaeological Evidence

The Kofun period, as mentioned earlier, is the age of the Horserider theory. Egami claimed that during this period, a sudden invasion of horse-riding invaders swept

into Kyushu and as far as the Kanto plain, as evidenced by funerary articles, weapons and horse trappings. The appearance of equestrian warrior artifacts stands irrefutable. Questions, however, remain regarding the timing of the introduction of these artifacts. Rather than a single invasion, Vargo argues for multiple waves of influence, starting in Yayoi and extending up to historic times (1982:1). In other words, the influx was more immigration than invasion, and extended over a great period of time, rather than a single event in history (cf. Hanihara's theory).

Kofun culture shows artifacts markedly different from those of the Yayoi culture. Evidence for horses does not exist in Yayoi sites, yet abounds in Kofun sites. ***Haniwa,*** large clay figurines surrounding Kofun tombs, depict equestrian warriors wielding swords and dressed in armor, and horses with armor, bells, and bronze ornamentation. Wall paintings of a few Japanese tombs are similar to those of the Koguryo kingdom wall paintings, both showing a warrior culture (Vargo 1982:156).

Given the geographical proximity of the Korean peninsula and Kyushu, independent indigenous development of such strikingly similar warrior cultures seems highly improbable. Egami's description of this culture is accurate, but his time frame is too limited. Multiple waves of immigrants moved into Kyushu, bringing with them cultural and technological advances. Vargo argues that not only warrior artifacts, but rice cultivation, iron, early political systems, religious practices and customs were introduced by immigrants coming from the Korean peninsula (1982:157).

3.2 Prehistoric Korea

3.2.1 Neolithic Culture

Neolithic Culture appeared on the peninsula around 4000 B.C. Sites of this

period are characterized by polished tools and specific pottery styles. Lee (1984:2) claims that the Neolithic people where probably the same ethnic stock as the Neolithic culture in Siberia at that time.

Neolithic pottery of this area is characterized by geometric designs, referred to as "comb pattern pottery", gray in color, and V-shaped bottoms instead of flat. The scope of this style of pottery is extensive: identical pottery remains can be found in sites not only throughout the peninsula, but in the Maritime Territory of Siberia, the Amur and Sungari River basins of Manchuria, and even in Mongolia (Lee 1984:3).

As for the possible relationship of these early peoples to the modem inhabitants of the Korean Peninsula, Lee has this comment regarding ethnic stock (1984:3):

> Neolithic culture in Korea thus experienced three major stages of development as these three successive waves of migration spilled down into the peninsula. Unlike that of Korea's Paleolithic people, the ethnic stock of the Neolithic people is seen as continuing unbroken to form one element of the later Korean race. It is believed, then, that in the course of a long historical process these Neolithic peoples merged with one another and, combining with the new ethnic groups of Korea's Bronze Age, eventually came to constitute what we now think of as the Korean people.

Dwellings from the Neolithic age are often in clusters, indicating the formation of a community life. Burial is presumed to have been communal graves, and animistic beliefs were the religion of the day. It is also thought that descent was determined by the lineage of the mother, as is seen later on in the Koguryŏ kingdom.

3.2.2 The Bronze Age

The use of bronze in the Korean peninsula is dated around the eighth or ninth centuries B.C., with scholars arguing for both a later and earlier date. It is again likely that

the Bronze Age people were ethnically different from the Neolithic inhabitants. Although sites are usually separate and filled with very different remains, indicating a very different lifestyle, there are sites where both styles of pottery have been found. This would indicate a transition period between the two peoples and cultures. Contact is also established because of the exchange of styles and motifs; for example, geometric designs start to show up on bronze daggers and mirrors. As the Bronze Age continues, however, it is clear that the Neolithic culture has been absorbed and comb pattern pottery completely disappears from the later Bronze Age sites.

The people of the Bronze Age lived in rectangular pit dwellings, grouped in settlements. The predominant forms of burial of this age were dolmen and stone cist tombs. There are two styles of dolmen: a northern and a southern style, differing in construction. Interestingly, burial objects in this period include polished stone daggers more frequently than bronze items.

3.3 Archaeological Conclusions

In conclusion, archaeological evidence shows a migration from the Korean peninsula into Kyushu in the Yayoi period. This migration brought new technology and artifacts, commingling with and eventually replacing those of the indigenous population, with Northern Kyushu as the main point of entry for the migration. Several Jomon sites show Korean objects mixed in with traditional Jomon artifacts. Tumulus-period sites show multiple waves of influence from a technologically advanced warrior culture. Archaeological evidence indicates contact over a long period of time, with culture from the Korean Peninsula merging with and dominating the indigenous culture.

4.0 History of the Korean Peninsula

4.1 Early Korean States

In order to understand the linguistic evidence, one must also have an understanding of the history of this area. We must keep in mind that when we refer to Korea, we are talking about a political entity that has existed only in recent history. The peninsula itself has been occupied and claimed by various groups throughout history, and it was only after the Silla state united the peninsula for the first time that one could refer as a whole to the political region now known as Korea.

4.1.1 Walled-town States

Out of the Bronze Age culture, walled-town states developed. Lee claims that "These walled-town states were the earliest form of state structure to exist in Korea, and accordingly the origins of state formation in Korea are to be sought therein" (1984:13). These walled-town states developed into societies that are important to our understanding of the Korean peninsula. To the north of Korea proper, in the Sungari river basin, the Puyŏ arose; in the middle reaches of the Yalu, the Yemaek; and in the Liao and Taedong river basins, Old Chosiin. In the Hamhŭng plain on the northeast seacoast, Imdŭn arose; in Hwanghae province, Chinbŏn; and Chin south of the Han River. By the fourth century B.C., Chinese records have documented the existence of these states (Lee 1984:13).

Old Chosiin was the most developed of these early states; as it grew, it joined with neighboring walled-town states to form a single confederation. Political structures were also evolving rapidly. Early Old Chosiin leaders held both political and religious duties

and the leaders themselves, called tan *'gŭn wanggŏm*, were supposed to have descended from the sun god, Hwanin (Lee 1984:14). In Chinese records, it is documented that the leader of Old Chosŏn later took on the name wang, the Chinese term for 'king'.

4.1.2 The Iron Age

In addition to political terms and socio-political structures, iron culture was also being imported from China. In addition, a second, bronze, culture of Scytho-Siberian origin was also simultaneously entering the peninsula. Lee claims that: "the Taedong river region thus became a reservoir of the new metal cultures, and from there they soon came to spread in all directions. Moreover, these cultural waves went on to cross the sea and penetrate even into Japan, where they gave rise to the Yayoi culture" (1984:14).

Artifacts from the Iron Age show a dramatic increase in the range of weaponry, horse trappings, and agricultural devices available. In addition to these artifacts, strong Chinese influence is apparent in the Chinese-style stoneware that appears in these sites (requiring higher firing temperatures) and Chinese "crescent knife coins" (Lee 1984:15)

Pit-dwellings were still prevalent in this age, but *ondol* heating devices (flues under the floor for circulating heat), and ground level houses began to emerge. Earthen tombs and jar-coffin interments were the modes of burial; in jar-coffin interments, two large urns covered the lower and upper part of the corpse and the mouths of the urns were facing one another.

4.1.3 Wiman Chosŏn

Around 300 B.C. the Chinese state of Yen invaded the Liaotung Peninsula and took control of the area. Not long after this, however, Chinese leadership itself was

undergoing intense and radical change, eventually resulting in the newly unified Chin empire falling to Liu Pang, the founder of the Han dynasty, in 206 B.C.

Out of the political turmoil emerged a powerful refugee named Wiman, who drove out the regional Chinese ruler and established himself as king of the new kingdom, Wiman Chosŏn. From descriptions of his hairstyle and dress, it is believed that he was from Old Chosŏn and not the fallen state of Yen. In addition, he chose to use Chosiin in the name of his kingdom. Wiman continued to expand his territory and his military strength. The ability to push back Chinese invaders indicated a military organization and weaponry equal to that of the Chinese. Eventually, however, the Chinese prevailed, and in 108 B.C., the Wiman Chosiin capital Wanggŏm-sŏng (modem P'yŏngyang) fell to Han China.

4.2 The Han Commanderies

In the region of the fallen Wiman Chosiin, Han China established three commanderies: Lo-lang, Chen-fan, and Lin-t'un; in the former Ye territory, Hsüan-t'u was formed. These commanderies were under pressure from local opposition and eventually succumbed to emerging entities. For example, in 313 A.D., Lo-lang fell to Koguryŏ, and Paekche expanded northward, taking over Tai-fang territory. Although regional groups took over from the Chinese commanderies, there was a substantial residue of Chinese influence.

4.3 The Confederated States

Below we will examine some of the confederated states that emerged from the

demise of the Chinese commanderies.

4.3.1 The Puyŏ

The Puyŏ kingdom emerged in the Sungari river basin in Manchuria. The Puyŏ lay between Koguryŏ in the northeast and the nomadic Hsien-pei in the north; in order to check these two neighbors, China formed an alliance with the Puyŏ, who were for their part eager to form relations with the Chinese due to their hostile encounters with the Hsien-pei and the Koguryŏ. Records of Puyŏ envoys being sent to China start in 49 A.D. And despite occasional border clashes with Chinese commanderies, the Puyŏ held a close relationship with the Chinese, including marriage ties at the end of Later Han (Lee 1984:22). Although the Puyŏ were able to survive through the many fierce attacks from surrounding enemies, they were eventually entirely absorbed by the Koguryŏ.

4.3.2 The Koguryŏ

According to legend, a leader of the Puyŏ called Chumŏng and his followers formed the Koguryŏ state in 37 B.C. in the Yalu and T'ung-chia river basin. In the fourth century B.C., however, an earlier stage of the Koguryŏ had been developing strength in this area; these people were known as the Yemaek. It is assumed, therefore, that the eventual Koguryŏ royalty was a coalescence of the early Puyŏ rebels and the powerful local Yemaek leaders. The Koguryŏ kingdom, forged in an era of fierce clashes with warring

states such as China, developed a reputation for military expertise. The skilled warriors of the Koguryŏ ruling class, even in times of peace, constantly trained in combat and military exercises. They had the reputation in their day of attacking their neighbors to gain land, people for workers, animals, and the general spoils of war; instead of making it on their own, they were known for taking what others had developed.

The early stage of the Koguryŏ kingdom developed from smaller independent entities surrendering to the Koguryŏ, their leadership becoming like provincial administrative units. Included in the absorption were various walled-town states, such as the "Na" entities: Kwana, Chona, Hwanna, Chuna, and Yŏnna (Lee 1984:28). As the Koguryŏ subdued more states, their power base grew and their reputation preceded them in battle. Even the walled-town states of the Okchŏ and Eastern Ye were under direct dominion of Koguryŏ (Lee 1984:29).

4.3.3 Chin and the Samhan States

At the inception of the Koguryŏ state, the south was also going through many changes. South of the Han River basin, as the earlier state of Wiman Chosŏn waned in power, the state of Chin was emerging around the second century B.C. The Chin state saw the importance of the Chinese metal culture and imported iron usage and knowledge. Iron culture altered the development of this state, through the importation of metal culture, arts, government, and society. As the Chin state grew, it began to disintegrate into three political entities known as the Sarnhan, or the Three Han: Mahan, Chinhan, and

Pyŏnhan. Within these three states, there were 78 smaller walled-town states according to Chinese records. The Mahan developed into Paekche.

4.4 The Three Kingdom Period

Out of the 78 smaller walled states of the Samhan, there emerged two separate confederations that later amassed great power, Paekche and Silla. At the same time, the already developing force of the Koguryŏ continued to grow in power. Over the next few centuries these three kingdoms of Paekche, Koguryŏ, and Silla rose and fell in strength; below we will briefly look at their emergence and the historical and cultural impact that each made on the peninsula.

4.4.1 Paekche

Paekche was originally one of the small walled-town states of the Mahan, one of the major states of the Samhan, as mentioned above. The original walled-town state of Paekche was located south of the Han River, in the region of modern Kwangju. The Paekche kingdom developed from this original group, whose founder-king is said to have been Onjŏ. It is not clear exactly when Paekche emerged as a confederated kingdom, incorporating neighboring walled-town states, but by 246 A.D., the Chinese kingdom of Wei had launched a severe attack to try to disrupt this consolidation of new power in the Han river basin. The strength of the new Paekche entity is shown in their repulsion of the attack, resulting in the governor of the Tai-fang cornmandery being killed in battle. The Paekche leader of this period is King Koi and it is thought that this is Kui, the man celebrated in Paekche ceremonies as the founder of the kingdom.

Paekche continued to centralize and strengthen. In 369, King Kŭn Ch'ogo (346-375) destroyed the Mahan state from which Paekche had emerged, and in 371, Paekche pushed into Koguryd territory and killed the reigning Koguryd king. Kŭn Ch'ogo ordered the scholar Kŏhŭng to compile a history of Paekche, or Sogi; it was at this time that Paekche was at its height of power and territorial expansion. It had close ties with the people of Wa in the Japanese islands, and it is believed that many Paekche people migrated to Wa. The pendulum of power swung the other way, however, as Koguryd recovered its power and began to regain previously lost territory. In 433, Paekche and Silla formed an alliance against Koguryŏ in order to prevent any more loss of power, but it was not enough to stop the formidable Koguryŏ force. In 475, Koguryd beheaded the reigning King Kaero and took the Paekche capital at Hansŏng (modern Kwangju).

4.4.2 Koguryŏ

To understand the rise and fall of Koguryd, we will continue from the previous section concerning it. As mentioned above, the campaigns of earlier Yen and Paekche had ravaged the once powerful Koguryd. Thus, after losing so much ground to Paekche, the kingdom was restructured in order to stop the campaigns from taking any more ground and to turn the tide. King Kwanggaet'o (391-413) was very successful in this endeavor. Kwanggaet'o's goal was to pursue not only lost territory, but to expand Koguryŏ's domain. According to the stele at his tomb in Kŭngnae-song, Kwanggaet'o took sixty-four domains and over 1,400 villages. Some of his notable campaigns include those

against Liao-tung, Paekche, and the Sushen, a Tungusic tribe to the northeast (Lee 1984:38).

Kwanggaet'o's successor, King Changsu (413-491), built upon Kwanggaet'o's military successes and brought Koguryŏ to its height of cultural, political, and economic prosperity, while maintaining military superiority. Changsu was masterful in diplomatic strategies; for example, he held relationships with both the Northern and Southern dynasties in China so that he could keep both in check by capitalizing on their antagonistic relationship. In 427 A.D., Changsu transferred the capital south to P'yŏngyang, posing a greater threat to Paekche and Silla. And despite joining forces with Silla, Paekche's capital fell to Koguryŏ in 475.

4.4.3 Silla

Silla originated from the walled-town state of Saro, where six clans ruled. Out of these six ruling clans, the leadership of Saro was seized and consolidated by T'arhae (circa 80 A.D.), a metalworker and shaman of the Sok clan. The state of Saro began forming a confederation with neighboring walled-town states and gradually gained strength. As Saro evolved into the kingdom of Silla, King Naemul(356-402) formed alliances with Koguryŏ against Paekche. The direction of this alliance was completely reversed less than a hundred years later.

In the latter half of the fifth century, Silla had expanded its power base by setting up post stations throughout the region for central control and trade among the locales. It secured its alliance with Paekche through marriage ties to the Paekche King Tŏngsŏng. The two countries then carried out many joint military operations together.

King Chijŭng [r. 500-514] encouraged the introduction of advanced agricultural techniques, such as plowing by oxen. In addition, the kingdom readily absorbed advanced political structures from China, as evidenced by significant political development and the Sinification of names, such as *wangi* for 'king' and declaring the official name of the country 'Silla', rather than the native name of *Maripkan*. Also at this time, the Pak clan became the primary source of Silla's queens, which will have significance later on.

King Pŏphŭng [r. 514-540] continued to develop this centralized aristocratic state, based on the previous political advances of King Chijŭng: he developed a code of administrative law in 520 A.D., instituting the *kolp'um*, or 'bone-rank' system, adopted Buddhism as the state religion around 530 A.D., and created an independent era name, *Konwon*, or 'Initiated Beginning' in 536.

With all of these political advancements and with internal fortifications, it was only a matter of time before Silla adopted an expansionist ideology. Pŏphŭng conquered Pon Kaya in 532, and together with Paekche's King Siing, Silla attacked Koguryŏ in 551, conquering ten counties in the upper Han river basin region. Then Silla's King Chinhŭng turned on Paekche and drove them out of the lower Han region. King Sŏng attacked in retaliation in 554, but was felled in battle at Kwansan (modem Okch'ŏn). Silla went on to conquer Tae Kaya in the south in 562, and advanced further into the northeast plains of Hamhung.

4.4.4 Kaya

Originally one of the twelve entities of Pyŏnhan, Kaya emerged in the lower reaches of the Naktong River. This area did not fall under the rule of the Chin, but formed an independent entity through confederation. From this federation, emerged Pon ('original') Kaya and Tae ('great') Kaya. Pon Kaya and Tae Kaya eventually joined forces with the other Naktong region walled-states to create the Kaya federation.

Pon Kaya, located at the mouth of the Naktong river, engaged in numerous maritime contacts from the north with the people of Ye and to the south with the Wa in Japan. Kaya's maritime skills enabled it to hold distant ties, but the pressure of Silla and Paekche on either side prevented it from developing much further. Eventually, Pon Kaya fell to Silla in 532 and Tae Kaya followed in 562; and along with Silla's absorption of the other petty states in the Naktong river basin, the Kaya federation came to an end.

4.5 Silla's Unification of the Peninsula

Although Paekche had been badly damaged, it was starting to make a resurgence in the Silla-Paekche border campaigns. In order to suppress this newly recovered force in Paekche, Silla's King Kim Ch'un-ch'u turned to its former enemy, Koguryb, for military assistance against Paekche. Koguryŏ's King Yon Kaesomun was agreeable to the idea, but demanded the Han River area in return for its help. Not willing to give up any territory, Silla risked another hazardous strategy and turned to T'ang China with a plan to first subdue Paekche, and then overtake Koguryŏ by attacking from the north and the south in concert, to which T'ang China agreed.

In 660, Silla and Chinese Emperor Kao Tsung joined forces and attacked the

Paekche remnant. With the fall of the capital at Sabi and the surrender of King Uija, the kingdom of Paekche perished. There was a native movement to restore Paekche royalty to the throne upon the return of the Paekche Prince P'ung from Japan (Wa). Briefly, the restoration/resistance movement gained success and retook over two hundred strongholds. Internal power struggles ensued, however, between Prince P'ung, Poksin, another member of the Paekche royal family, and a Buddhist monk Toch'im. Poksin murdered the monk Toch'im, and was in turn murdered by P'ung. Observing this internal warfare as a golden opportunity, Silla crushed the main restoration stronghold at Hansan, whereupon the rest of the resistance forces surrendered.

After completing the conquest of Paekche, Silla and T'ang redirected their attacks towards Koguryŏ. Although Koguryŏ had been a ferocious enemy in the past, it had been weakened from years of constant warfare. When King Kaesomun's rule ended, Koguryd was thrown into a vicious internal power struggle among his sons and younger brother. The outcome of this struggle ended in the eldest son surrendering to T'ang and the younger brother going over to Silla. This gave every advantage to the Silla-T'ang strategy and in 667, Silla and T'ang coordinated an assault and succeeded in 668 in conquering Koguryd. As with Paekche, there was a brief resurgence of a Koguryŏ resistance movement, but again, murder and in-fighting brought it to its own end.

Once the great kingdoms of Paekche and Koguryŏ had been obliterated, T'ang and Silla were left to face one another. Both sides had the ultimate intention of unifying the peninsula after these campaigns had succeeded. T'ang had plans to add the entire peninsula to its domain and had already established five commanderies in the former

Paekche region. It cleverly sought to win over the loyalty of the indigenous Paekche people by appointing Puyŏ Yung, a son of the previous Paekche King Uija. T'ang thus gave the appearance of encouraging nationalistic feelings for the crushed Paekche Kingdom, while remaining the power behind Puyŏ Yung. T'ang set up the same false appearance of relinquishing control in conquered Koguryŏ areas. The goal in both regions was to capture the loyalty of the local people and to thwart Silla's designs to control the regions.

In effect, once the conquests were over, Silla had been relegated to a position no higher than the conquered Koguryŏ or Paekche. Unwilling to become next in line to fall, Silla launched an attack on T'ang forces. After a series of battles in the Han river basin area, Silla succeeded in 676 in forcing T'ang out. If the T'ang had succeeded, the whole of Manchuria and the Korean Peninsula would have been under Chinese rule, forever changing the outcome of what modern Korea is today. Instead, Silla was able to drive back the T'ang forces and maintain independence. Thus, Silla's ability to drive out such a seemingly invulnerable force "laid the groundwork for the independent historical development of the Korean people" (Lee 1984:71).

4.6 The Founding of Parhae

Although Silla's unification of the peninsula laid the groundwork for what is now modern Korea, Silla did not control the entire region. Refugees from Koguryŏ in the northern regions of the fallen Koguryd formed a new state outside of Silla's control. The new state of Parhae [Chinese: Po-hail now developed in south central Manchuria by the Sungari River, the same area where ancient Puyŏ once flourished. A former

Koguryij general, Tae Cho-yŏng, later King Ko, founded the Parhae kingdom in 713. Earlier, he overcame the independent Chinese state of Chin in 698 by taking advantage of an internal struggle, and attacked during an insurrection of a group of Khitan people in that state.

General Tae Cho-yŏng ruled over not only a group of ethnically Koguryŏ people, but also a large population of Malgal, who were a semi-nomadic Tungusic people scattered over Manchuria, Siberia, and northeast Korea. The Malgal were once subject to Koguryŏ in Manchuria, and now came under Parhae rule. Despite the large population of Malgal in Parhae, the Parhae ruling class was exclusively comprised of Koguryŏ ethnicity. This fact would influence the legacy of Parhae after its demise centuries later.

Parhae exerted pressure on Silla, so much so that Silla erected a defensive wall along its northern border. And so, as it was in the Three Kingdom period and before, friends became enemies, and friends again, depending upon the need at the time. Given Parhae's mounting strength, Silla joined hands with its former enemy T'ang to strike an offensive against Parhae. Parhae's King Mu (719-737) wisely established diplomatic ties with the Tujüe, a people north of China, and with Japan. In so doing, Parhae was able to successfully prevail against the powers of Silla and T'ang. In fact, Parhae actually expanded into T'ang territories. At the same time, it began to adopt T'ang institutions and culture.

Parhae reached its zenith in territorial and cultural achievement during the reign of King Sŏn (818-830). Although it introduced vast amounts of Chinese culture and

institutional models, Koguryŏ elements still remained strong. Many Parhae artifacts, including the ondol heating system by means of flues laid under the floor, show a distinct Koguryŏ flavor. If Parhae had survived, we would certainly know more today about the Koguryŏ people and culture.

Parhae's weakness stemmed from its very social make-up, where the ruling class was of Koguryŏ descent and the subject class from the native Malgal people. This internal friction allowed the Khitan to topple Parhae easily in 926. The transmission of Parhae culture became nearly impossible since the ruling class, of Koguryŏ ethnicity, took refuge in the new state of Koryŏ, leaving the indigenous Malgal people to the task of perpetuating a culture that was not originally theirs to begin with. The Malgal people continued on for two more centuries under Khitan rule, when they eventually drove out the Khitan and formed their own state, the Jurchen Chin dynasty, emerging as a great force over all Manchuria and the northern half of China.

As mentioned above, the ruling class of Koguryŏ came over to Koryŏ when Parhae fell. However, the Koguryŏ ruling class was unable to ever play a large part in the new Korean state. And so, even though Parhae and Silla both occupied similar sized territories and power, Silla became the legitimate standard bearer of Korean history. Thus we are left with only sparse relics of Koguryŏ influence in modem Korean language and culture. It is the Silla language that exclusively became Middle Korean and eventually, modern Korean.

4.7 Historical Conclusions

From examining the history of the Korean Peninsula, we can see that it has undergone great political upheaval over the centuries. Such political movement undoubtedly had an effect on the linguistic situation. Several areas in the Korean Peninsula had ties to the Japanese Islands, and migrants from several different areas came into Japan. Specifically, Yamato, or Wa, had close, if not genetic, ties to Paekche and Kaya. Silla had close ties to Izumo; in fact, it is said that the Izumo deity Susuno-wo came from Silla.

When Silla unified the peninsula, it became the sole linguistic survivor recorded in Middle Korean documents. When Silla took over the regions of Kaya and Paekche, the Silla language also became dominant; it is likely, however, that some Kaya and Paekche vocabulary were brought into the Silla language through dialect borrowing. I hypothesize that there were two likely scenarios for dialect borrowing: 1) Izumo borrowing Silla elements; and 2) Yarnato and Silla borrowing Paekche / Kaya elements. This will be discussed in greater detail when I introduce the main arguments in Part C.

5.0 Japanese Mythology and Ancient Records

Regarding the prehistory of the region of the Japanese Archipelago, we have little more than oral histories that have been written down much later. As is the case with any story retold again and again over time, the 'historical' records have been modified and exaggerated to the extent that the stories have become largely mythological in nature. Selected stories were chosen and reworked to give legitimacy and to fabricate political favor for the particular political group writing them.

5.1 The *Koiiki* and the *Nihon Shoki*

The ***Kojiki,*** comprised of three books, was compiled from two earlier documents, one of genealogies and the other, of historical events. The first book deals almost entirely with mythological explanations, describing the colonization of the Japanese islands. The second book begins with the tale of Jimmu, describing his advance from Kyushu to the east, where he is said to have established Yamato. The third book gives details about the remaining reigns of the sixteenth to thirty-third emperors and empresses, ending in **641.**

Wontak Hong, in his **1988** work on the relationship between part of early Korea and Japan, that is, between Paekche and Wa, argues that the ***Nihon shoki*** and the ***Kojiki*** were amended and rewritten in order to establish the legitimacy of the Yamato empire. The Court noble O no Yasumaro presented the ***Kojiki*** and then ***Nihon shoki*** to Genmyō and Genshō, having "corrected" the so-called "errors in the old words" and the "misstatements in the former chronicles" (Hong 1988:220).

In the ***Kojiki*** we are actually informed of the corrections; it tells how Temmu [A.D. **672-6861** lamented as follows:

"I hear that the chronicles of the emperors and likewise the original

> words in the possession of the various families deviate from exact truth, and are mostly amplified by empty falsehoods. If at the present these imperfections be not amended, ere many years shall have elapsed, the purport of this, the great basis of the country, the grand foundation of the monarchy, will be destroyed. So now I desire to have the chronicles of the emperors selected and recorded, and the old words examined and ascertained, falsehoods being erased and the truth determined, in order to transmit [the latter] to after ages" (As quoted in Hong, 1988:219).

By recording this decision of Temmu's, the ***Kojiki*** scribe has inadvertently let the reader in on the fact that changes will be made to suit the needs of the current Yamato regime. In A.D. 670, Yamato rulers officially changed the name of their country from 'Wa' to 'Nippon' (Hong 1988:219).

The process of rewriting the histories began around A.D. 682, until the completion of the ***Kojiki*** in A.D. 712 and the ***Nihongi*** in A.D. 720. This was done in order to establish and legitimize the imperial rule by creating a mythological reign that goes back into mythological time, starting from the Sun Goddess, Amaterasu Ōmikami. Because of this, Japanese Nationalists even today can claim an imperial line with a genealogy dating back not only to the origin of the Japanese state, but even to the gods.

Despite the fabrication and rewriting of history, however, the authors of the ***Kojiki*** and the ***Nihongi*** left some obvious clues as to what was really happening during the early history of the Yamato state. Hong reexamines these texts from a Korean perspective to come up with an interesting and compelling hypothesis regarding the origins of Yamato Wa. Hong sees the mythologizing of the early oral traditions as a way to hide the origins of the early rulers, namely Paekche immigrants of royal status. Instead of disclosing their real origin, the early rulers and leaders became gods descending from heaven, arriving on rock boats or turtle boats from somewhere out in the ocean, or appearing from behind

rocks. Explaining that a local ruler/deity appeared in such a fashion excuses the author from naming the true place of origin.

5.2 Amaterasu, Jimmu and the Founding of Yamato

According to the mythological account of the Kojiki and Nihongi, the gods of heaven descended to rule the land of Izumo and Wa, conquering the gods of the original inhabitants. The deities fall into two groups: the gods of heaven [ama *tsu* kami], which represent the non-indigenous alien people, and the gods of the earth [kuni *tsu* kami], which represent the native indigenous groups (Hong 1988:108). The gods of heaven, led by the Sun Goddess, Amaterasu Ōmikami, represent the mandate from heaven needed to give legitimacy to the Yamato reign while at the same time hiding their origins.

Although it is clear that Amaterasu is a mythological fabrication, the details of her brother, children, and grandchildren seem to indicate that perhaps an original character(s) might have existed as the basis for the creation myth (Hong 1988:126-7). It would also be counter-productive to come up with stories of deities that went awry and left their post on their way to subdue the evil deities, or upon arrival in the land of evil deities, took a wife instead and were never heard from again—except if the authors of the Kojiki and Nihon *shoki* were referring to actual events from an earlier record. However, these records are not available, so the actual events remain shrouded in obscurity.

More importantly, these texts describe Sosa-no-wo, the brother of Amaterasu, the Sun Goddess, as descending to Silla from heaven where he lived for a time before proceeding to Izumo in Japan. Sosa-no-wo was sent to rule over Japan, but he and his offspring were found unfit to rule and so Amaterasu chose to send her grandson Ninigi instead, as described in the passage above. Again, this makes for a weak story

line for a creation story if it is being fabricated without any reference to reality.

I would assert that there is likely a sequence of events that this mythology is loosely based on. Amaterasu, being a female, is likely of Shamanistic, and therefore Korean origin. Shamanism originated in the Korean Peninsula before it spread to the Japanese Archipelago, where it became the Shinto Religion. The above passage also indicates what are the articles that imply royalty and authority: the *magatama* (curved jewel), the sword, and the mirror.

Family disagreements described above indicate that some kind of power struggle must have occurred with the brother of an influential shaman priestess/ruler during the advancement of royal immigrants into the islands of Japan, where the brother and his family apparently deferred to the rule of the new leadership. Ledyard (1975) offers an explanation for why Ninigi, the ancestor of the most important clan in Japan, would choose Kujifuru as its sacred mountain to descend to, a remote peak in a barren area. Ledyard asserts that since the native population would already have claimed the other mountain peaks for local deities, a remote, unclaimed peak is a perfect place for a non-indigenous ruler to "descend" to.

5.3 The Historical Basis for Jimrnu

According.to records, Jimmu, or Kamu-Yamato Iware-Biko, was the fourth child of the grandson of Ninigi. Jimmu is a posthumous name invented during the reign of Kammu [A.D. 782-806]. The Nihon *shoki* (NI:108) tells us that as a child he was called Sano, and the name Kamu-Yamato Iware-Biko was added after he came to control the islands. Hong (1982, and 1988:129) believes that the legend of Jimmu is actually based on Homuda Wake, i.e. Ōjin, who is to Hong a member of Paekche royalty. Meyer

(1976:20) states that Jimmu's conquest eastward follows the archaeological record, except that the actual date is probably a millennium later than asserted in the legend.

The ***Nihon shoki*** tells of how Jimmu explained his plan to his household in order to convince them and win their support (NI:110-111).

> Now I have heard from the Ancient of the Sea, that in the east there is a fair land encircled [on] all sides by blue mountains. Moreover, there is one who flew down riding in a Heavenly Rock-boat. I think that this land will undoubtedly be suitable for the extension of the Heavenly task...The person who flew down was, I believe, Nigihaya-hi. Why should we not proceed thither?...All the Imperial princes answered, and said: 'This thought is constantly present to our minds also. Let us go thither quickly.' ...In that year; in winter, the Emperor in person led the Imperial Princes and a naval force on an expedition against the East.

The ***Nihon shoki*** continues (NI:111-112) by introducing the Yamato no Atahe [BER: Atai] clan, a clan that came over from Paekche (NI:265) (Hong 1988:129):

> When he [Jimmu] arrived at the Haya-suhi gate, there was there a fisherman who came riding in a boat...The Emperor...inquired of him, saying 'Canst thou act as my guide?' He answered and said: 'I will do so.' ...[H]e was made pilot. A name was specifically granted to him, and he was called Shihi-ne-tsu-hiko. He was the first ancestor of the Yamato no Atahe. Proceeding on their voyage they...arrived at the harbour of Oka in the land of Tsukushi.

The ***Kojiki*** also describes Jimmu's movement from Korea to Japan (NI:141). This selection is extremely important because it mentions Korea specifically:

"...Ninigi...descended from the heavens to the peak Kuzi-Puru-Take [BER: Kujifuru] of Mount Taka-Ti-Po [BER: Takachiho] of Pimuka [BER: Hyūga] in Tukusi [BER: Tsukushi]...At this time he said: 'This place is opposite the land of Kara; (it is a place to which one) comes directly through the Cape of Kasasa...'" Chamberlain (1982: NI:137-138) notices that some Japanese scholars, such as Moto'ori, attempted to conceal the mention of Korea, that is, Kara, by omitting that sentence in their ***kana*** rendering.

The text continues, stating: "…Ipare-Biko [BER: Iware-Biko]…dwelling with his elder brother Itu-se [BER: Itsu-se]…in the palace of Taka-Ti-Po [BER: Takachiho], consulted him and said: 'Where to dwell in order to carry on the government of the kingdom peacefully? I am thinking of going eastward.' Thus departing from Pimuka [BER: Hyūga], he journeyed to Tsukushi [Kyushu]."

Hong (1988:130) states that the ***Nihon shoki*** (section 112-113) clearly indicates that Jimmu, or Homuda-wake (= Ōjin) according to Hong's interpretation, was recognized by those that had migrated earlier from the continent.

> The Emperor assumed the Imperial Dignity in the Palace of Kashihara. This year is reckoned the first year of his reign…the Emperor ascended the Hill Waki Kamu no Hotsuma. Here, having viewed the shape of land on all sides, he said: "Oh! What a beautiful country we have become possessed of!"

Hong interprets these passages in the ***Kojiki*** and ***Nihon shoki*** as making it fairly clear that a royal group crossed over from Paekche to north Kyushu, established a settlement at Tsukushi, and after a few years, migrated in the direction of the central, or Kinki region to establish the Yamato court.

Ōbayashi (1977) compares Japan's creation mythology with that of the Korean Peninsula. He claims that the creation myths and expedition stories of Jimmu's eastern trek all have elements taken from the foundation legends of Paekche and Koguryŏ.

Ōbayashi (1977:76) concludes: "…an examination of the legend concerning Jimmu's eastern expedition, and the Hyūga myth preceding it, reveals a striking correspondence in structure between the Japanese myth and the kingdom-foundation legends of

Koguryŏ and Paekche. This provides a clue to the origins of the ruling-class culture in Japan." Even Egami (1964) compares the legend of Jimmu to the story of Chumong, the founder of Koguryij. He notes that the story of the founder of Puyŏ, Ton-myung, also began in a similar fashion. All three had the assistance of a turtle, or turtles, that appeared in the water, whereupon they could cross over to a new land. Ōbayashi points out that three kinds of animals, the tortoise, bear, and crow, appear in both Jimmu's story and that of Chumong, the Koguryŏ founder. Chumong, after being born from an egg, went on to establish the Koguryŏ kingdom. These and other similarities indicate that the authors of the ***Kojiki*** and ***Nihon shoki*** likely used other foundation myths along with some historical fact to come up with the story of Jimmu and the establishment of Yamato.

5.4 Yamatai and Himiko

Although the ***Kojiki*** and ***Nihon Shoki*** start out with Jimmu, a descendant of the Sun Goddess, Chinese sources give us our only historical indication about the situation in Japan before the founding of Yamato. According to the ***Wei Chih,*** written between A.D. 280 and 297, there were more than a hundred tribal states in the country of Wa. These reports were made by the Chinese envoys during a nine-year stay from A.D. 239 to 248. The ***Wei Chih*** tells of a people in a mountainous island land with warring tribal chieftains. These states were in the midst of a civil war, when a woman ruler rose to power.

This shaman queen was known as Himiko and resided in a district called Yamaichi [BER: or Yamatai or Yamato]. The ***Wei Chih*** recounts that Queen Himiko was

an accomplished sorceress and mystified the people with her magical abilities. She had no husband but utilized her younger brother to assist her in the governing and control of the country. The Wei Chih also records that Pimiko dispatched an envoy by the name of Nashonmi to the Tai-fang Commandery in A.D. 238. Her goal was to receive an audience with the Wei emperor, which the envoy arranged at the Wei capital of Loyang. In December of A.D. 238, the Wei Emperor granted her a golden seal through the Tai-fang governor, styling her "Queen of Wa, Friendly to Wei".

The Wei Chih also records that Queen Himiko, although ruler over northern Kyushu, was at odds with a rival kingdom called Kuna in southern Kyushu. It is widely debated whether Himiko was in Kyushu or Honshu since the exact location is unclear in the Wei Chih. In A.D. 247, the Wei Chih, as quoted in Tsunoda & Goodrich (1951:15-16), states that "the Governor, Wang Ch'i, arrived [at Tai-fang] to assume office.... Pirniko [BER: Himiko] had been at odds with the King of Kunu [Kuna], Pimikuku, and had sent Saishi Uwo of Wa to visit the prefect and report in person regarding the conflict going on." When Queen Himiko passed away, the Wei Chih records, a king was placed on the throne, but soundly rejected by the people. To restore order and unity, a relative of Himiko, a girl of thirteen, was made queen. The people preferred a female blood relative of their deceased queen.

Hong (1988:44, 51) raises doubts as to whether Himiko was actually the leader of Wa, or rather a high advisor who appeared to the Chinese envoys as a ruling queen. He quotes Seichō (1983), who also believes that the Chinese envoys mistook Hirniko for a ruling queen: "The shamanism by which Pimiko 'deluded' people came from southern Korea and was a form of spirit worship. In northern Korea all members of a tribe

took part in services for the souls of their ancestors, but in the south one person was chosen as a go-between. The shaman's job was to convey messages from ancestral spirits to the people." Seichō (1983) goes on to assert that Himiko was an advisor to the federation of tribal chieftains, making predictions on agricultural matters, such as sowing and harvesting, and current skirmishes with other tribes.

I find this line of argument unmerited and without any logical motivation except for the apparent inability of these scholars to accept a female ruler. Neither of them questions the authority of King Himikuku of Kuna, of whom we know very little except for a brief mention in the Wei Chih, which states that this southern Kyushu king was at odds with the northern queen and not under her authority. And yet for no apparent reason, they assume that the sophisticated Chinese envoys were not able to discern the true leadership of the region.

The Emperor of Wei would not have confirmed upon Himiko the title of Queen of Wa without actually ascertaining her true rule and authority. Her royalty is also evidenced by the reaction of the people at her death. The Wei Chih records "a king was placed on the throne, but the people would not obey him." As mentioned above, the people would not be calmed until a younger female relative of Himiko's was placed in power and peace briefly was restored. Certainly Himiko was more than just "an advisor to the federation of tribal chieftains" (Hong 1988:51), someone mistakenly named a **leader in the Chinese annals by bumbling Chinese officials.**

Hong bemoans the fact that Western and Japanese scholars miss what he calls the 'Korean connection' by failing to credit Paekche as the source of Japanese royalty, despite the obvious relationship. Ironically, he misses the 'female connection' by

apparently refusing to believe that a female ruler could have existed in this time period.

5.5 Female Rulers

Contrary to Hong's doubts, the existence of a female ruler at this time actually indicates a strong connection to the Peninsula, and ultimately, the continent. Shamanism entered Japan from the Korean Peninsula and was the religion of both the elite and the commoners. This shaman-led animistic religion was institutionalized in Japan as *Shintō*, surviving into modern times as the national religion, while shamanism began to wane in Korea after the introduction of Buddhism and Confucianism. Unlike the latter two religions, shamanism was very well disposed to female leadership, with most of the top leadership being women. Thus it is very likely that an influential shaman priestess became a powerful political leader as well.

In fact, the notion of a female leader fits in well with the myth of the original deity, the Sun Goddess Amaterasu. According to the foundation myths of Yamato, she is the beginning of the Yamato ruling line. The story has her descendents —not her— actually coming to rule in Yamato, but she is credited with being the spiritual source. Barnes (1988:274) points out that sun worship was widespread in Northeast Asia. She goes on to analyze Queen Himiko (Pimiko)'s name as follows: ***hi*** 'sun' + ***miko*** 'shamaness?'. Barnes notes that the shrine attendants at Ise were called ***miko,*** which she believes means something like 'shamaness[7]'. Barnes notes that the head attendant was usually an unmarried princess, a fact that again shows a strong link between religious and political ties. I would take Barnes' analysis one step further, analyzing ***miko*** as ***mi (OJ mi$_1$)*** 'honorific term' + ko (OJ ***mi$_1$***) 'child'. The prefix ***mi$_1$*** is commonly used in Old Japanese in such terms as ***mi$_1$ko$_2$to$_2$, mi$_1$yako$_1$*** 'capital', and even ***mi$_1$ti*** 'road[7]'.

Barnes (1988:273) states that Koguryŏ, Silla, and Paekche each had a solar deity as the ancestor of their Royal family. And as mentioned above, sun worship was very prevalent in Northeast Asia. Barnes suggests that the fourth-century bronze mirrors were representative of a solar deity. Rather than doubting the possibility of Himiko's leadership, Hong's argument of a 'Korean connection' would actually be strengthened if we take as real the religious and political connection that was present in both the Korean Peninsula and Japan at this time.

5.6 Historical Conclusions

Historical and mythological accounts of the origins of Japan and its rulers indicate a strong connection to the Korean Peninsula. In order to establish legitimacy and independence from the Peninsula, historical ties were masked in stories of deities coming from heaven to rule in the islands. The parallels in the stories, however, give away the Yamato story's origins and the connection to the Korean Peninsula. The historical and mythological accounts of Yamato indicate a long and close relationship between Yamato and the Korean Peninsula. Also, the fact that the founding deity of Yamato is a female sun deity gives additional evidence in favor of the Korean Peninsula and the continent, since sun worship was common throughout early Asia and females held high rank in this shamanistic religion; this is in contrast to later Buddhist and Confucian thought, where females were not allowed in leadership except for minimal participation.

6.0 Methodology

The aim of this present study is to go back into a period of time far beyond historical documents. In order to go back in time and get a glimpse at the phonology of an unattested, prehistoric language, certain linguistic tools of reconstruction are required. We will introduce these basic tools of reconstruction.

6.1 Comparative Reconstruction

The comparative method (CM), central to historical linguistics, compares two or more languages and/or dialects, and can be used for reconstruction and to show language relationship (Antilla, 1972:229). The CM operates on sets of phonologically correspondences from different languages/dialects. These sets must occur in forms that are semantically similar and be prevalent in enough examples to diminish the possibility of chance similarity.

In addition, one must distinguish instances of borrowing from genetic inheritance. Borrowed words can often be identified because they have not undergone all of the sound changes that other forms have: Antilla (1972:231) states that one way to avoid borrowed vocabulary is to utilize basic noncultural vocabulary in the comparative method. The assumption is that vocabulary such as: body parts, natural objects, plants, animals, pronouns, and lower numerals, are most likely to be native. On the other hand, technologically specific vocabulary, such as words for horse trappings, for example, are likely to have been borrowed in with the introduction of the item.

After correspondence sets have been established using core vocabulary, these sets of correspondences are treated like phones in phonemic analysis (Antilla 1972:231). Specifically, all noncontrasting sets can be grouped into one unit and labeled with

a the same symbol for all. Although any symbol can be used, it is common sense to use a symbol that is as close to the original as possible; i.e. m-sets would be labeled with *m, t-sets with ***t***, and so forth. The reconstructed form is noted with an asterisk, indicating that the reconstructed form is not directly documented.

After such straightforward correspondences have been labeled, then more complex correspondence sets are examined to look for what is called complementary distribution (Antilla 1974:235). In other words, if ***ch*** only occurs in language X before a high front vowel, and t occurs in the other languages, then we can assume that since the ***ch*** : t set and the t : t set occur in mutually exclusive environments (complementary distribution), they are allosets of the same unit and can be labeled the same; in this case, ***t***.

In determining how to label the unit in examples such as the one above, one must consider naturalness. It is more reasonable to assume that ***t*** is original and was palatalized in front of a high front vowel—a natural phonological change. Conversely, it is unnatural to posit a hypothesis that assumes that ***ch*** is original, but became ***t*** everywhere except before a high, front vowel. There are cases, of course, where the naturalness of the phonological change is not so evident, or where outside evidence indicates another direction. For example, German underwent a change of t > ***d***, which is not phonetically natural in initial position (Antilla 1974:242).

The CM is based on the assumption of regular phonetic change; irregular change, such as analogy, is not directly recoverable using the CM. Hence, Antilla (1974:242) states that "the result of the comparative method is always highly tentative." The CM is unable to uncover changes that have been completed and for which there is no

evidence in any of the languages.

Whereas internal reconstruction requires two or more morphophonemic alternations, comparative reconstruction requires regular correspondences in cognates of two or more languages. This method attempts to reconstruct back to a node in the language tree where there was a single original system from which all daughter languages/dialects are derived. In order to determine cognate sets, one must first eliminate borrowings, recent innovations, and chance similarities. Based on the reflexes in the daughter languages, proto-segments are reconstructed along with sound changes based on these phonological correspondences. In doing our reconstruction, we postulate only the number of proto-segments and sound changes required, keeping in mind the concept of economy, known as Occam's razor.

Whenever possible, the earliest evidence available should be used for a more accurate reconstruction. The collective reconstructed vocabulary constitutes the lexicon of a proto-language. A reconstruction is valid only for the languages that have been used to reconstruct it (Antilla 1974:240). So, for example, if one were to compare English and German, the reconstructed forms cannot be called Proto-Germanic, but rather something like Proto-English-German.

It is through comparative reconstruction that we are able to establish language families and posit sub-groupings within each family. The comparative method approximates an earlier linguistic reality (Hock 1991:568); in other words, whereas internal reconstruction posits points at various time depths, comparative reconstruction approximates a single node in the history of a language. The date of this node can be estimated based on the various sound changes and our understanding of when

those changes likely happened. Even so, this or any other historical method only allows us to reconstruct back in time as far as ca. 5000 B.C. (Hock 1991:566). Beyond that, we are out of range of these current methodologies.

In conclusion, the CM rests of two main factors: regular phonetic change, and the arbitrariness of the linguistic sign (Antilla 1974:255). That is, if two or more languages show regular correspondences in vocabulary items of similar meaning, then there must be one underlying colligation of meaning and sound. The CM, therefore, depends upon regular phonetic change. An innovation in one of the languages with irregular phonetic change can hinder the CM. Analogy, which often makes the forms more iconic, or iconic change with respect to nature, such as onomatopoeia, derails regular sound change, which would have retained the conventional arbitrary colligation of sound and meaning.

6.2 Internal Reconstruction

Internal Reconstruction (IR) is almost exactly the same as morphophonemic analysis. The main difference is that synchronic analysis, that is, morphophonemic analysis, brushes aside irregular alternations, whereas diachronic analysis, that is, IR, concentrates on such irregularities.

IR is the process of analyzing and reducing synchronic morphophonemic variations within a language to a prehistoric form of assumed invariance. The process of reconstruction requires one to deduce the phonological changes that occurred to arrive at the present day alternation. The reconstructed form is called a pre-form and is marked with an asterisk. Portions of a pre-form can vary as to their time depth. In other words, one portion of a pre-form may be very early, whereas another may be very late.

6.2.1 Strengths of IR

This method allows us to reverse history by positing plausible sound changes that resulted in the attested variations. We are able to reach back into time with the help of synchronic relics of an earlier sound change(s). It was developed and has been tested out on Indo-European languages, and later confirmed with comparative evidence (See **6.2.3).**

6.2.2 Limitations of IR

This method only allows us to uncover the processes that left a trace in the modern language, or an attested earlier language. If a phonological process left no trace, there is no way to uncover it using internal reconstruction. Also, even if there is a synchronic alternation available, analogical developments leading to the alternants may make it difficult to recover the pre-form.

Internal reconstruction assumes that alternation is the residue of a sound change and that at an earlier stage, there was no alternation. This assumption that at some earlier stage in the language there was complete regularity imposes unrealistic constraints not attested in any living language (Bynon 1977:98). The pre-forms of a language, therefore, do not comprise a snapshot of the language at any one point in time. Language, like geology, is in a constant state of upheaval and change: forms and paradigms are being constructed, just as others are eroding away.

6.2.3 Accuracy of IR

Since we are reconstructing forms that we have no way of checking the veracity of, we must rely on the accuracy of the tool in hand, and also how we utilize this tool. If the methodology itself is suspect, then any reconstruction into the past is useless.

The most commonly cited example that supports the accuracy of internal

reconstruction is that of Ferdinand de Saussure's (1879 [1967]) reconstruction of Proto-Indo-European laryngeals. When he first presented his reconstruction, there was no way to confirm the accuracy of it and it was largely ignored by the linguistic community. Some fifty years later, however, ancient Hittite (ca. 2000 to 1200 B.C.) was shown to be a member of the Indo-European family, and it was Hittite evidence that confirmed the accuracy of Saussure's work. Ancient Hittite reflexes correspond to Saussure's reconstructed segments, or as Saussure called them, *coefficients* sonantiques, "sonant coefficients." Thus external evidence was used to confirm internal reconstruction.

6.3 IR and CM Together

As for reconstructions, IR produces pre-forms, whereas the CM gives proto-forms. Pre-forms can reach to any depth from a given reference point; proto-forms, on the other hand, form a node in a linguistic family tree. In other words, *proto-* refers to the node itself, and pre- refers to anything preceding a node (Antilla 1974:274).

It is wise to use both methods when examining the historical relationship of two languages. Starting with IR can eliminate the effects of any recent changes. Then, the CM can be applied to these pre-forms. Indeed, it is possible to then reapply IR to the resulting proto-forms, obtaining pre-proto-forms (Antilla 1974:275).

6.3 The Reality of a Proto-Language

Bynon (1977:71) states that 'a protolanguage is no more than a theoretical construct designed to link by means of rules the systems of historically related languages in the most economical way." It has been argued that the proto-language is purely theoretical and does not represent anything that actually was spoken in any period of history.

One of the main reasons for such rejection of the reality of a proto-

language is that the very definition of comparative reconstruction requires that all variation be reduced to invariance (Hock 1991:568). It is quite dubious, however, if ever such a phenomenon as a dialect-free, variant-free language ever existed in any time period. On the contrary, it is likely that the language represented by the proto-forms was likely just as dialect-rich as any other attested language.

6.4 Dialect Borrowing

Hock (1991:388) suggests that "borrowing from dialects or closely related languages can have more profound effects than foreign-language borrowing." He notes that most of the cases of basic-vocabulary borrowing in English (such as: ***they, their, them; give, skin, sky)*** are from the Scandinavian of the Danes; likewise, the plural ending of Standard German, ***-s***, is actually a loan from northern German dialects.

The major difference between foreign and dialect borrowing, according to Hock (1991:388), is the consequence of the differences in relationship between different languages on the one hand, and dialects of the same language on the other. In the case of dialects, linguistic differences are less since the dialects are ultimately related and therefore have some shared properties. In some cases, the differences are so minor that it is difficult to detect dialect borrowing at all.

Hock (1974:389) also notes that independent, concrete evidence showing significant geographical and/or social contact between the two dialect regions strengthens an argument for dialect borrowing. In other words, one needs to specify which dialects are in contact, the nature and approximate duration of the contact, and, based on the data, what effects this had on each dialect/language.

For example, in this dissertation, I attempt to add to the picture of Koreo-

Japonic by including the concept of dialect borrowing. I argue that one of the reasons that the relationship between Korean and Japonic has remained so elusive up until relatively recently is because dialect borrowing has complicated the correspondences. There were two clear pathways for dialect borrowing based on their close relationships with each other: Yamato with Kaya and Paekche; and Izumo with Silla.

Later on, I introduce Serafim's labiovelar hypothesis, where we find a correspondence of MK k to OJ p. Forms that share this correspondence are genetically linked and there is no borrowing. However, I also found cases of what appears to be a "reverse" correspondence; that is, MK *p* to OJ k. In order for this to have happened, both of the above-mentioned dialect borrowing scenarios have to have occurred. That is, given Izumo's close relationship with Silla, forms with k, instead of p, are borrowed into Izumo. Then, when Yamato overtakes Izumo, it also incorporates Izumo/Silla elements, borrowing forms with k instead of the expected p.

In the same vein, given Paekche and Kaya's close relationship to Wa / Yamato, it is reasonable to assume that words were borrowed from Yamato into Paekche and Kaya. When these two regions fell to Silla, some words were borrowed into the Silla language and survived. Specifically, where one would expect k, one finds forms with p instead. When both of the above scenarios occur, the result is what appears to be a "reverse" correspondence.

Note that it is also very likely that only one of the borrowing scenarios mentioned above occurred; that is, some of the k found in Old Japanese may have originally come from a labiovelar, reconstructed as $*k^{w}$, but we have no way of knowing since all we can see is a MK k : OJ k correspondence, resulting from the borrowing of the OJ word

from Silla. In the same way, a MK ***p*** : OJ ***p*** may also be a case of a single dialect borrowing, this time into Silla from a dialect where p < *k^w / ****p***; but there is, again, no evidence. All things being equal, one would assume that MK ***k*** : **OJ *k*** and MK p : OJ **p** both came from just ****k*** and ****p*** respectively, but that does not exclude the possibility—because of borrowing—that some cases came from a labiovelar.

6.5 Application of the Above Methods

As can be seen, the application of any one of these methods alone yields both its strengths and weaknesses. It is unlikely and unnecessary, however, to limit oneself to a single methodology in order to carry out a reconstruction. As has been mentioned previously, these methods can be used in harmony to create a more accurate account of the language at an earlier stage. Recognizing the weaknesses of a particular method, one can employ the strengths from another method, and still capitalize on the strengths of the first method in another area. And since the yield from each method is not mutually exclusive, using both methods simultaneously normally offers some sort of mutual verification for the results of each.

To demonstrate the process, the following example employs both of the above methods to reconstruct the earlier stages of the Japonic bilabial consonant. This exemplifies both how a particular method can obtain information that would otherwise be lost (and conversely, how another method would be ineffective in recovering the same information), and how the results are verified when the picture is put together as a whole.

If we examine the synchronic paradigm of 'to buy' in Japanese, we find the forms: ***/kau/***, lkaimasul, ***/kaQta/***, and lkawanail. The last two forms give us the only internal evidence for an earlier consonant that was lost in the other environments.

We know from other forms also that lwl was lost everywhere except before /*a*/. At this point, we could reconstruct ***kawu*** and ***kawi-masu*** for the first two forms in the above paradigm. If the merger with zero had been complete, there would be no trace for internal reconstruction to uncover.

Given the additional knowledge that lwl merged with /*F*/ intervocally, acquired through philological examination (Lange 1973:5), we are faced with two options in reconstruction. Written records show that /*F*/ is the correct choice. Dialect data from some Okinawan and Kyushu dialects indicate that /*F*/ was previously lpl, giving us ***kap-*** for our reconstruction. In addition to dialect data, there is some scant information through transliterated proper names in the **Wei-Chih.** This Chinese history has Japanese names written in Chinese characters using their phonetic value, although it does not help with this particular word.

As Serafim (1993:3) points out, the results of the comparative method and internal reconstruction may yield different results; "...that is, the pre-language and the proto-language may not be the same, since there is no necessary exact correlation between the results of the two methods." If the forms differ, however, the two reconstructions should be relatable through a set of ordered rules, assuming the methods have been applied accurately.

In his dissertation, Whitman (1985) combines the strengths of the comparative method with internal reconstruction. Whitman cuts down on an unnecessary and unnatural segmental inventory by first applying internal reconstruction within Old Japanese and Middle Korean. He has chosen to solve internal issues in both Japanese and Korean before applying the comparative method.

6.6 Principles of Language Contact

When examining the history of a language, we have to realize that a given language did not develop in a vacuum. Although language change occurs on its own for purely internally motivated reasons, Thomason and Kaufman (T&K) would argue that social factors can trump purely linguistic factors in determining the evolutionary course of a language. T&K (1988:4) state that "[t]he history of a language is a function of the history of its speakers, and not an independent phenomenon that can be thoroughly studied without reference to the social context in which it is embedded." Purely linguistic factors, such as markedness, can cause language change, but T&K assert that social factors can override linguistic factors.

Bickerton (1980) argues that social forces have no lasting effect on the language overall. A careful look at the English language, however, shows evidence of the various contacts with other languages throughout its history, contacts that had a lasting and definite effect on the evolution of the English language. Determining the nature of such contacts is the question of study for T&K.

First of all, T&K want to clarify the criterion for what constitutes a genetic relationship. They point out that neither the use of only vocabulary, specifically basic vocabulary, or morphology, for example, as the criterion for establishing genetic relationship, is sufficient by itself.

To illustrate their point, T&K give a hypothetical example where a group of English speakers replaced all their lexical morphemes with Russian ones but kept their English phonology and morphosyntax. This would be a case of a mixed language and not genetically related to Russian, despite the fact that all of the vocabulary,

especially basic vocabulary, is that of Russian; nor is it related to English, despite the fact that all of the grammar is identical to English.

Although this scenario is highly unusual, T&K assert that just such a situation exists in Ma'a. Ma'a has mainly a Cushitic lexicon, especially basic vocabulary, but almost entirely Bantu grammar. To them, Ma'a is not genetically related to either Cushitic or Bantu. T&K claim (1988:8) that no single subsystem is sufficient for establishing genetic relationship and "genetic relationship in the traditional sense of one parent per language can only be posited when systematic correspondences can be found in all linguistic subsystems: vocabulary, phonology, morphology, and syntax."

6.6.1 Borrowing

In evaluating the effects of language contact, one must make a clear distinction between borrowing and non-borrowing, or what T&K term interference through shift. Borrowing, according to T&K (1988:37), "is the incorporation of foreign features into a group's native language by speakers of that language; the native language is maintained but changed by the addition of the incorporated features." The first thing that gets borrowed from one language to another is vocabulary; after extensive contact, structural features may be borrowed, but not necessarily.

Borrowing generally occurs from a dominant language to a non-dominant language (1988:44). The term often used in this discussion is "prestige." It is assumed that the language with more prestige is the one that others borrow from. For example, both early Japan and Korea borrowed from Chiia because of its superior technological and socio-political advancements, and not the other way around. T&K also note that borrowing requires several hundred years of intimate contact. Borrowing from

an unrelated language implies no genetic relationship whatsoever to the language that is borrowed from. As is the common practice in the Comparative Method, all elements borrowed from an unrelated language must be eliminated from the pool of vocabulary to be compared.

6.6.2 Language Shift

Language shift, where a group of speakers shift to another language, is still genetically related to the mother tongue. That is, a language that has been affected by speakers shifting to it is still related to the same language of the pre-shift speakers. The degree to which the target language, or TL, is affected depends on the relative size of both the shifting group of speakers and the TL speakers, the level of bilingualism (i.e. the availability of the TL), the intensity of contact, and the duration of contact. Note that T&K use the term 'target language' to refer to the language that members are shifting to (T&K 1991:39); the term 'target language' is used differently here than in other linguistic fields. What T&K term interference through shift can take as little as one generation, in contrast to borrowing of grammar and morphology, which requires several hundred years of intimate contact. A shift can take place over centuries, with the result that the shifting population is likely to be completely bilingual and therefore exert no interference on the TL.

T&K also downplay the importance of prestige in interference through shift, as opposed to borrowing where it clearly is an important factor. In a shifting language, interference can occur in the TL even though the dominance relationship is quite clear. T&K argue that although prestige may play a role in interference through shift, "it cannot be used to develop overall predictive constraints for contact-induced change"

(1988:46). In other words, even though the prestigious group does not intend to be affected by the language of the indigenous, subordinate group, depending on the nature of the shift, it may be beyond their control.

T&K note (1988:49) that both borrowing and language shift are actually on a continuum and that categorical labels are for general distinctions; a given language may sit on the borderline between one category or another. And for both borrowing and shift, the extreme result is a language not related to any of the source languages; i.e. their origin is non-genetic. In such cases of shift, the availability of the TL is so limited that the shifting speakers acquire only the vocabulary of the TL successfully but essentially none of the grammar (1988:48). Examples of this are creole languages that developed from pidgins that had not fully solidified. T&K call this process "abrupt creolization," where a definite pidgin stage is not attested. Examples include the Seychelles Creole, Mauritian Creole, and some of the Caribbean creoles (1988:48).

On the opposite end of the spectrum, there is a small shifting group and/or perfect learning occurs within the shifting group, causing no interference in the TL as a whole. Let us outline the basic categories of language shift. This last example T&K would term "shift without interference" (1988:119). The shifting language leaves no linguistic trace in the TL. The small shifting group shifted over several generations, and this is considered a slow shift. An example of this would be the American Indian languages, which have left only minor lexical traces in English, such as place names and cultural terms, when they shifted to English.

6.6.3 Interference

Further along the spectrum, we have what T&K term "slight interference." In this

scenario, phonetic and syntactic features of the TL are affected to a slight degree. In 'moderate to heavy interference', the shifting speakers' failure to learn TL structures and phonology accurately results in moderate to heavy interference in the TL. T&K (1988:122) point out that the relative size of the two groups of speakers is a determining factor for the extent of interference through shift.

It is most often the case that the language of the invaders, not the invaded, survives (1988:122). However, there are cases of the conquerors' language being linguistically absorbed. If a shifting superstrate group is very small in comparison to the indigenous, subordinate population, then it is unlikely that there will be much interference from their learners' errors into the TL, no matter how prestigious they may be. If, however, the size of the superstrate group is about a third of the size of the indigenous community, T&K (1988:122) state that it is unlikely that the invading, superstrate group will shift to the subordinate language. We can find no such case of a relatively large superstrate group shifting to the indigenous, subordinate language. As we can see, the relative size of both groups is an important factor in determining the degree of interference.

6.6.4 Linguistic Predictions

T&K (1988:121) note the impossibility of making specific predictions about the effects of interference, even in shift situations that are comparable. In other words, we cannot look at a situation and predict that labials with lenite in initial position. We can only predict the extent of interference, not the specifics of it. Time, that is, duration, the relative size of the shifting group and the TL group, and the intensity of contact are the factors that allow us to predict the degree of interference.

6.7 Application to Japonic

It appears that the contact between the regions of Japan and the Korean Peninsula, specifically: Yamato and Paekche/Kaya, and Silla and Izumo, resulted in shift with very slight interference; that is, somewhere in between the continuum of T&K's 'shift without interference' and 'slight interference'. Archaeological evidence indicates waves of prestigious and technologically superior immigrants coming across the Korean Strait into Kyushu and diffusing out over approximately a 1000 year span, starting with a small influx and ending with a large, concentrated group of TL speakers. Eventually, the invaders dominated not only in land and language, but also in DNA (See: Anthropological Evidence, 1.2.2).

Therefore, we would expect to find only traces of substrata1 vocabulary for cultural items or place names. These substrata1 elements that were incorporated into the TL are likely the items that often are then related to Austronesian languages in linguistic studies. Some scholars have mistakenly tried to genetically relate Japonic to Austronesian, based on this small substratal lexicon, when actually, it appears very unlikely that Japonic is Austronesian. Instead, if we view the body of relatable items as substrata1 vestiges of an earlier, indigenous language that was related to Austronesian, the picture becomes clearer. Japonic is not Austronesian, but the substrata1 elements are. According to T&K's model, Japonic is genetically related to the language that came across the Korean Strait, and not the language of the group that was absorbed.

7.0 Old Japanese

7.1 Archaic Japanese

The Kojiki, the oldest extant record of Japanese, contains quotations from earlier OJ documents. Seeley (1991) concurs with Mabuchi (1968) that Japan began to use Chinese characters around 450 A.D. From the above indirect attestations, some information can be obtained regarding Archaic Japanese (AJ). As Unger has pointed out (1993:1), the term AJ is "...a shorthand for indicating that dialect most likely to have preceded Old Japanese as far back as the introduction of literacy...".

7.2 Old Japanese Phonology

7.2.1 Introduction

Roland Lange (1973) reconstructs a phonemic inventory of OJ syllables by comparing the ongana, or Chinese phonograms used to write Japanese, of the Man *'yōshū* with Karlgren's reconstructed values of Chinese. Lange takes this approach because he states that this evaluation must precede the application of any other techniques. Lange eliminates Books XI, XIV, and XX because they are written in the eastern, or Azuma dialect, along with any other material corrupted or described as coming from another time period.

Lange compiled a list of graphemes based on the following criterion: characters must share the same environment in at least two separate forms to be considered a member of the same set. For a character to be a member of its own set, it has to occur in at least four different words. The only exception to the above criterion is given to syllables corresponding to later */e/*, lgel, */ze/*, and lzol because of their rare occurrence. Following this method, Lange reconstructs the following phonemic inventory of

OJ syllables:

Table 3: Lange's reconstruction of OJ syllables

wa	la	ja	ma	ba	pa	na	da	ta	za	sa	ga	ka	a
wi	li		mji	bji	pji	ni	di	ti	zi	si	gji	kji	i
			mi	bi	pi						gi	ki	
	lu	ju	mu	bu	pu	nu	du	tu	zu	su	gu	ku	u
we	le		mje	bje	pje	ne	de	te	ze	se	ge	ke	e
		je	me	be	pe						gje	kje	
wo	lo	jo	mo	bo	po	nwo	do	to	zo	swo	gwo	kwo	o
						no				so	go	ko	

Lange did not find Chinese evidence to reconstruct prenasalized voiced obstruents, except for /***g***/. Unger (1993 [1977]:20) points out, however, that Lange's findings do not negate the theory of prenasalized voiced obstruents.

Unger (1993 [1977]:20) also notes that Lange consistently makes decisions in favor of the Chinese data, and that Lange's analysis for syllables with e has been effectively reversed depending upon whether the initial is velar or labial. Lange does not find enough evidence in his body of data for **A-B** distinctions for /***zo***/, ltol, /***do***/, /***yo***/, and /***ro***/ (see 7.3 below for the **A-B** distinctions). With some modifications, Lange's reconstructions offer a solid basis for further scholarly development. This is somewhat surprising considering the fact that Lange used only Karlgren's reconstruction of Middle Chinese. Since that time, several scholars have simplified and completely redone Karlgren's reconstruction; Karlgren posited a plethora of forms which it seems

clear are merely allophones of the same phoneme. Despite relying solely on Karlgren's Middle Chinese reconstruction, Lange presents a clean starting point.

7.2.2 Phonemic Inventory

Whitman essentially follows Unger's OJ Phonemic inventory (1993 [1977]), except for the following modifications: the feature [+/- consonantal] has been eliminated, and /y/ and /w/ are represented as [-syll]. Notice that in Unger's and Whitman's (1985:5) system, the feature [+/- nasal] has eliminated the need for [+/- voice]. Also the description of /s/ allows for either [č] or [š].

Table 4. Whitman's phonemic inventory of OJ

	p	t	k	s	b	d	g	z	m	n	r	y	w	i	u	e	o	a
syllabic	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	
sonorant	-	-	-	-	-	-	-	-	+	+	+							
nasal	-	-	-	-	+	+	+	+	+	+	-							
coronal	-	+	-	+	-	+	-	+	-	+								
anterior			+	+	-	-	+	+	-	-								
high												+	+	+	+	-	-	
low												-	-	-	-	-	-	+
back												-	+	-	+	-	+	

7.2.3 Syllable Structure

OJ syllables are composed of consonant plus vowel, or occasionally, a vowel alone in morpheme-initial position. Unlike modern Japanese (NJ), there are no long vowels, vowel sequences, geminate consonants, or consonant clusters (Unger 1993 [1977]:6). Thus, OJ syllable structure can be represented as follows: (C)V.

7.3 OJ Vowels

It was thought for some time that Old Japanese had five vowels, just as in modern standard Japanese. Upon detailed analysis of the Chinese phonograms used to

represent Old Japanese syllables, and of their usage, it became clear that there were two sets of mutually exclusive phonograms for later /*i*/, /*e*/, and /*o*/. In other words, there were graphemes in mutually exclusive environments. From this, it became clear that instead of five vowels, there were actually eight vowel distinctions in Old Japanese.

7.3.1 History of Vocalic Research

Moto'ori Norinaga [1730-1801] is credited with first observing the above phenomena while doing exhaustive study of the ***Man'yōshū***. This philologist is also known for his work ***Kojiki-den,*** a 48-volume commentary on the ***Kojiki.*** Moto'ori notes in the first volume of this commentary that Nara period works had distinctions in the writing system not found in ***kana*** syllabaries after the Nara period. For example, Moto'ori pointed out that although there were two characters used for what is now the NJ syllable ko, when writing the word for 'child', only one of the characters was used, not the other.

Moto'ori's student, Ishizuka Tatsumaro [1764-1823], continued Moto'ori's research and wrote ***Kanazukai oku*** no ***yamamichi*** [The innermost secrets of ***kana*** orthography]. This three-volume work outlined the use of ***man'yōgana*** in the ***Kojiki,*** *Nihongi,* and the ***Man'yōshū***. This work was arranged according to the 50 syllable ***kana*** chart. Each syllable was given, followed by the possible ***man'yōgana*** used, examples of words using the given syllable, and the source of each word from the ***Kojiki, Nihongi,*** and the ***Man'yōshū***. Ishizuka showed which symbols corresponded to the two independent sets discussed above, and which were interchangeable; i.e. did not have a distinction. Ishizuka determined that there were twenty sets of ***man'yōgana*** that showed a distinction. Two of these pairs, ***ti*** and mo, show up only in the ***Kojiki*** (Lange 1973:22-23).

Ishizuka's work stayed in manuscript form and did not actually get published until 1929 (Miller 1967:176). Hashimoto Shinkichi [1882-1945] concluded that the above orthographic distinctions were a reflection of vocalic distinctions that had existed in the sound system. In other words, each set represented a vowel that was phonemically distinct from the corresponding set. Hashimoto also posited */e/* and */je/* as the values for the syllables which later merged to become NJ */e/* (Lange 1973:67).

7.3.2 Assignment of A-B Types

It was Hashimoto that first coined the terms *kō-rui* (A-type) and *otsu-rui* (B-type) to refer to the two sets in a 1931 article. Hashimoto arranged the sets of *man'yōgana* into Type *A* or Type B based on parallel distinctions in writing functional morphemes. For example, one set was used to represent the final syllable of the imperative form of *yodan* verbs (e.g. Heian Period */kake/*), while a corresponding but distinct set was used to write the perfective base of the same verb (Heian Period */kake-/*).

This enabled Hashimoto (1931:183-4, quoted in Lange 1973:68-69) to determine the classes for those syllables that were used in morphological paradigms. For the remaining syllable sets, namely (Heian) */so*, to, no, mo, *yo/*, along with their voiced counterparts, Hashimoto classified them using Chinese sound tables.

In the case of later */no/* and */nu/*, Hashimoto found three sets of *man'yōgana* that correspond to later *kana* symbols. One of these sets of symbols has the modern values of 'nu' or 'no'. Hashimoto speculates that the symbols of this group that are now read as 'nu' were once read with a mid-vowel, i.e. something like 'no', rather than the other way around. Hashimoto based his conclusion on the organization of the *kana* chart. Based on

this interpretation, the **A-B** distinction would only occur with three of the vowels (i.e., later /***i***/, /***e***/, and /***o***/), instead of four (i.e., not with added /***u***/).

Arisaka Hideo [1908-1952] continued to make important advancements in this area, along with his significant Chinese scholarship. Arisaka studied the relationship of the *kō-otsu* distinctions to Middle Chinese rhyme tables. Briefly, Arisaka claims that Type **A** vowels correspond to IV ***teng*** and Type ***B*** to III ***teng*** divisions of the Sung rhyme tables (Miller 1967:178).

It should be noted also that the assignment of the terms Type A and Type B, or ko and *otsu*, respectively, is completely random. That is, Type A should not be assumed to be the predominant of the pair; neither should it be assumed that Type **A** is the resulting vowel after the merger.

7.3.3 Orthographic Representation of Vocalic Distinctions

The vowel distinctions have various romanized representations. Traditionally, Type A syllables were orthographically unmarked and Type B syllables were marked with a dieresis (or umlaut) over the vowel. This system has the undesirable implication of one being linguistically marked and the other not. In addition, the representation for the Type B vowels can be easily mistaken for the IPA letter using the same symbol. Most importantly, however, this system does not take into account vowels where the distinction is neutral, or where the distinction is unattested or unknown.

Mathias (1973) came up with the following system to deal with each of these cases:

Table 5: Mathias' system of OJ vocalic distinctions

(a) Type A: ĭ i̊ e̊ o̊

(b) Type B: ï *e* ö

(c) Neutral Vowels: i e *o*

(d) Unattested/unknown: I E O

In this way, Mathias distinguishes between Type A vowels and those that are either neutral or unattested.

Martin (1987:50) utilizes a structural interpretation to represent this system. For the palatal-type (i.e., type-A) front vowels, Martin writes /*Cyi*/ and /*Cye*/. In order to follow the symmetry of this representation, Martin writes /*Ciy*/ and /*Cey*/ for the non-palatal counterparts (i.e., type-B). For the back vowels, Martin uses /*Cwo*/ for Type A, and /*Co*/ for Type B.

Whitman adopts the following modified version of both Lange and Unger's representation. Included also is Martin's representation of the A-B distinctions:

Table 6: Whitman and Martin's representation of A-B vowel distinctions

Type	Unger	Whitman	Martin
A-Type /i/	i	i	yi
B-Type /i/	wi	uy	iy
A-Type /o/	wo	wo	wo
B-Type /o/	o	o	o
A-Type /e/	ye	ye	ye
B-Type /e/	e	ey	ey

Martin represents A-Type *e* as *ye* and B-Type *e* as *ey* to indicate that "these finals have sources from contraction of /*a*/ (in a few cases /*o*/) and a high front vowel" (Whitman 1985:31). Syllables not showing an A-B distinction for this vowel pair are represented simply as e in Martin's system.

Note that the dieresis only indicates B-Type vowels and is no indication of their articulation. Instead, it indicates the direction of the merger according to many linguists (Whitman 1985:29); in other words, at the end of the OJ period, B-Type vowels merged in the direction of A-Type vowel articulations, which, by some accounts, are similar to that of NJ values of lil, /*o*/, and /*e*/. Most agree that the A-type /*i*/ and /*e*/ were more palatal than B-Type lil and /*e*/, and B-Type /*o*/ was more centralized than the corresponding A-Type vowel.

In the most comprehensive dictionary of Old Japanese, Jidai-betsu kokugo *dai-*jiten, Type A, or *kō-rui*, is marked with a line to the right of the syllable, and Type B, or otsu-rui, is marked with a line to the left of the syllable. In this dissertation and in the body of the data and Appendices, the following system of representation is utilized: for Type **A** vowels, the vowel is followed by a subscript 1, and Type B vowels are followed by a subscript 2. For cases where it is neutral or unattested, no numeric representation is given.

The following is a chart of all major representations of ABC distinctions, including my own, where "C" stands for "neutral":

Table 7: Reference guide of AB representations

	Trad.	Lange	Unger	Hashimoto	Mabuchi	Whitman	Martin	Riley
A	ɪ	ji	ɪ	ɪ	ɪ	ɪ	yi	$ɪ_1$
B	ɨ	ɪ	wi	ɨi	ia	uy	iy	$ɪ_2$
C	—	—	—	—	—	ɪ	1	1
A	e	je	ye	e	ie	ye	ye	e_1
B	e	e	e	əi	3	ey	ey	e_2
C	—	—	—	—	—	e	e	e
A	o	wo	wo	o	uo	wo	wo	o_1
B	o	o	o	ö	o	o	o	o_2
C	—	—	—	—	—	o	o	o

7.3.4 Phonetic Features

The question arises as to what phonetic features to assign to each distinction. Miller (1967:177) writes that: "The inspection of written records, like the other two techniques of linguistic reconstruction mentioned above, actually tells us nothing about the precise phonetic nature or acoustic quality of the sounds for whose earlier existence it provides evidence." Although there is no way to be completely sure, we can get a good idea of what the distinctive feature difference was between the pairs. This requires us to turn to Middle Chinese.

In his study of MC values of man'*yōgana* in the Nihon *shoki*, Mabuchi (1983) arrives at the following phonetic interpretation of A-B vowel distinctions:

Table 8: Mabuchi's phonetic interpretation of A-B distinctions based on MC values

NJ	A-Type	B-Type
/i/	[i]	[iə]
/o/	[uo]	[o]
/e/	[je]	[ɜ]

In his 1973 study of the MC values of man'*yōgana* in the Man'*yōshū*, Lange arrives at a similar phonetic interpretation:

Table 9: Lange's phonetic interpretation of A-B vowel distinction based on MC values

NJ	A-Type	B-Type
/i/	[ji]	[i]
/o/	[wo]	[o]
/e/	[je]	[e]

Unger (1977) concurs with Lange's assessment of five primary vowels for OJ and that the three extra distinctions are from diphthongs.

It is generally accepted for the front vowels (modem /i/ and /e/) that the distinction was one of palatality, where Type A has a palatal quality and Type B was non-palatal, with a possible labio-velar quality (Martin 1987:49). The distinction for the back vowels (modem /*o*/) was one of roundedness, where Type A was more rounded and slightly higher and Type B was unrounded and more central (phonetically ***[a]).*** After the phonetic distinction was neutralized, it has been assumed that the pronunciation was Type A for all of the vowels. It is of course possible that the distinction merged into a third pronunciation, rather than a pre-existing one.

7.3.5 Distribution of Vowel Distinctions

This A-B distinction appears in certain environments, but not in others. To be specific, the distinction for the modem front vowels /*i*/ and /*e*/ shows up after velars /*k*/, /*g*/ and labials /*p*/, /*b*/, and lml. For the modem back vowel /*o*/, the distinction occurs after velars /*k*/ and /*g*/, and dentals /*t*, *d*, *s*, *z*, *n*/ and /*r*/, lyl, and after lml in the *Kojiki* (Martin 1987:49). The following is a chart of the distribution of OJ vowels, utilizing the Whitman orthography (Serafim 1996: personal communication & notes from discussion group):

Table 10: Distribution of OJ vowels

	1.	a	ka	ga	sa	za	ta	da	na	pa	ba	ma	ya	ra	wa
A	2.	i_1	ki_1	gi_1						pi_1	bi_1	mi_1			
C	3.				si	zi	ti	di	ni					ri	wi
B	4.	i_2	ki_2	gi_2						pi_2	bi_2	mi_2			
	5.	u	ku	gu	su	zu	tu	du	nu	pu	bu	mu	yu	ru	
A	6.	e_1	ke_1	ge_1						pe_1	be_1	me_1			
C	7.				se	ze	te	de	ne				ye	re	we
B	8.	e_2	ke_2	ge_2						pe_2	be_2	me_2			
A	9.	o_1	ko_1	go_1	so_1	zo_1	to_1	do_1	no_1	po_1	bo_1	mo_1	yo_1	ro_1	
C	10.														wo
B	11.	o_2	ko_2	go_2	so_2	zo_2	to_2	do_2	no_2	po_2	bo_2	mo_2	yo_2	ro_2	

Ikegami (1932) and Arisaka (1932) argue for A-B distinctions for /***mo*$_1$**/ and lmol in the Kojiki. The distinction between the two syllables corresponding to later /***mo*$_2$**/ was lost after the Kojiki; it does not appear in the Man*'yōshū* or the *Nihon* shoki. Mabuchi (1957) claims A-B distinctions forpo, bo, si, *zi*, and o, but later retracts the one for o (1971). Ōno (1962:905) concurs with the existence of a /***po*$_1$**/ and /***po*$_2$**/ distinction. In 1998, Bentley argued effectively in favor of A-B distinctions for bothpo and mo. Note that the distinction forpo and mo is realized predominantly in the Kojiki, the oldest OJ text. Thus it seems that the back-vowel A-B distinction was lost by degrees after labial consonants (Whitman 1985:33).

7.3.6 Theories for the Limited Distribution

There are different ways to account for this vocalic distribution. Miller speculates that the distinction was originally made in all environments, but neutralized in certain environments depending upon the preceding consonant. Although there is no evidence for all of the environments, it is reasonable to assume that the distinction once existed throughout. In other words, the preceding consonant determined which vowel would merge and when. The distinction collapsed at different times depending on the environment. Miller (1967:172) states that all the A-B vowel distinctions had neutralized by the Heian Period The philological evidence clearly indicates that the distinction for back vowels disappeared at different times and so it is plausible that the neutralization in the excluded environments had already occurred.

As discussed above, the labial consonants /***m***/ and lpl show the distinction only in the oldest texts, such as the Kojiki. In other words, it was lost first after labial

consonants. We can assume from this that B-Type ***o*** began to undergo rounding after labial consonants, thus eliminating the distinction between A-Type ***o*** and B-Type o after labials.

Whitman (1985:33) notes that the A-B distinctions in lines 2 - 3 and lines *6* -8, which correspond to NJ /***i***/ and /***e***/ respectively, clearly show that no distinction is realized after coronals, including /***r***/. One explanation for this distribution is that /i_2/, and /e_2/, Whitman's /***uy***/ and /***ey***/, were palatalized after coronals, leading to their merger with /i_1/ and /e_1/, or Whitman's /***i***/ and /***ye***/, respectively, at the pre-OJ stage. Whitman notes, however, that this development is not as phonetically motivated as the rounding of $*o_2$ after a labial consonant discussed above. Also, /i_2, e_2/ merged with /i_1, e_1/ in the probable direction of /i_1, e_1/, and began to induce affrication of the preceding coronal obstruents in Middle Japanese (MJ). Whitman suggests that the affrication began after this merger.

Whitman (1985:34) claims that coronal consonants were palatalized: (i.e., affiicated) before /***i***/ and /***y***/ in pre-OJ, as is shown in the following rules:

Table 11: Whitman's rule of palatalization of coronal consonants

before /***i***/ and /***y***/ in Pre-OJ

Pre-OJ				OJ
t, s	>			***s*** ([***c***])
d, z, n, r	>	***y***	>	***ø***

Given this rule, syllables in lines 3 and 7, except for /***si***/, /***se***/, /***wi***/ and /***we***/, are then instances of /Ci_2/ and /Ce_2/. This rule supports Mabuchi's 1957 claim of an A-B distinction for si in the ***Kojiki.*** Whitman's rule of palatalization of coronal consonants before /***i***/ and /***y***/ accurately predicts that the A-B distinction for i and e after these consonants is allowed to survive only after /***s***/ by the time of OJ. In all other

environments, the original coronal initial will be lost before /***i***/ and /***y***/. ***An*** A-B distinction with ***se*** is also likely, but due to the low frequency of its occurrence, this probable contrast remains speculative.

Whitman (1985:35) acknowledges that this hypothesis runs counter to the common assumption that the syllables for which there is no orthographic A-B distinction are the unmarked version of his /***Ci***/ or /***Cye***/ (Type A), despite the fact that Type A ***e*** is less fequent in occurrence than Type B ***e***. He claims Japanese-internal, as well as external evidence to support his thoery. For internal evidence, Whitman (1987:35) cites Miller (1967) and Martin (1987) and their observation that some instances of ***i*** and ***e*** preceded by **a** coronal initial must be the B-type vowels /i_2/ and /e_2/, since they share the same vocalic alternations that are characteristic of these vowels (or diphthongs). The following examples show alternations that are characteristic of /i_2/ and /e_2/ (Whitman (1985:35) cites Omodaka et al. (1967)).

Table 12: Alternations of ***i*** with ***o*** and of ***e*** with ***a*** after Coronal Initials

si 'that' (mesial), 3rd person pronoun	:	***so$_2$-*** 'that' (mesial); cf. MK ***tye-*** 'that'
se 'narrow', ***seba-si*** id.		***sa-, sa-si*** id.; cf. ***saori*** 'narrow weave'
se 'back'		***so$_2$-(muk-)*** 'turns the back'
ti 'blood'	:	***tu-*** in ***tunu*** (place name) < ***tu*** + ***nu*** 'pond'
-ti 'suffix after numerals'		***-tu*** id.
ti 'miscanthus'		***tubana*** 'miscanthus flower' < ***tu*** + ***pana*** 'flower'
ti 'hook'	:	***turi*** 'fishing', through medial /**r**/ loss
te 'hand'	:	***ta-*** id.
ni 'baggage, load'	:	***no$_2$-*** id.
ni 'jewel'	:	***nu-*** id.
nirU- 'to resemble'	:	***no$_2$r-*** id.
ni 'earth, red clay'		***nur-*** 'to paint', ***nurA-*** 'to dampen', ***nu-, nuta*** 'mud, damp ground' < ***nu*** + ? ***ta*** 'field')

Whitman (1985:36) states that this accounts for most of the monosyllabic roots such as ti and ni, where /i_2/ would be predicted for OJ.

Whitman (1985:37) notes that neutral cases of /*Ci*/ with coronal initials which do attest alternations such as those given above, still reflect secondary /*i*/, or even B-Type ***i*** through alternate dialect forms, or doublets:

Table 13: Alternations of ***i*** and ***u*** or o

nizi ' rainbow'	***nuzi*** id. (Could also be ***nwozi***)
nita 'wet, wet ground'	nuta id.
sim- 'to soak into, be dyed'	***so$_2$m-*** id.
simA- 'to dye'	***so$_2$mA-*** id.

Whitman notes the antiquity of the doublet ***sim(A) ~ so$_2$m(A)-*** and that even by OJ, this is evidence of the semantic specialization of the related NJ verbs ***simi-*** 'to soak into', ***simer-*** 'to become damp', and some- 'to dye'. The MK cognate sumuy- 'to soak into' offers evidence for an original ***o$_2$*** in the first syllable, since OJ ***o$_2$*** corresponds to MK u. (See: 9.0 Proto-Koreo-Japonic).

As additional support for palatalization of coronals before high front vowels in pre-OJ, Whitman also cites various kinds of dialectal evidence, particularly that from Azuma. Also, the distribution of stem-final consonants in OJ's yodan, or quadrigrade, conjugation offers evidence for his hypothesis of palatalization. OJ yodan verb stems do not end in d-, z-, n-, w-, or y-, whereas nidan, or bigrade stems all attest ***dV-***, ***zV-***, ***n*** V-, ***wV-***, and y V-. Most of the verbal extensions to the OJ verb stem were built upon the continuative, or ren'*yo͂kei*, base /***-i$_1$***/. If Whitman's hypothesis of palatalization after coronal obstruents is correct, then we would expect the continuative suffix /***-i$_1$***/ would trigger palatalization after original stem final ****d-***, ****z-***, ****n-***, ****y-***, and ****r-***, resulting

in either the loss of these stem-final consonants or restructuring of the paradigm with original stem final ***t-***. Whitman's hypothesis is supported by the absence of the above-mentioned voiced coronal obstruents in OJ ***yodan*** verbs. Stem-final ***/t-/*** and ***/r-/*** do exist in OJ ***yodan*** verbs, but this is likely due to their high frequency. Whitman (1985:39) also draws on comparative evidence to suggest that some of the ***yodan*** cases of stem-final ***/r-/*** are actually an epenthetic consonant attached to an original monosyllabic vowel-final verb stem. For example, OJ ***nar-*** 'becomes, is born, comes out' compared to MK ***na-*** id, and OJ ***kar-*** 'part, go away' compared to MK ***ka-*** 'go'.

Further support for Whitman's claim comes from the OJ ***yodan*** verb stem finals that were originally ****t.*** One would expect OJ ***/s/*** for the final of the continuative base preceding the continuative suffix ***/-i/***. The following contrast: OJ ***hanat-*** 'separates, releases it' and NJ ***hanas-*** id. indicate dialectal differences in final outcomes, depending on when palatalization ceased to be productive. Or, it could also be because the single paradigm was analogically split into two, as with English 'shade' : 'shadow'. Whitman (1985:40) writes the following two rules for palatalization of coronals before ***lil*** and ***/y/*** in pre-OJ:

Table 14: Whitman's rules of affrication and palatalization

a) Affrication of ***/t/*** before ***/i/*** and ***/y/*** in pre-OJ:

[+cor, +ant] > [-ant] / ____ V [+hi, -bk]

b) Palatalization of voiced coronals before ***/i/*** and ***/y/*** in pre-OJ:

[+cor, +vd] > [+hi, -bk] / ____ (#) V [+hi, -bk]

Voiced coronal consonants palatalized to ***/y/*** before ***lil*** and ***/y/*** in pre-OJ, whereas stem final ***/t/*** in ***yodan*** verbs did not lenite to [s] in the central OJ dialects, but did in

Azuma dialects.

7.3.7 Sources of OJ Vowels

In Section 7.3.2, OJ Vowels, eight vowel distinctions were outlined for OJ. Scholars disagree, however, regarding the number of vowels in Pre-OJ. Whitman (1985), Martin (1987), and Miller (1967) agree on four primary vowels: /*i*/, lul, /*o*/, and lal. Unger (1993 [1977]) argues for adding primary /*e*/. Serafim [1978] argues for at least eight primary vowels. Internal evidence suggests eight vowels/vowel distinctions in OJ, where three of these vowels/vowel distinctions were lost by merger in the late OJ – early NJ period, resulting in: lil, /*o*/, and /*e*/.

According to Whitman, the B-Type vowel /**uy**/ (= /i_2/) is are from diphthongization of pre-OJ ***u*** or ***o*** (= ***o***$_2$) and a high front vowel (1985:31). Whitman also states that "the most widely attested position for this final parallels the most widely attested position for /*ey*/: stem-final position in nouns and the continuative base of nidan (bigrade) verbs. Thus it is desirable to treat the two finals in parallel fashion, as diphthongs consisting of a vowel and a palatal off-glide" (1985:31). For this reason, Whitman reverses Unger's lwil representation of B-Type i to luyl, showing the order of vowel nucleus plus glide. Martin (1988) notes that /*iy*/ (Whitman's luyl) was likely phonetically [*ĭy*], which is similar to Hashimoto's (1950) representation for B-Type lil.

7.3.8 Theory of Diphthongal Origins

Unger (1993 [1977]:25) lists the possible processes when two OJ vowels occurred consecutively at a morpheme boundary:

Table 15: Unger's processes of OJ vowels at a morpheme boundary

1. Loss of the first vowel
2. Contractions, or loss of the second vowel

3. Monophthongization, or replacement of both vowels by a single, different vocalic element.
4. Epenthesis (rare)

Unger claims that the theory of diphthongal origins accounts for the A-B distinctions in OJ, given certain qualifications.

For monophthongization, process number three, Unger gives the following list of changes (1993 [1997]:26):

Table 16: Monophthongizations Chart

1. ***Cai** > **Ce** (= **Ce$_2$**)	***naga-iki** 'long' + 'breath' > **nageki** 'sigh'
2. ***Cia** > **Cye** (= **Ce$_1$**)	***saki-ari** 'bloom' + 'exist' > **sakyeri** 'be blooming'
3. ***Coi** > **Ce** (= **Ce$_2$**)	***tono-iri** 'palace' + 'enter' > ***toneri** > **tonyeri** 'servant to the imperial family'
4. ***Cio** > **Cye** (= **Ce$_1$**)	***pi-oki** 'day, sun' + 'put' > **pyeki** '(family name)'
5. ***Coi** > **Cwi** (= **Ci$_2$**)	***opo-isi** 'big' + 'rock' > **opwisi** '(place name)'
6. ***Cui** > **Cwi** (= **Ci$_2$**)	***waku-iratukwo** 'young' + 'male' > **wakwiratukwo** '(appellation)'
7. ***Cuo** > **Cwo** (= **Co$_1$**)	***situ-ori** 'ancient type of native weaving' + 'weave' + **sitwori** 'id.'

The Theory of Diphthongal Origins asserts that the OJ eight vowel system is derived from a simpler system. Whitman reorganizes Unger's chart of monophthongizations into the following (Whitman 1987:512):

Table 17: OJ Vowel Sources through Monophthongization

NJ	OJ	Pre-OJ
i	i_1	< **i*
	i_2	< **u* / *o* + *i*
u	*u*	< **u*
e	e_1	< **i* + *a* / (*o*)
	e_2	< **a* / (*o*) + *i*
o	o_1	< **u* + *a* / (*o*)
	o_2	< **o*
a	*a*	< **a*

7.4 Pre-OJ Vowel System

The chart indicates that only four pre-OJ vowels are needed to derive both of the OJ and NJ systems. Based on the theory of diphthongal origins, Martin (1987) proposes a four-vowel system of *i, **u*, **o*, and *a for pre-OJ, where **i* is equivalent to later i_2, and **o* is equivalent to later o_2. Whitman (87:512) notes that the evidence for Type A, or *kō*, o is slight (i.e., for pre-OJ $*o_1$). Unger objects to a four-vowel system because the system would be unbalanced. Unger (1993:27) also argues for some instances of original *e, equivalent to later e_2. Hattori (1978) and Serafim (1978) argue for an even richer pre-OJ vocalic inventory.

Like Martin, Whitman assumes a four-vowel system for pre-OJ. He states the precursor of OJ /o_2/ was a central vowel, such as **[a]*, and therefore the system would maintain the three vowel heights of OJ, with backness distinctive only for high vowels. The system would look like the following:

Table 18: Pre-OJ primary vowels

	- back	+ back
+ high	*i	*u
- high		*o (= [ɔ])
+ low		*a

Whitman (1990:513) states that by accepting the theory of diphthongal origins for OJ vowels, we have new sequences to search for when comparing our data to MK (See: 9.0 PKJ). He claims (1990:515) that the OJ vowels that developed from diphthongal origins, namely leyl (= /*e*₂/), lyel (= /*e*₁/), luyl (= /*i*₂/) and lwol (= /*o*₁/), came from earlier sequences of *VCV, where C was *y (pre-OJ) for leyl, lyel and luyl, and *w for lwol.

7.4.1 Evidence for the Secondary Nature of OJ Vowels /*uy*/, /*ey*/, lvel, and lwol

Whitman cites three areas of evidence to show the secondary nature of the OJ vowels luyl, leyl, /*ye*/, and lwol: compounds where diphthongization of two vowels has occurred; specific vocalic alternations, resulting from the absorption of suffixes into a stem; and the frequency and distribution of the above vowels in OJ.

7.4.2 Diphthonnization in Compounds

The following are OJ examples of the OJ vowels luyl, leyl, /*ye*/, and lwol originating from the crasis of two vowels in a compound (Yamaguchi 1971, Õno 1974).

Table 19: Examples of OJ diphthongization in compounds

1. luyl <	a.) /*o*/ + /*i*/	opo 'large' + isi 'rock' > opuysi (Kojiki)
	b.) /*u*/ + /*i*/	waku 'young' + *iratukwo* 'honored male' > wakuyratukwo
2. leyl <	a.) /*a*/ + /*i*/ (Kojiki)	taka 'high' + iti 'market' > *takeyti* (place name)
	b.) /*o*/ + /*i*/ servant'	*tono* 'palace' + iri- 'entering' > toneyri 'palace
3. lyel <	a.) /*i*/ + /*a*/	ki- 'to wear' + ar- 'to be' > kyeri 'to be wearing'
	b.) lil + /*o*/	pi 'sun' + ok-i 'putting' > pyeki personal/place name
4. /*wo*/ <	a.) /*u*/ + /*a*/	kazu 'number' + *apA*- 'to join' > *kazwopA*- 'to

count'

b.) /*u*/ + /*o*/ *situ* 'native weaving' + or-i 'weaving' > *sitwori* (NS)

7.5 The Consonantal System of Old Japanese

7.5.1 OJ Voiced Obstruents

OJ did not allow initial voiced obstruents, except in a small number of Chinese loans. Sequential voicing, or rendaku, however, occurs frequently. Sequential voicing is the voicing of the initial obstruent of the second morpheme of a compound.

Scholars have hypothesized that original plain voiced obstruents in pre-OJ were lost through lenition to glides or zero, and replaced by a series of prenasalized voiced obstruents from secondary sources, i.e., from a nasal plus a voiceless obstruent (Whitman 1985:7). Thus, in OJ, voiced obstruent phonemes lbl, /*d*/, /*g*/, and /*z*/ had prenasalized articulations (Hamada 1957, Unger 1993:34).

7.5.2 Evidence for Prenasalized Voiced Obstments in OJ

For external evidence, Whitman cites Rodriquez' Arte da lingoa de Japam (1608), where it states that vowels are regularly nasalized before /*d*/ and /*g*/, and sporadically before /*b*/ and /*z*/. This leads Hashimoto (1950) to conclude that the Tōhoku and Tosa dialects retain the OJ prenasalized voiced obstruents, as opposed to the prenasalized articulation being a later innovation in these dialects. Eastern Japan, Kyushu, and Shikoku dialects attest [ŋ] for the articulation of /*g*/.

Strong internal evidence for a prenasalized b comes from the well-attested alternation of medial /*b*/ with /*m*/ in OJ, e.g. amu ~ *abu* 'horsefly', *amu-* ~ *abu-* 'bathe'. Modem Ryukyuan dialects reflect this alternation of lbl with /*m*/. Yonaguni, the last island in the Okinawan island chain, has the following examples of Yonaguni lbl

corresponding to standard NJ /***m***/ (Riley 1995:unpublished field notes).

Table 20: Yonaguni evidence for prenasalized b

Gloss	NJ	Yonaguni
smoke	kemuri	***kibuNci***
spider	kumo	kubu
smooth	nameraka	***nabiruNtai***
mother	(OJ omo)	abuta
narrow	semai	***siba:tati***

Whitman states that a parallel alternation for /***d***/ or /***g***/ is lacking (1985:8). In other words, we do not find /***d***/ alternating with /***n***/, nor /***g***/ with /***ŋ***/ in various stages of Japanese. In Yonaguni, however, we do find modern dialectal attestations of NJ /***g***/ corresponding to YN /***ŋ***/ ((Riley 1995:unpublished field notes, except where noted).

Table 21: Yonaguni evidence suggesting a prenasalized *g*

Gloss	NJ	Yonaguni
mirror	kagami	***kaŋaN***
swim	***oyogu***	***uŋuN***
grandchild	***mago***	***maNŋu***
row	kogu	***kuŋuN*** (Thorpe: 1983)
remove	nuku	***nuŋuN*** (Thorpe: 1983)

7.5.3 ***Go-on*** and ***Kan-on*** Evidence

Other evidence for prenasalized voiced obstruents is the ***man'yōgana*** transcriptions in the ***Kojiki*** (712). Ōno (1974) observes that the ***man'yōgana*** in the ***Kojiki*** are related to ***go-on*** pronunciations, and the ***man'yōgana*** in the ***Nihon shoki*** (720) are related to ***kan-on*** pronunciations. The ***man'yōgana*** in the ***Kojiki*** had plain obstruents in Middle Chinese, whereas the ***man'yōgana*** in the ***Nihon shoki*** have mostly nasal pronunciations in Middle

Chinese. Hamada (1952) suggests this shift in man'*yōgana* is due to Chinese influence on OJ.

Unger (1993:35-36) argues that Archaic Japanese had two types of voiced obstruents, one prenasalized and the other not, and the original voiced obstruent series underwent lenition. The go-on voiced obstruents in Chinese loans were originally the plain voiced obstruent series. A consonant shift then occurred, where AJ */*b*, d, g, *z*/ became lw, y, *ø*, *ø*/ in OJ, leaving only the prenasalized obstruent series during the period when kan-on pronunciations were being introduced.

Whitman (1985:14) points out, however, that shifts observed between the go-on and kan-on readings in the Nihon shoki are also reflected in the orthography for native OJ words. Whitman also observes that if Unger's theory were correct, we should find examples where /*b*, d, *g*, *z*/ in the *Koziki* appear as lw, yl or o in the Nihon shoki, but such examples do not exist.

Whitman claims that the go-on pronunciations reflected in the man'*yōgana* in the texts other than the Nihon shoki were not imported directly from China, but via the Korean peninsula, whereas the later kan-on pronunciations reflect direct contact with the spoken Chinese of that time. Whitman states: "(T)he later association of MC nasal initials with OJ voiced initials in both kan-on pronunciations and the Nihon *shoki* **orthography for native words were the result of subsequent** contact **with spoken Chinese"** (1985:14). (Whitman quotes Mabuchi's (1974) list of *man'yōgana* from the Nihon shoki (1985:10-13) for syllables with OJ voiced obstruent initials.) In either case, it can be asserted that at least some voiced obstruents are the result of earlier nasal plus

obstruent clusters.

7.5.4 *Rendaku* as a Source

As mentioned above, ***rendaku*** can also be seen as evidence for secondary voiced obstruents in OJ; for example, ***yudura*** 'bowstring' < ***yumi*** 'bow' + ***tura*** 'string', or, more controversially, ***yagura*** 'armory' < ***ya*** 'arrow' + ***kura*** 'storehouse'. One way to interpret ***rendaku*** is to analyze it as the absorption of an original genitive; i.e. ***ya*** + ***no*** (genitive) + ***kura*** > ***yagura.***

7.5.5 Sources of OJ ***lvl*** and ***lwl***

In this section, we will discuss what became of the original plain voiced obstruents in pre-OJ. Martin (1966, 1987) reconstructs ****b*** and ****d*** for some instances of OJ ***lwl*** and ***lyl.*** Later (Martin 1972), he posits PKJ ****g***, based on Korean evidence, with a reflex of **o** in the Japonic line. Ramsey and Unger (1972) agree and add pre-OJ ****z***, also resulting in **o** in Japonic.

The evidence for pre-OJ ****b*** leniting to OJ ***lwl*** is the strongest. In the Sakishima dialects (Miyako and Yaeyama) and Yonaguni dialect, the phoneme ***lbl*** corresponds to initial OJ ***lwl*** in most cases. Whitman cites examples from Hirayama (1967); the example from my field work are in parenthesis (Riley 1995:unpublished field notes).

Table 22: Sakishima evidence for ****b*** lenition

Gloss	OJ	Yonaguni
young	***waka-***	***baga-***
to be	***wo-***	***bu'N***
axe	***wono***	***(bunu)***
to forget	***wasur-***	***barasa***N
drunk	***wep-***	***bi?-***

Whitman (1985:17-18) views the above process as a lenition, and parallels it to the leniting of ***p*** to /ɸ/. Thorpe (1983:) reconstructs ***w*** for the above forms and claims instead that a fortition occurred in Sakishima and Yonaguni. A number of Ryukyuan dialects again demonstrate the reflex ***/p/*** where NJ has ***/h/.*** Whitman assumes a shift of proto-JR labial stops ***p*** and ***b*** to the fricatives *ɸ and *β which began in the dialects of the main island and moved outward; modern dialects have ***/h/*** and ***/w/*** respectively. Whitman (1985:18) writes a rule of lenition for labial obstruents in pre-OJ.

Table 23: Labial Obstruent Rule of Lenition for pre-OJ

[- son, + ant] > [+ cont]

Thus Whitman excludes other obstruents from this process and views the development of ***b*** to be different from ***d*** and ***g***.

As mentioned above, Martin and Unger view a gradual lenition of all voiced stops, whereas Whitman limits it to labials. Martin and Unger claim that ***d*** lenites to OJ ***/y/*** based on Yonaguni evidence; Whitman views this as overgeneralizing a hypothesis beyond its limit. As mentioned above, the Sakishima dialects and Yonaguni give evidence for ***b > w,*** which Whitman accepts, but only the Yonaguni dialect has the reflex of ***/d/*** for OJ ***/y/*** in initial position. Whitman (1985:18-19) cites data from Hirayama; data from my own field work (Riley 1995: unpublished field notes) agrees with Hirayama's forms:

Table 24: Yonaguni examples of a /*d*/ reflex corresponding to OJ /*y*/

Gloss	*OJ*	Yonaguni
roast, to	***yak-***	***da:guN***
mountain	*yama*	*dama*
night	*yoru*	*duru*
hot water	***yu***	*du*
house	***ya***	*da*
(final particle)	***ya***	*da*
(final particle)	***yo***	*do*
stop, to	***yame-***	***da:myaN***
cheap	***yasu-***	*da*ʔ***tsaN***
rest, to	*(voko-)*	***duguN***
eight	*yattu*	***da:ci***
soft	***yawaraka-***	***dara:tati***
drool	***yodare***	*dudai*
good	***yo-***	***duTu***
four	***yottu***	***du:ci***
four days	*yokka*	*duga*
four times	(***yonkai***)	*du-muruci*
four people	(***yonin***)	***dudaiN-Tu***
read, to	***yom-***	***dumuN***
Yonaguni		***dunaN-cima***
floor	*yuka*	*duga*
bow	*yumi*	***duN***

Whitman rejects the Yonaguni evidence for several reasons. One reason is because Chinese loans, such as J ***yasai***, 'vegetable' also begin with an initial /*d*/ in Yonaguni, *dasai*. This example can be explained by the constraints of the Yonaguni language at the time of borrowing the word for 'vegetable'; in other words, initial /*y*/ was not allowed in the Yonaguni language at the time of borrowing and therefore was assigned to /*d*/. Modern Yonaguni does accept initial /*y*/ due to borrowing from NJ via the media and increased contact with Japanese mainland speakers.

If we examine an unrelated case of Hawaiian borrowing English words, such as the names 'David', or 'Samuel', we find a similar phenomenon. When borrowed into

Hawaiian, there was no /*d*/ or /*s*/, so both names end up with an initial /*k*/ instead, Kawika and Kamuela, respectively. This certainly does not indicate a diachronic rule, such as ***s***, ***d*** > k, but rather a synchronic constraint of that time that did not allow /*d*/ or /*s*/. Instead of viewing yasai, 'vegetable' as having also undergone a sound change of y to d, it can also be viewed as a synchronic constraint on the language at that time which did not allow for y in initial position. Whitman also cites Thorpe's (1983) rule which states that /*d*/ is the Yonaguni reflex for all non-labial voiced obstruents, including Proto-Ryukyuan, or PR, ***g*** before ***i*** and ***y***.

Since Yonaguni is the only dialect that offers this reflex, Whitman sees it as insufficient proof of ***d*** > y. I would argue that at times, evidence for a proto-phoneme will only show up in one of the many dialects, and many times disappears completely. Although it is certainly desirable to have multiple dialects exhibit the same reflex, the existence of only one dialect with such a reflex is still evidence that has to be treated, either as a retention of an earlier *d, or an innovation in that dialect. Whitman accepted ***b*** > ***w*** because it was found in both the Sakishima dialects and Yonaguni. It seems that these dialects could be retaining the original voiced consonants, and a wave of lenition is sweeping down through the island chain, leniting the velars first and the dentals next, but with labials being the most resistent to lenition.

Whitman also rejects Martin (1972) and Unger's (1993 [1977]) pre-OJ ***g*** leniting to zero in OJ. Martin develops this proposal based on Middle Korean comparisons such as OJ ***amU-*** 'to bathe, wash' : MK ***kam-*** id. Since the examples are few and there is no internal Japanese evidence, Whitman rejects this also, stating that "[t]he main support for the Martin-Unger view positing ***b*** > lwl, ***d*** > /*y*/, ***g*** > ***ø*** is the generality of the

hypothesized lenition of voiced obstruents, but if, as I have argued, the OJ development of ***b*** is to be treated together with ***p***, and the Yonaguni evidence for ***d*** > /***y***/ is discounted, this support disappears" (Whitman 1985:19).

7.5.6 OJ /***s***/

The phonetic realization of OJ s has been the source of much controversy. Some have relied on the placement of s in the ***kana*** chart as evidence for the OJ realization. Unger (1993:21), however, queries whether the placement was merely a reflection of the preferences of the Buddhist clerics. In other words, since Sanskrit had both voiced- and voiceless-initial syllables in the palatal slot but only voiceless-initial syllables in the s-column, perhaps the clerics opted to place /***s***/ and /***z***/ in the palatal in order to be consistent with the Sanskrit chart in terms of voice distinctions. The other possibility is that in OJ, /***s***/ and /***z***/ were pronounced with palatal initials.

Arisaka (1936) and Miller (1967) claim that /***s***/ was [ts] before back vowels, and before front vowels /***s***/ was phonetically [s] or [ʃ]. Arisaka based his hypothesis on the Sanskrit study notes in *Zaitōki* (858), a diary of the ninth-century Chinese monk Ennin (also known as Jikaku Taishi). Mabuchi (1959, 1971) disagrees with Arisaka and claims [ʃ] in all positions. Mabuchi's theory is based on comparisons of Sanskrit and Japanese in the ***Shittan yōketsu*** (c. 1100) and the ***Shittan kuden*** (1181). While Osada (1972) cannot decide between [ʃ], [ts], and [***t***ʃ], based on the above-mentioned placement in the Sanskrit chart, he is sure that [s] itself is not correct.

Lange (1972) observes that there is little evidence to indicate an allophonic variation between [s] and [ʃ], as stated by Arisaka, narrowing the phonetic possibilities

down to *[s]* and *[ts].* Unger (1993:21) notes a point mentioned by Mabuchi in personal conversation: if */s/* was phonetically *[ts]* in OJ, then an explanation is needed as to why */s/* and */t/* did not merge as [*tʃ*] when in most dialects */s/* and */t/* were beginning to palatalize before *Iil* in the thirteenth century. And yet, according to Whitman, such a merger did happen earlier.

From a typological perspective, Unger (1993:21) points out that almost all languages have the sound *[s].* Hawaiian is one of the few languages that synchronically does not have [*s*], due to the fact that **s* became *h* in Hawaiian. Unger also notes that when a language only has one sibilant, it is always */s/*, and therefore he concludes, with noted caution, that he will identify OJ */s/ æs* phonetically *[s]* (1993:22). Miyake (1996) also concludes that it is simple *[s].*

7.5.7 OJ */r/*

OJ */r/* does not occur word-initially, although it does occur morpheme initially. Serafim, as cited in Unger (1993:33), offers an explanation. According to this hypothesis, there was a productive process of reduplication of the first syllable of a verb to form a new root with enhanced meaning; for example, *tuke-* 'attach', *tutuke-,* 'continue'; *yam-* 'get sick', *yayam-* 'be troubled'.

Serafim reconstructs **r* in initial position before **o*; Unger furthers this hypothesis and reconstructs word-initial **r* before all vowels. By allowing **r* word initially, Unger can then reconstruct exact reduplication for what initially appear to be problematic examples.

Table 25: Unger's reduplication examples

wogam- 'bow'	worogam- 'revere'	***rogam-**	***rorogam-**
utape- 'appeal'	urutape- 'appeal'	***rutape-**	***rurutape-**
name- 'line up'	narabe- 'line up'	***rabe-**	***rarabe-**
i- 'mint, cast'	ir- 'scorch'	***ri-**	***riri-**

If the reconstructions are correct, then the data suggest the following changes (1993:34).

Table 26: Unger's suggested pre-OJ changes

r** > (?y** >) ø / #___***i***

r** > (?w** >) ø / #___***u***

r** > ***w / # o (due to Serafim)

r** > ***n / #___***a***

(*r > y / #___***e***)

Unger claims that the changes have already taken place by OJ, likely in AJ. Whitman, however, claims that these are examples of medial r loss in the OJ line. We will take up this phenomenon, known as Whitman's Law, in the section on proto-Koreo-Japonic.

7.5.8 Disappearing OJ Initials

Yamaguchi (1974) notes cases of word-initial consonants alternating with zero. Yamaguchi lists lp, t, k, s, m, ***n***/ as consonants that alternate with zero in word initial position.

7.5.8.1 The case of ***s***

By far, ***/s/*** has the most numerous examples, as listed below, which tend to recur with the same morpheme (Unger 1993):

Table 27: OJ Examples of disappearings

'rain': ***paru-s-ame*$_2$**
***paya-s-ame*$_2$**
***ko*$_1$*-s-ame*$_2$**

Table 27: OJ Examples of disappearings (continued)

	***mura-s-ame*$_2$**
'rice plant'	***tuki*$_1$*-s-ine-mo*$_2$*ti***
	mi-s-ine
	uru-s-ine
	to*$_1$*-tuka-s-ine
'crag'	kata-s-ipa
'occur?'	***mi*$_1$*-s-o(ko)napas-***

Note that the majority of forms occur with 'rain' and 'rice plant'. Note also that 'rain' and 'rice plant' occur independently with s- initials: ***same*$_2$**, and sine, respectively, which forms alternate with the more common ***ame*$_2$** and ine.

Whitman claims that this epenthetic s is actually related to the genitive suffix ***–tu***, which itself has been compared to the Korean genitive construction ***-s-*** (Miller 1967). In order to explain why ***/t/*** should surface as ***/s/*** in some cases, Whitman claims the following rule:

Table 28: Whitman's rule of palatalization of t

t > s / __ i, y

In other words, Whitman reconstructs ****mitine*** for OJ ***misine***, where the t comes from the OJ genitive marker ***–tu***; *mi-tu-ine > ****mitine*** > ***misine***. The independent forms with initial s, however, would not fit into this hypothesis. If this is true, then perhaps sine and same2 can be explained by analogy.

7.5.8.2 The case of ***n***

Yamaguchi (quoted in Unger 1993:26) notes only the following two cases of n alternating with zero: ***na-n-imo***, and ***nipi-n-ape***. Unger offers little explanation for them, stating only that they "remain problematic."

7.6 OJ Conclusions

Understanding OJ and Pre-OJ is critical to the task of reconstructing Proto-Koreo-Japonic. In so doing, one can eliminate internal problems before comparing OJ to MK. For example, in his landmark work reconstructing PKJ, Martin (1966) did not take the eight vowel distinctions of OJ, but rather relied on the five vowels of NJ (See: 9.0 Proto-Koreo-Japonic). Modifications to remedy the situation were later suggested by both Miller and Mathias; ideally, however, one would want to eliminate language internal problems before reconstructing a proto-language.

In fact, utilizing such language internal information can actually help to uncover more possible cognate pairs. Whitman, in his 1985 dissertation, used the results of internal reconstruction in his reconstruction using the comparative method. This enabled him to get a more accurate picture of the pre-language at an earlier time depth, in addition to explaining sound changes in each language. Martin, on the other hand, by not doing IR first, ended up with several unnatural segments in his proto-language.

In addition, Whitman used the theory of diphthongal origins to benefit his PKJ comparison (See: 9.0 Proto-Koreo-Japonic). That is, he integrated the results of IR of OJ vowels to help him look for possible cognate pairs in MK. For example, instead of looking for a match to OJ e_1 or e_2 (without consideration of diphthongal origins), Whitman hypothesized that IR helps us see more clearly what we should actually be searching for in MK. That is, given e_1, since based on the theory of diphthongal origins this vowel came from ***iCa**, one would therefore look for an ***iXa*** sequence in MK, where X could either be a consonant or nothing. In the same way, since e_2 came from an original ***aCi*** sequence, one would therefore look for an ***aXi*** sequence in MK.

This exemplifies the benefits of doing language internal work before beginning a comparative reconstruction.

8.0 Korean Language History

8.1 Introduction

Earlier Korean scholars divided Korean language history according to political events, rather than linguistic events. Terms such as Old Korean, Ancient Korean, and Middle Korean were used loosely and inconsistently. In order to establish consistency within the literature, Lee Ki-Mun (1961) (henceforth YKM), therefore, proposed the following dates for the division of Korean language history:

Table 29: Division of Korean language history

Old Korean	?? – 1000 A.D.
Middle Korean	
Early Middle Korean	1000 – 1400 A.D.
Late Middle Korean	1400 – 1600 A.D.
Modern Korean	
Early Modern Korean	1600 – 1750 A.D.
Late Modern Korean	1750 – present

8.2 Early Korean Languages

8.2.1 Chinese Records

Since no records exist for early languages spoken on the Korean peninsula, Chinese records offer the only information about these languages. Chapter thirty of the ***Wei Chih*** [Records of Wei], which itself is from a section of the ***Sankuo Chih*** [Records of the Three Kingdoms (Chen Shou: 233-297)], entitled Tung-I ***chuan*** [Accounts of the eastern barbarians], refers to the Puyŏ tribes, located in central Manchuria, and Koguryŏ, south of Puyij. The translation of the ***Wei Chih*** states: "According to an old tradition of the Eastern Barbarians, Koguryŏ is regarded as a branch of Puyŏ; its language and customs

are practically the same as those of Puyŏ" (YKM 1975:15-16). The chronicle goes on to state that not only the Puyŏ and Koguryŏ languages, but also the languages of Okcho and Ye were related. Based on this account, YKM calls this group of languages the Puyŏ, or Northern group (1975:16).

In the southern part of the peninsula, there were three tribes: Chinhan, Mahan, and Pyonhan, and each of these tribes was divided into several smaller groups. Information from Chinese sources regarding the relationship of these tribes is less clear. However, genetic relationship to one another seems likely. The tribes of Mahan and Chinhan would later emerge as the kingdoms of Paekche and Silla, respectively. YKM calls these languages the Han or Southern group (YKM 1975:17-18; Huh 1983:1). Both Huh and YKM believe that the Puyŏ and Han language group came from a common source (YKM 1975:19; Huh 1983:1).

8.2.2 Languages of the Three Kingdom Period

The Korean historical chronicles known as the *Samguk-sagi* [Historical records of the three kingdoms (1145)] and *Samguk-yusa* [Remnants from the three kingdoms (c. 1285)] refer to the languages of the Three Kingdom Period. Place names, personal names, and a few lexical items recorded in the history texts centuries later, offer modern scholars the only information available.

Although the information is scant and fragmented, YKM claims that based on the limited lexicon of these languages, the Koguryŏ language was closer to Ancient Japanese than the Paekche or Silla languages. YKM suggests the following cognates for Koguryŏ

and Old Japanese (quoted in Kim CW 1983:36):

Table 30: YKM's proposed cognates of Koguryŏ and Old Japanese

Koguryŏ	Pre-OJ	Old Japanese	Gloss
osagum	***wusagi**	***usagi**	'rabbit'
mit	***mil**	***mi-**	'three'
utsu	***itu**	***itu**	'five'
nanin	***nana**	***nana**	'seven'
poksa	***puka-**	***puka**	'deep'
ta-	***tani**	***tani**	'valley'

8.2.3 The Silla Language and Old Korean

The Silla kingdom unified and ruled the Korean peninsula from the seventh to the tenth century. The Silla kingdom originally emerged from Saro, one of the twelve states of Chinhan. After unification of the Chinhan states, Silla went on to subjugate Paekche and Koguryŏ. Old Korean, therefore, is a descendent of the language of Silla, which in turn is a likely combination of the Saro language and adjoining dialects (Huh 1983:2).

Documents of Old Korean exist, but are, again, scarce. In addition, such documents are written in a modified system of Chinese characters, where the characters are used to represent sounds of Old Korean. Silla scholars developed two such scripts: *idu* and *hyangch'al*. Lee defines *idu as* a usage of Chinese characters that mixes *hanmun*, or written Chinese and Korean syntax (YKM 1975:22). *Hyangch'al* is similar to *idu* except that the prose is more native Korean than Chinese. *Hyangch'al* appears only in **Silla poetry and songs.**

Ancient Japanese scholars developed a similar system called *man'yōgana*. Ancient Japanese possesses only a limited number of possible syllables and so only a

relatively small number of Chinese characters were needed to represent the language. The complexity of Korean syllable structure, however, required over a thousand characters for expression; this added to the complexity of idu and hyangch'*al* and hindered its continued usage (YKM 1975:23).

8.2.4 The Phonology of Old Korean

YKM reconstructs Old Korean (OK) vowels based on Chinese phonograms (YKM 1972; Whitman 1985:85; Martin 1992):

Table 31: YKM's reconstruction of OK vowel system

Old Korean	Middle Korean (Yale)
**a*	*/a/*
**o*	*/o/*
**u*	*/wo/*
**e*	*/e/*
**ö*	*/u/*
**ü*	*/wu/*

8.2.5 Early Middle Korean

The Kyerim *yusa*, a Chinese-Korean dictionary with around 350 entries, stands as the most reliable source of Early Middle Korean (EMK). The Sung Dynasty scholar Son Mok (Korean pronunciation [Ch., Sun Mu]) compiled the dictionary in China between 1103-1104 (Cheun 1974:2; Huh 1983:3).

8.3 General Characteristics of Late Middle Korean

Late Middle Korean (LMK) has become the battleground for many a linguistic debate, due in part to the dramatic increase in extant materials. Briefly, the following changes occurred during the time of LMK that affected the language.

Table 32: General changes in LMK

1. Documents became suddenly copious.
2. Documents were written in a new, native script, *hangŭl*.
3. Strict vowel harmony was lost.
4. Several graphemes were in use that are extinct in Modern Korean.
5. Word-initial and word-final consonant clusters were lost. Evidence indicates that these clusters did not appear much before LMK and disappeared shortly afterwards.

8.3.1 Historical Texts

Briefly, important chronicles will be explained in terms of their contribution and relevancy to understanding Middle Korean.

8.3.1 *Yongbi ŏch'ŏnga*

Yongbi *ŏch'ŏnga*, or the Song of the Flying Dragons (1445), is credited with being one of, if not the first text written entirely in the new script, *hangŭl*. King Sejong, credited with the creation of the national script, *hangŭl*, in 1445, had Yongbi *ŏch'ŏnga* (YB) written as an epic eulogy of the foundation of the Yi Dynasty (Cheun 1974:11). The prose of YB parallels the events of Chinese dynasties by referring first to an auspicious event in China, and then to a parallel event in the Yi Dynasty in order to give credence to the new dynasty.

Linguistically, YB retains important information. Not only is it the first text to be written completely in *hangŭl* it is the only text that preserves MK vowel harmony almost completely (with only six exceptions) (see: Section 8.4.3, Vowel Harmony). After this manuscript, vowel harmony falls into disarray, as evidenced by orthographic mistakes. YP also retains a particular type of genitive marker represented by six allomorphs: lkl,

/*t*/, /*p*/, /*s*/, /*Δ*/, and /*ʔ*/ (Vovin 1993:252). In subsequent texts, usage of the genitive marker was reduced to /*s*/, /*ʔ*/, and /*Δ*/, and eventually, only to /*s*/. YB preserves the last vestiges of unique characteristics that disappeared shortly after and in a script that accurately reflects the language.

8.3.1.2 Hunmin *cŏng'ŭm*

The Hunmin ***cŏng'ŭm*** [Correct sounds to educate people] and the various documents associated with it, such as the Hunmin ***cŏng'ŭm ŏnhae*** [Illustrative meaning of the Hunmin ***cŏng'ŭm***], Hunmin ***cŏng'ŭm haerye*** [Commentaries and Examples of the Hunmin ***cŏng'ŭm***]. These texts give detailed descriptions of each ***hangŭl*** grapheme based upon Chinese linguistic understanding of the time, in order to teach the people the proper pronunciation of Korean. Ironically, the linguistic descriptions given raise more questions than they answer.

8.4 Middle Korean Phonology

Modern linguistic research on the Korean language began in the late 1920's. During World War II, however, native Korean linguists were often jailed and the Korean language itself was banned under Japanese occupation. Therefore, ironically, Japanese Koreanologists, such as Ogura, Maema, Kanazawa, and Kōno presented early research on Middle Korean (Cheun 1974:3).

In the 40's and 50's, Korean linguists focused on the sound values of obsolete graphemes, assuming that the surviving ***hangŭl*** symbols represented in earlier Korean the same sound values as in Modern Korean (Chang 1982:129-130).

8.4.1 Middle Korean Vowels

The *Hunmin cŏng'ŭm* describes seven vowels in Middle Korean, including one, arae 'a, which did not survive into Modern Korean [See: Section 8.4.1.5, Merger of ***o***]. As mentioned above, early scholars assumed that the other six vowels had essentially the same phonetic value as in Modern Korean and focused their attention on the merger of arae 'a with the other vowels. The following discussion outlines the development of linguistic thought regarding Middle Korean vowel values. Although much advancement has occurred, a consensus has not yet been reached. Cheun (1974:70) laments: "One of the most discouraging facts to beginning students of LMK is that there is no agreed-upon vowel system. If some exaggeration is allowed, almost every linguist has his own system."

8.4.1.1 Vowel Shift Theory

Kim Wan-Cin (KWC) challenged previous assumptions regarding surviving phonemes and voiced his frustration about the lack of research on anything except extinct phonemes. KWC queries: "Isn't it unusual to expect a character with a fixed value, standing aloof from the times? Is it impossible for a character to have a value in a given stage and another value in the successive stage? The author's current view is that every phoneme or every character deserves to be studied with equal caution" (KWC 1971:220).

KWC agrees with earlier studies regarding the merger of ***arae 'a,*** but not with the descriptions of all other vowels. KWC's values for Middle Korean graphemes are as follows:

Table 33: KWC's phonetic Middle Korean values

#	MK Grapheme	Kim's MK Value	Yale Romanization
1.	ㅏ	[a]	/a/
2.	ㅅ	[ʌ]	/o/
3.	ㅗ	[u]	/wo/
4.	ㅓ	[ɛ]	/e/
5.	ㅡ	[ə]	/u/
6.	ㅜ	[ʉ]	/wu/
7.	ㅣ	[i]	/i/

Note that I use numbers to represent the MK graphemes to track the confusing and competing values of different theories.

KWC describes Middle Korean vowel harmony as two groups of vowels in opposition to one another, with /i/ as the neutral vowel (See: Section 8.4.2, Vowel Harmony):

Table 34: KWC's MK vowel harmony opposition groups

Group A: /a/ (1), /ʌ/ (2), /u/ (3)

Group B: /ɛ/ (4), /ə/ (5), /ʉ/ (6)

Group C: /i/ (7)

The oppositions between the vowels are as follows: /ʌ/ (2): /ə/ (5), /u/ (3): /ʉ/ (6), /a/ (1): /ɛ/ (4).

According to KWC, in order to get from these MK values to Modern Korean values for each grapheme, the vowels had to shift their position one rotation clockwise. This process can best be explained schematically. If we assign KWC's A Group, or 'bright' series of vowels the labels A, B, C, and KWC's B Group, or 'dark' series

A', B', C', then the rotation is as follows (Chang 1982:146):

Table 35: Schematic diagram of KWC's vowel rotation

Middle Korean			Modern Korean		
i	*A'*	A	*i*	*B'*	*A'*
	B'	*B*		C'	*A*
	C'	*C*		*C*	(*B*)

Note that in the resultant system, *arae* 'a, represented by (B), has merged to C or B' (See: Section 8.4.1.5, Merger of *o*). Kim places the timing of this shift after the 15th century.

8.4.1.2 YKM's Vowel Shift Theory

YKM agrees with Kim's assessment of previous scholarship and vowel rotation, but differs in the timing of the shift. YKM believes the shift occurred before LMK, while, as mentioned above, KWC puts the shift after the 15'' century. Therefore, YKM's LMK values look similar to the values of Modern Korean; YKM's values for Old Korean resemble KWC's LMK system.

Table 36: YKM's Old Korean vowel system

i (7)	*U* (6)	*u* (3)
e (4)	*O* (5)	*o* (2)
	a (1)	

Serafim (1996: personal communication) reinterprets YKM's system further into the following analysis.

Table 37: Serafim's reinterpretation of YKM's Old Korean vowel system

Non-Rd	Rd	Non-Rd	Rd
i (7)	*U* (6)		*u* (3)
e (4)	*O* (5)		*o* (2)
		a (1)	
Front		Back	

YKM's post-shift values are as follows (YKM 1972; KWC 1971; Chang 1982:130; Whitman 1985:84-85):

Table 38: YKM's LMK phonetic values

YKM's LMK Value	#	Yale Romanization
[*a*]	1	/*a*/
[*Λ*]	2	/*o*/
[*o*]	3	/*wo*/
[*ə*]	4	/*e*/
[*ɨ*]	5	/*u*/
[*u*]	6	/*wu*/
[*i*]	7	/*i*/

YKM's system of LMK vowels is as follows (Lee 1969:140, 1971:32[166]):

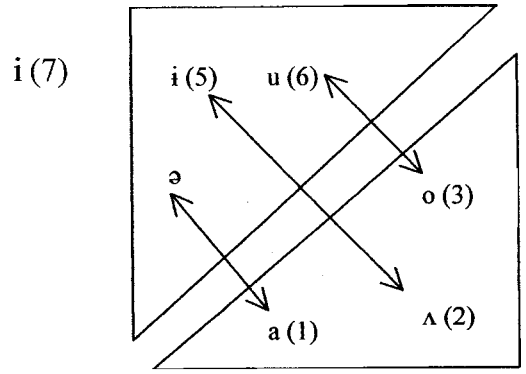
Table 39: YKM's LMK vowel system

i (7)	*ɨ* (5)	*u* (6)
	ə (4)	*o* (3)
	a (1)	*Λ* (2)

YKM (1971:32) admits that the above system does not comply with the rules of vowel harmony. Cheun (1974:78), however, points out that if the opposing pairs are

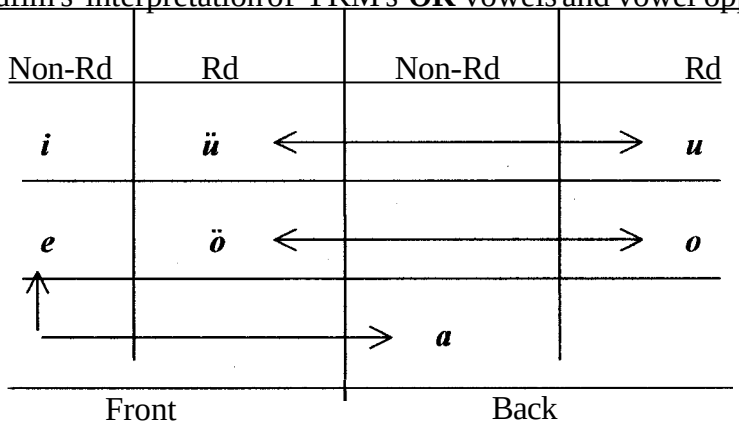
connected schematically and the harmonizing groups enclosed with triangles, the resulting system emerges:

Table 40: Cheun's schematic diagram of **MK** vowel harmony



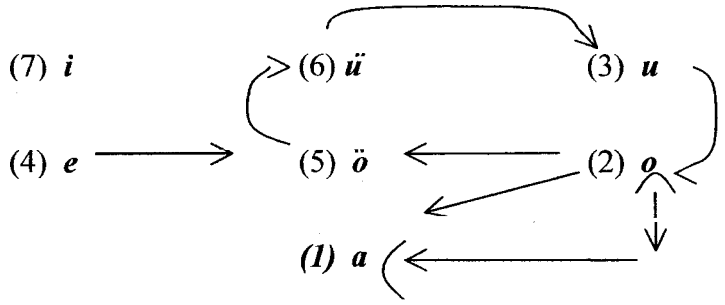
If we refer back to Serafim's interpretation of YKM's **OK** vowel system, the oppositions work nicely, as shown below. Note that Serafim **(1999)** has since abandoned the vowel rotation theory.

Table 41: Serafim's interpretation of YKM's **OK** vowels and vowel oppositions



According to the vowel rotation theory, YKM's model, as well as KWC's model would rotate one step clockwise as shown below:

Table 42: YKM's vowel rotation



The arrows indicate the direction of the shift. After o (5) raises, ***e*** (4) becomes more rounded. Then arae'a, or o, moves across to the previous position of (5), and also down to the position of (1). Note that instead of (2), arae'a moving directly into (1), it is more likely that it lowered first and then mounded.

After the shift and merger, we arrive at the NK vowel system with six of the original seven vowels, and not including newly created vowels.

Table 43: NK vowel system

(7) ***i***	(5, 2) ***ɨ***	(6) ***u***
	(4) ***ɔ***	(3) ***o***
	(1,2) ***a***	

8.4.1.3 Other Shift Scholars and Timing Viewpoints

KWC espouses a late shift starting after the 15th century, associated with the loss of *arae'a* and the phonologization of a new group of front vowels (KWC 1971:222). KWC bases his timing on his own comparative data from Chinese and Japanese sources, deriving a phonetic approximation of MK vowels (1971:12). Most scholars who believe in a vowel shift, however, do not agree with the lateness of KWC's assessment and date the shift at

some point earlier.

YKM, on the other hand, dates the shift back perhaps the earliest. YKM's studies of Mongolian loanwords into Korean and the transcriptions of EMK in such Chinese sources as the Kyerim *yusa* [1103], led him to believe in an earlier timing, a period prior to the 12'' or 13'' century (YKM 1968; Whitman 1985:84).

Whitman (1985:87) follows YKM and KWC in espousing the vowel rotation theory. Whitman declines to narrow down a time frame, but does note that KWC's shift is too late and YKM's may be too early. Whitrnan excuses himself from deciding on an actual time frame by stating: "...the actual chronology of the shift from a vowel system like that of [YKM's OK] to a system more like that of modern Korean is basically irrelevant, as long as researchers concur that at some period prior to MK, the vowel system had the basic structure of [YKM's OK]'' (YKM 1985:86).

Two other 'shift' scholars, Chang and Cheun, also place their theories somewhere in the middle. Chang (1982:146) believes that the shift falls in the midle of the 15th c., when various detailed phonological data become available to us, (and for many speakers of the time, both systems were available as sub-dialectal or stylistic variants) and was completed between the 16'' and 17'' centuries. Most MK speakers lost access to the earlier system upon which the MK vowel harmony was based (1982:150). Chang also refers to the fact that the descriptions in the ***Hunmin*** *chŏng'ŭm* (HC) indicate that the rotation had not yet been completed since, according to Chang's interpretation, the so-called 'bright' vowels series are described as back vowels, and the 'dark' vowel series as central vowels (Chang 1982:136-7) [see: Section 9.5, Analysis of the HC].

Similarly, Cheun (1974:84) sees a push-chain shift as beginning in the late

15th century and completed by the end of the 17" century. The following is Cheun's description of the LMK vowel system (1974:7).

Table 44: Cheun's LMK vowel system

	Front		Central		Back	
	UnRd	Rd	UnRd	Rd	UnRd	Rd
High	i			ɯ		u
Mid			ə			
Low			ɜ		a	

8.4.1.4 Non-Shift Scholars

Shift scholars, such as KWC, regard it unlikely that MK vowels would be essentially the same as NK vowels, except for the merger of *arae'a*. Non-shift scholars, however, maintain that even after much analysis, such a view is actually an accurate picture of MK vowels. Among the non-shift scholars is Martin (1992). Although Martin is somewhat vague on his phonological system, he clearly believes that this Korean vowel shift did not occur. The nature of Martin's Yale romanization allows him to move easily from MK to NK without having to make many changes or account for phonetic detail. A schematic interpretation of Martin's LMK vowels could be interpreted as the following (Serafim 1996):

Table 45: Schematic interpretation of Martin's LMK vowels

i	*e*	*u*	*wu*
a	*o*	*wo*	

Note that the harmony is one of height and not palatal harmony usually assumed for Korean.

W. Huh has a phonological system similar to that of Martin's, except for some minor differences in sound values, although it is difficult to compare because it is not clear what Martin's phonetic values actually are. Huh's phonological system of LMK is as follows (Huh 1963; Cheun 1974:73):

Table 46: Huh's system of LMK vowels

i	*ə*	*ɨ*	*u*
a	*ʌ*	*o*	

In Huh's system, *arae'a* is represented by A. Note that Huh is in agreement with Martin's harmony of height.

A recent non-shift scholar, M. Miyake (Miyake 1996: personal communication/e-mail), uses comparative Sino-Xenic evidence, specifically that of Sino-Vietnamese and Sino-Japanese, to argue against vowel rotation. Based on his own vowel correspondences, Miyake concludes :

> It would be highly unlikely that Japanese and Vietnamese would have independently undergone the same vowel shifts so that all three branches of Sino-Xenic would have the same vowel system today. The Sino-Vietnamese evidence is especially compelling because it dates from the late Tang, slightly after Sino-Korean (mid-Tang?) and has a richer vowel system than Korean, whereas the sparser vowel system of ***Kan-on*** and its earlier vintage (early Tang) make it less compelling (1996: e-mail).

Here is a table of Miyake's correspondences. Note that the values for Late Middle Chinese (LMC) are Miyake's and not Karlgren's, Baxter's, or Pulleyblank's.

Table 47: Miyake's Sino-Xenic correspondences

Yale	S-Viet	S-Jpn	LMC	MK-SK1	MK-SK2
i	i	*i*	* i)i	*i	*i
e	([(a	*e*	*je	*e	*e
u	*u'[ɨ], a[a]*	*o*	*ɨ	*ɨ	*ə
wu	*u*	*u*	*u	*u	*ɨ
a	*a (a:]*	*a*	*a	*a	*a
o	*u' [ɨ],* a *(a:]*	*u (To-on)*	*O – *a	*a	*o
wo	*o^[o]*	*o*	*o	*o	*u

MK-SKI = Middle Sino-Korean according to Miyake
MK-SK2 = Middle Sino-Korean according to KWC, YKM
S-Jpn = Kan-on reading

The above correspondences initially look compelling; however, it is still not clear enough to say that there was no rotation at all. Late Middle Chinese values remain problematic. For example, Serafim (1996: personal communication) points out that Modern Chinese ***gau*** and ***gu*** both correspond to Sino-Korean ***ko.*** Miyake responds by noting that in his LMC reconstruction he would posit ****ko*** for this syllable, whereas Karlgren would reconstruct ****gu***.

8.4.1.5 Merger of ***o***

The merger of *arae'a* (and the subsequent loss of this grapheme) had a great effect on the vocalic system as a whole, and played a part in destabilizing vowel harmony. ***Arae'a*** merged in two directions: one merger making it more centralized, and a second merger making it lower. Recall that the latter merger likely occurred in two parts: first, it lowered, and then it centralized.

Using Yale romanization, *arae'a* merged to either **/a/** or lul, depending upon the environment. In first-syllable position, *arae'a* merged with **/a/,** and **/u/** elsewhere. There are, of course, exceptions. For example, in first syllable position, 'earth' ***holk*** becomes

hulk, rather than the expected ***halk***. Likewise, 'chin' thok > ***thek***, and 'shadow' ***konol*** > ***kunul***. In non-first syllable position, 'five' tasos becomes tases, 'wind' ***polom*** > ***palam***, and 'morning' ***achom*** > achim. Whitman (1985:88-89) sees the merger of ***arae'a*** as the cause for the loss of harmonic opposition in most suffixes, since they involve an alternation.

8.4.1.6 Distribution of o

Chang (1982:147-148) notes that ***arae'a*** rarely occurs in word-initial position, and never after an on-glide, ***w-,*** or y-. Of course, wo is very common, but that it is treated as unitary. There are only a few exceptions where ***arae'a*** occurred in word-initial position, such as the interjection oy 'oh' [Wŏrin chŏ'gang chigok] and 'parrot' oyngmu [SK; cf. SJ ***ŏmu***] [Hunmong chahoe]. Chang (1982:147) says that these exceptions suggest a broader distribution of ***arae'a*** in EMK. Chang exemplifies this hypothesis with 'below' which he claims is ***oloy*** in earlier texts and ***alay*** in the HC, a later text (1446), and 'below' olph-oy corresponding to ***aph-elo*** 'front-to' in the Sohak ***ŏnhae*** (c. 1585). Note, however, that the two exceptions are negligible since one is an exclamation and the other is a borrowing.

8.4.2 Vowel Harmony

Following Serafim (1976:1,84), we note Mathias' (1973) distinction between vowel harmony and vowel concord. We define concord as: a constraint (not a derivational rule) on a morpheme shape, so that all the vowels agree in a particular distinctive feature, such as height, or backness. Vowel harmony, strictly speaking, refers to a phonological rule that makes suffixes agree in a particular distinctive feature. Working in combination,

vowel harmony and vowel concord form entire words that agree according to a distinctive feature.

8.4.2.1 Overview of MK Vowel Harmony

The opposition groups for MK vowel harmony are as follows (given in Yale romanization):

Table 48: MK vowel harmony oppositions

Group A: /*a*/, /*o*/, and lwol
Group B: /*e*/, lul, and /*wu*/
Group C: /*i*/

As mentioned earlier, lil acts as a neutral vowel.

8.4.2.2 Vowel Concord in Polysyllabic Words

'Tree', namo, is an example of vowel concord; i.e. the vowels are only from one group. There are also numerous counter-examplesto vowel concord in MK, however; for example, 'first of all' ***monce*** [YB] (Chang 1992:135). In compound stems, a great number of both Sino-Korean morphemes and native morphemes do not conform to vowel concord; e.g. 'eyelash' ***nwun-ssal*** [Wŏlin sŏkpo]. It appears that the first vowel in a morpheme is more stable, and that counter-harmonic forms appear in subsequent vowels.

KWC (1971:231-232) proposed that morphemic boundaries play a role in restricting the general rule of vowel harmony in MK. Kim's rules of morphemic boundaries regulating vowel harmony can be stated as follows (1971:232):

1. Within a single morpeheme, vowel harmony was unconditional.
2. A boundary between two lexical morphemes inhibits vowel harmony.
3. A boundary between two grammatical morphemes, or between a lexical morpheme

and a grammatical morpheme, allows vowel harmony only when the following morpheme (or at least one of the allomorphs) begins with a vowel.

8.4.2.3 Questions regarding MK Vowel Harmony

Vowel harmony was best preserved in the text YP [Songs of the Flying Dragons], where out of 393 alternating suffixes, there are only six exceptions, according to Cheun (Cheun 1974:10-11). As mentioned previously, the YB is the first text to be written in *hangŭl*.

In subsequent texts, the number of exceptions greatly increases. Indeed, it is likely that vowel harmony was already weakening even at the time of YB. Chang (1982:141) states: "[i]f we take a full harmonic system to be 'symmetric' in the sense that the conditioning vowel be either of the two vowel classes for vowel harmony to operate, then the late Middle Korean system has lost its symmetry." Recently, Martin (1999) has challenged the extent of vowel harmony in MK and in previous stages of the language.

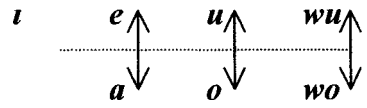
8.4.2.4 Distinctive Feature

One of the points of contention surrounding MK harmony concerns the nature of the harmony; i.e. what particular distinctive feature held the two groups in opposition. Whitman (1984:86) states: "The MK vowel harmony system is of considerable interest because of the absence of a readily identifiable phonemic feature which characterizes the opposition between the two groups..." In the following sections, we will review the various views of prominent scholars in regard to what distinctive feature is at work in MK.

The scholars that reject the vowel rotation theory, such as Martin and Huh, are also the scholars that favor a non-traditional view of MK harmony. We will use Martin's schematic system as being representative of this viewpoint (Serafim 1996:

personal communication).

Table 49: Martin's vocalic height harmony



8.4.2.5 Palatal Harmony

The more traditional view, first suggested by Ramstedt (1939:25-26), is one of palatal harmony. Other scholars in agreement with this view include KWC, YKM, Chang, and Whitman. KWC (1971:42) claims, based on his interpretation of LMK vowel values, that the LMK harmony system is based on a front-back opposition, or palatal harmony. Kim says of the palatal system: "each pair of the above-mentioned oppositions ...are bilateral, proportional, logically privative and neutralizable, that is correlative. By the way, let it be added here that the correlations in modern Korean also know nothing such as high versus low" (1971:221). Whitman (1985:84), Chang (1982:145-146) and Cheun (1974:7) also agree with palatal harmony.

Whitman (1985:84) represents MK vowel harmony as follows (given in Yale romanization):

Table 50: Whitman's MK vowel harmony

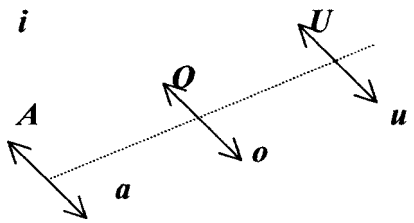
Neutral	A Group (< Front Vs)	B Group (Back Vs)
i	*wu*	*wo*
	u	*o*
	e	*a*

In addition, Kim claims that this system of palatal harmony is also in accord with comparative data, since many Altaic languages are analyzed as having palatal harmony (Poppe 1962; Ramstedt 1939).

8.4.2.6 ATR Harmony

Serafim (1996: personal communication) warns, however, not to force an analysis onto a particular language just because neighboring languages have been labeled in such a manner. Serafim cautions not to reconstruct downward from a higher node in the tree; in other words, let each language stand on its own instead of assuming things that may or may not be there. Since Altaic vowel harmony is commonly treated ast being a palatal opposition, many often assume that it must also be the case with MK. Serafim, however, has come up with a system based on the feature of advanced tongue root (ATR). A schematic drawing of Serafim's system is as follows:

Table 51: Serafim's ATR harmony for MK



The phonetic values for Serafim's system are as follows:

Table 52: Serafim's MK phonetic values

ATR Symbol	Phonetic Value	MK Grapheme #	Yale
i	[*i*]	7	i
U	[ɯ]	**6**	***wu***
u	[*o*]	3	***wo***
O	[a (slightly front)]	5	***u***
o	[ʌ]	2	***o***
A	[*e*]	***4***	***e***
a	[*a*]	1	***a***

Serafim has also proposed a similar system of ATR harmony for Old Japanese. In fact, many Altaic languages that have traditionally been analyzed as having

palatal harmony have recently been reanalyzed as having ATR harmony. Jan-Olof Svantesson has "no doubt that vowel harmony in modem Khalkha (and also in Inner Mongolian dialects of Mongolian and in Buriat) is based on the feature ATR (or 'pharyngeal' as I would prefer it)" (1996: e-mail). Further, Svantesson states that Tungusic vowels also show a typical pattern for ATR harmony. Altaic vowel harmony is of great interest and deserves further research, but it is beyond the scope of this project.

8.4.2.7 Neutral Vowel

In most Altaic harmony, there is a neutral vowel and /*i*/ is most commonly it. It is possible that at an earlier stage, there was an opposition that neutralized, leaving *i* as the lone non-participant in the oppositions. Serafim (1976:6) says that in the case of Korean, **U* and **I* merged, creating a now neutralized **i*. Chang (1982:135) also agrees that i is likely due to the neutralization of an earlier pair of high vowels. Cheun (1974:14-15) posits a merger between **i* and **ɪ*, similar to the merger in other Altaic languages.

8.4.2.8 Suffixal Harmony

MK suffixes usually consist of a pair of alternating forms, one with back and the other with non-back vowels (assuming palatal harmony for the sake of discussion). The last non-neutral vowel of the stem determines the suffix form. Case markers also have alternating forms and are included under the category of "suffix."

The following is a list of case markers and their alternating forms. Note that the topic marker and the accusative marker also alternate depending on whether the preceding noun ends in a consonant or vowel.

Table 53: Case marker alternations

1. Topic Marker: ***-on / -non - -un / -nun/ -n***
2. Accusative Marker: ***-ol / -lol - -ul / -lul***
3. Ablative Marker: ***-o.lwo - u.lwo / lwo***

Whitman (1985:87-88) gives the following list of verbal suffixes:

Table 54: Partial list of verbal suffixes

1. Infinitive: -a - ***-e***
2. Attributive: ***-on - -un***
3. Future Attributive: ***-olq - -ulq***
4. Continuative: ***-omye - -umye***

If there is more than one vowel in a suffix, only the first suffixal vowel has to harmonize, for example, the ablative marker and the continuative suffix, which may have been part of the process of vowel harmony unraveling. When a stem is followed by several affixes, harmony is observed throughout the string (Cheun 1974:9-10).

8.4.2.9 Non-Harmonic Suffixes

MK suffixes (including case markers), can actually be classified into two types: one type which is subject to vowel harmony, and another which is not (Chang 1982:138-139).

Table 55: MK suffix classification

1. Subject to VH: suffixes that begin with a vowel; ex. Theme marker
2. Not subject to VH: suffixes that begin with a consonant; ex. Plural marker ***-tol***, parallel marker 'also' ***-tu***, past tense marker ***-te***.

It seems that the presence of a consonant blocks suffix vowel harmony. Two semi-exceptions to this rule are the thematic marker and the object marker that can alternately begin with n and ***l***, respectively.

Whitman (1985:88) suggests that since consonant (obstruent) initial suffixes do not alternate, "this raises the possibility that the harmonic alternations in the suffixes actually reflect only an alternation in a single 'linking' vowel preceding originally consonantal suffixes."

Chang (1982:140) also notes that these non-harmonic suffixes predominantly contain back vowels: -a, -ha (vocatives), ***-tol*** (plural), ***-kwa*** / -(*G*)***a*** (connective), -ko (connective), -ta (declarative), -sop (humble), and so forth. Although there are non-harmonic suffixes with front vowels, they are much less common; e.g. ***–te*** (imperfect), ***–key*** / ***–(G)ey*** (adverbial).

8.4.2.10 Back Vowel Suffixal Bias

Among counter-harmonic examples of suffixes, front-back combinations, such as eps-a 'there isn't and-' [YB], are far more common than back-front combinations (Chang 1982:141). Chang also notes that root morphemes that have the off-glide y, such as ***uy***, oy, ay, ***ey*** almost exclusively occur with a back vowel when used with the thematic and object markers. These factors seem to indicate that MK suffix vowel harmony may have had a bias towards back vowels.

8.4.2.11 Neutral Vowel and Suffixal Harmony

With root morphemes that contain the neutral vowel ***i***, the required suffix is almost always a front vowel, except in the case of the thematic and object markers, which take a back vowel; e.g. 'rain-THEME' ***pi-non***; 'rain-OBJECT' ***pi-lol***; 'house-THEME' cip-on, 'house-OBJECT' ***cip-ol***. In other suffixes, however, front vowels predominate after the neutral vowel i; e.g. 'on the street' kil-ey [YB] (Chang 1982:137).

8.4.3 Analysis of the *Hunmin chŏngum*

The HC, written by 15th century Korean linguists, is very important in that it tells us what features and values MK graphemes represented, at least according to their own perception. This is an enormous help to present-day scholars. And yet, in some sense we are still not much closer to sholarly agreement, since the descriptions in the HC are themselves subject to interpretation, as well as the Chinese that the HC bases some of the values of *hangŭl* graphemes on. Let us review what exactly the document does tell us.

8.4.3.1 HC Vowel Descriptions

This document states that 15th century Korean had seven simple vowels. The basic letters and their graphemes are based on what is called the Three Powers, heaven, earth, and human. The basic vowel graphemes according to the Three Powers, are: ᆞ, ㅡ, and ㅣ. From these we get what the HC describes as the First-Derived Letters, where the forms are derived from the basic letters: ㅗ, ㅏ, ㅓ, and ㅜ. And from this set, we obtain the Second-Derived Letters: ㅛ, ㅠ, ㅑ, and ㅕ.

The HC gives its version of distinctive features of the vowels. For the basic vowels, the HC states that they were pronounced in the following manner (Chang 1982:130):

Table *56:* HC basic vowel descriptions

Grapheme	Description
ᆞ	The tongue contracted; the voice deep
ㅡ	The tongue slightly contracted; voice not deep, not shallow
ㅣ	The tongue not contracted; the voice shallow

To show these descriptions more clearly, D. Lee (Lee 1990:79) has placed the description in the following table:

Table 57: Lee's description of basic vowels

Basic Letter Grapheme		Tongue Position	Acoustic Image
\	(2)	Retracted	Deep
—	(5)	Slightly retracted	Neither deep nor shallow
|	(7)	Non-retracted	Shallow

The four additional vowel symbols are then derived by recombining the first three forms, and the phonetic characteristics ascribed to them are as follows (values are given by number and Yale romanization instead of graphemes) (Lee 1990:79, Chang 1982:131):

Table 58: HC phonetic descriptions

(3) wo is like (2) ***o*** but is pronounced with lips rounded
(1) ***a*** is like (2) ***o*** but is pronounced with lips spread open
(6) ***wu*** is like (5) ***u*** but is pronounced with lips rounded
(1) ***e*** is like (5) ***u*** but is pronounced with lips spread open

The first two statements indicate that ***wo*** and ***a*** have the same tongue position as ***arae'a,*** i.e., ***o***, and the next two statements indicate that ***wu*** and e have the same tongue position as u. The difference within each set is lip rounding and lips spread open; in other words, ***wo*** and ***wu*** are pronounced with lips rounded, and ***a*** and e with lips spread open.

The HC then indicates which vowels are 'light' and which vowels are 'dark' (YKM 1990:80), and then relates the values of 'light' and 'dark' to the Chinese concepts of *yin* and ***yang.***

Table 59: Light and dark vowels

Light Vowels: ***a*** (1), ***o*** (2), ***wo (3)***
Dark Vowels: ***e*** (4), ***u*** (5) ***wu*** (6)
Neutral Vowel: **i** (7)

As for the diphthongs, the four First-Derived Vowel graphemes are combined with **i** to generate another group of second-derived letters. The HC describes the diphthongs as follows (YKM 1990:80):

Table 60: HC diphthong descriptions

ywo is like ***wo*** but the pronunciation starts with **i.**
ya is like ***a*** but the pronunciation starts with ***i.***
ywu is like ***wu*** but the pronunciation starts with **i.**
ye is like ***e*** but the pronunciation starts with **i.**

Clearly, the HC is describing an on-glide plus vowel.

8.4.3.2 Distinctive Features of the HC

The HC uses three distinctive features for the MK vowels. The problems for scholars today arise from the interpretation of the HC distinctive features. The HC's descriptions can be used to justify various theoretical positions regarding the LMK vowel system, depending upon the interpretation of the HC. The following is a table of descriptions of the distinctive features of the HC and the options available for each feature (they are not all binary). Included in this description are the vowels that are said to fall into that particular category (Cheun 1974:33; Chang 1980:131):

Table 61: HC description of distinctive features

1. Tongue Retraction:	a) retracted: a (1), o (2), wo (3)
	b) a little retracted: e (4), ***u*** (5), wu (6)
	c) not retracted: i (7)
2. Mouth Shape:	a) contracted: wo (3), wu (6)
	b) stretched: a (1), e (4)
	d) neither contracted nor stretched: o (2), ***u*** (5)
3. Voice Resonance:	a) deep: a (1), o (2), wo (3)
	b) neither deep nor shallow: ***e*** (4), ***u*** (5), wu (6)
	c) shallow: i (7)

Based on the above distinctive feature descriptions, Cheun (1974:75) converts this information into feature matrices.

Table 62: Cheun's feature matrices based on the HC

Place	Feature	o (2)	***u*** (5)	***i*** (7)	***wo*** (3)	***a*** (1)	***wu*** (6)	***e*** (4)
Tongue	Retracted	+	-	-	+	+	-	-
	Not-retracted	-	-	+	-	-	-	-
Mouth	Contracted	-	-	-	+	-	+	-
	Stretched	-	-	-	-	+	-	+
Voice	Deep	+	-	-	+	+	-	-
	Shallow	-	-	+	-	-	-	-

Cheun notices that the feature for voice resonance is exactly parallel to the feature for tongue retraction, and is therefore, **a** redundant feature. Ignoring this feature, we arrive at the following **matrices:**

Table 63: Revised feature matrices

Place	Feature	o (2)	*u* (5)	i (7)	*wo* (3)	*a* (1)	*wu* (6)	*e* (4)
Tongue	Retracted	+	-	-	+	+	-	-
	Not-retracted	-	-	+	-	-	-	-
Mouth	Contracted	-	-	-	+	-	+	-
	Stretched	-	-	-	-	+	-	+

Another problem in the interpretation of HC's distinctive features comes from the translation of the texts. For example, in the category of "mouth shape," some scholars have translated "puckered" or "open" instead of "contracted" (Chang 1982:131). The Chinese character for "retraction" can also be translated as "wrinkled," "coiled," or "shortened." Cheun (Cheun 1974:76) queries what tongue retraction or contraction of the mouth actually meant to 14th century linguists. Since much of their work was based on Chinese linguistics, the present author also wonders if a study of Chinese linguistics would not be of help in interpreting the descriptions.

If we interpret "contraction" to be mouth aperture, or tongue height, then we arrive at a vowel chart such as the following:

Table 64: Possible HC vowel chart

i (7)	*wu* (6)	*wo* (3)
	u (5)	*o* (2)
	e (4)	*a* (1)

This type of chart lends support to a vowel shift, since the graphemes are essentially rotated one step counter-clockwise from where they would be placed in NK. YKM (1969:136) claims that "contracted" stands for dual features: tongue height and lip rounding. This analysis would not affect the height order above.

Kim (1990:152-153) interprets the situation differently. First of all, he states that "it is unlikely that there has been a great phonological change since the 15th century such as the vowel shift of Indo-European languages." Kim claims that it is unreasonable to claim that the distinctive feature "tongue retraction" depended upon tongue position as the criterion. Instead, Kim claims that the feature referred to the constriction of the tongue root and the pharyngeal wall.

Therefore, according to Kim's analysis (1990:170-171), when there was a constriction between the tongue root and the back of the pharyngeal wall, it would be labeled 'retracted' in HC terms. The constriction between the back part of the tongue and the soft palate would be called 'slight retraction', and the constriction of the tongue blade and the hard palate would be called 'non-retraction'. This has obvious implications for the theory of ATR harmony in LMK.

8.4.4 Middle Korean Consonants

8.4.4.1 Consonantal Inventory

The MK consonantal inventory is as follows:

Table 65: MK phonemic inventory

k	*t*	*P*	*c*	*s*	*4*
kh	*th*	*ph*	*ch*		*h*
kk	*tt*	*pp*	*cc*	*ss*	*hh*
ng	*n*	*m*		*z*	*G*
	1	*W*			

8.4.4.2 Middle Korean Obstruents

8.4.4.2.1 Initial Position

Middle Korean has the consonant initials listed below in native stems (Whitman 85:112).

Table 66: MK consonant initials

Plain Consonants: p, t, k, c, ***s***, h, m, n

Aspirated Obstruents: ph, th, kh, ch

Initial Consonant Clusters: ***sp***, sk, st, psk, pth, pst, ps, pc

Final Consonant Clusters: lk, ***lp***, ***lph***, nc, nh

Note that each of the MK initial clusters becomes a geminate consonant in NK, with the final MK consonant being the determinant; i.e. MK ***sp*** > NK ***pp***. According to Ramstedt (1939) and YKM (1972), these clusters resulted from contractions of earlier syllables and are the source of the NK tense obstruents.

8.4.4.2.2 Sources of Aspiration

The MK initial aspirated obstruents are not as common as in NK. Some NK aspirates arise from the shift of final lhl to the syllable onset position (Whitman 1985:113). A common example of this is 'nose', MK kwoh > NK ***kho***. Although not as common as in NK, aspiration occurs in both syllable onset and coda positions in MK and is problematic in historical comparisons. YKM (1972) concludes that MK aspirates show correspondences with both voiced and voiceless obstruents in Altaic and therefore there can be no segmental feature to relate MK aspiration to in Altaic.

8.4.4.2.3 Non-Initial Obstruents

In MK, aspirated stops are reduced to plain stops in coda position, namely /***s***/, /***t***/, and /***c***/. In NK, these distinctions are reduced to the unreleased dental stop /***t***/. MK coronals, lthl, /***tt***/, /***c***/, /***ch***/, /***cc***/, /***s***/, and /***ss***/, are reduced in NK to /***t***/.

8.4.4.2.4 Voiced Spirants

MK has the following voiced spirant series: /Wl, /***G***/, and /***z***/. These voiced spirants have

disappeared in NK and occur in dialectal reflexes as regular plain obstruents. In MK, they have a limited distribution, occurring only between voiced segments. Here is the exact distribution for each of the voiced spirants:

Table 67: Distribution of MK voiced spirants

/*W*/: {*V*, *y*, *l*, *z*} ___ V

/*z*/: {*V*, *y*, *m*, *n*} ___ V

/*G*/: {*y*, *l*, *z*} ____ V

Whitman points out that some cases of voiced spirants are the result of synchronic allophonic variation (1985:114-5). Ramsey (1978) gives examples of such variation, showing that intervocalically, lpl, /*s*/, and /*k*/ can become /*W*/, /*z*/, and /*G*/, respectively. Whitman queries whether given the fact that some cases of /Wl, /*G*/, and /*z*/ are phonemically distinct and /*s*/, lpl, and /*k*/ can also occur in the above environments for voiced spirants, we would be able to diachronically derive /Wl, /*G*/, and /*z*/ from earlier voiced obstruents.

Due to their limited environment, many scholars have hypothesized that the voiced spirants are a secondary development within pre-MK. Whitman (1985:115) points out, however, that since MK plain obstruents also occur in the same environment, defining this development remains elusive. YKM (1972a:92-95) argues against all cases of MK voiced spirants coming from earlier plain obstruents. YKM cites three reasons as evidence against a secondary source for MK voiced spirants, two of which are single lexical items. The only truly compelling argument of YKM's against the secondary nature of spirantization is the existence of near minimal pairs, where both voiced spirants and plain obstruents occur.

Whitman (1985:117), however, points out that YKM's argument overlooks the fact that MK aspirated obstruents are in near complementary distribution with both the plain and the voiced spirants in the environment of two voiced segments. Recall that aspirated obstruents almost never occur in medial position; those that do have transparent suffixation: e.g. ***swuphul*** 'grove' < ***swuph*** 'wood, grove' + ***-ul***. Whitman assumes that pre-MK, as in NK, had allophonic voicing of obstruents, including ****s*** (unlike NK). Whitman writes the following rule for Voicing Assimilation (pre-MK) :

Table 68: Whitman's vre-MK voicing assimilation rule

C → [+voice] / [+voice]___ [+voice]

The question then arises as to whether this rule applied to all obstruents, or to just the plain obstruents, as in NK. Whitman (1985:117) asserts that the Voicing Assimilation rule originally applied to aspirated obstruents as well as to plain obstruents and that the MK voiced spirant series is actually the result of original aspirated consonants becoming voiced between two voiced segments.

8.4.4.2.5 Whitman's Theory of Aspiration

Whitman synthesizes his theory on Weak Vowel Devoicing with Aspiration and Spirantization to give a compelling argument for the situation that we find in NK. As mentioned above, Whitman proposes that his voicing rule above applied to both aspirated and plain obstruents, and that the voiced spirant series in MK is the result of voicing aspirated obstruents between voiced segments. The question then becomes how the above voicing rule stopped being applied to aspirated obstruents, since aspirated obstruents are not subject to allophonic voicing in NK; or, in other words, how voiced spirants and aspirated obstruents became phonemically distinct.

Whitman (1985:119) asserts that aspiration became phonemic after devoiced vowels were lost and the environment for aspiration disappeared. He claims that weak vowels were devoiced in absolute initial or absolute final position, and that this devoiced vowel was the source of aspiration for the adjacent consonant. Once the devoiced vowel was lost, the environment for aspiration also disappeared, phonemicizing aspirated obstruents. Whitman (1985:120) proposes that for pre-MK, the status of the various obstruents was as follows: plain obstruents were allophonically voiced, non-medial aspirates were never voiced, and medial aspirates were always voiced. Whitman then claims that the voiced aspirates developed into the MK voiced spirants. It is not clear whether or not the development was merely a straight shift from voiced aspirates to voiced spirants, or whether the aspirated obstruents were all continuants intervocalically at the pre-MK stage and then later voiced in MK. There is little evidence to determine one way or the other, and, either way, the result is the same.

This author concurs with Whitman's account that MK aspirated obstruents arose from an earlier stage of simple obstruents. Whitman has tried to minimize the effect of comparative reconstruction, which is to expand the segmental inventory of the proto-language, and instead has proposed sound changes that explain the situation. Here is an example of Whitman's derivations for MK ***swuph*** 'forest'.

Table 69: Example f Whitman's proposed sound changes

****swupu***	
****swupu̥***	Weak Vowel Devoicing
****swuphu̥***	Aspiration Spreading
swuph	Devoiced Vowel Loss

Ramsey (1993:440), in an article on reconstructing pitch distinctions, proposes a similar theory regarding aspiration, i.e. that it arose through vowel syncope. The question then is whether V > V$_{\circ}$, or CVh > Ch.

8.4.4.3 MK Nasals

There are three nasals in MK, namely lm, n, ngl. There are possibly four if one were to accept Vovin and Starostin's theory as explained below.

8.4.4.3.1 MK A

In MK we find the grapheme A, the value of which has been the source of much controversy. The distribution of the MK grapheme A is limited in that it did not occur in initial position in native Korean words.

8.4.4.3.2 Phonetic Value in MK

The value of the MK grapheme A has been the subject of much discussion in the study of Korean historical phonology. The traditional view is that MK A was a voiced fricative [z], leniting from /*s*/ in intervocalic and post-sonorant positions. Vovin (1993:247) argues that this view denies the phonemic status of A, seeing it merely as an allophone of /*s*/. Vovin concurs with Starostin's assertion (1986) that MK A was a palatal nasal [*ɲ*]. Starostin's hypothesis was based on Altaic correspondences; in his 1993 article, Vovin sought to prove that MK A was a palatal nasal on the basis of internal evidence, and to make external comparisions afterwards. Vovin cites Whitman's (1985:237) PKJ example where he compares MK mozom 'heart, soul' (Vovin writes *moɲom*) to OJ mune ~ muna 'chest', which goes back PJ ***muna-i*** 'chest'. Vovin points out that Whitman's argument is problematic due to the *z* : n correspondence. This comparison becomes much

more convincing if one accepts Vovin and Starostin's view on MK **A**.

Vovin asserts that Is/-lenition cannot predict when /*s*/ will occur and when **A** will occur in similar phonetic positions. Vovin notes that various dialects show reflexes indicating a distinction, but none of the NK dialects have [*ɲ*] as a direct reflex, and so he looks to external evidence, such as Early Middle Chinese and corresponding nasals in Japanese and Altaic languages.

Vovin notes that the MK grapheme **A** became extinct in the latter part of the sixteenth century (1993:248), so he limits his research to the fifteenth century. He uses three fifteenth-century Sino-Korean sources to make his point : HC, HCH, and the *Tongguk chŏng'un* ('The correct rhymes of the Eastern Country', A.D. 1447) (1993:250). The problem in using these texts, however, stems from Chinese itself.

It would seem that several texts that specifically refer to the correct pronunciation of the language that one is investigating would prove greatly beneficial. At times, however, the texts actually only add more questions than they answer. First of all, one has to determine which dialect of Chinese the authors of the above texts were referring to. Secondly, there are various reconstructions of Middle Chinese. For a detailed discussion of the probable dialect source and reconstruction of Middle Chinese for these texts, I refer the reader to Vovin (1993:251-252). Vovin concludes that, based on Middle Chinese reconstructions by Baxter, Pulleyblank, and Starostin, the Middle Chinese characters used to exemplify the pronunciation of the MK grapheme **A** all have an initial palatal /*ɲ*/. Vovin concludes, that based on both internal and external evidence, the MK grapheme **A** was a palatal nasal /*ɲ*/.

Based on his Sino-Xenic studies, however, Miyake effectively argues against Vovin's time frame. He argues that, although the MK phoneme for which the grapheme **A** stands was at one time a palatal nasal /ɲ/, by the time of late Middle Korean, it had already gone to a voiced fricative /z/. He notes that Vovin is basing his arguments on EMC values, where the realization of this grapheme was likely a palatalized nasal, but, based on Sino-Xenic evidence, Sino-Vietnamese in particular, it is doubtful that LMK had such a realization, that is [ɲ] (Miyake 1996: personal communication). For this purposes of this paper, I will assume that by MK, the grapheme **A** had already gone to a voiced fricative /z/; the actual time that it underwent this change is not important to the purposes here.

8.4.4.4 Proto-Korean Liquids

In both Modem and Middle Korean, there is only one liquid /l/ with two major allophones [r] and [l]. Some linguists argue that prior to MK there existed more than one phonemic liquid, but not enough evidence exists to prove this.

The best evidence available comes from early phonograms of Old Korean. Lee (1977:95-96) notes two phonograms found in several Hyangga, which correspond to later MK /l/, were not interchangeable in OK. Specifically, one phonogram was used for the object marker, while another was used for the verbal suffix used as the prospective modifier. YKM claims that there were two distinct phonemes *r and *l that fell together after OK due to an additional phonological rule of "implosion"; in other words, *r in syllable-final position was no longer articulated with a release. The result of this rule rendered /r/, now phonetically [l], no longer distinct from /l/ phonologically.

According to YKM (1977:96), the phonogram for the verbal suffix

represented ***-r*** and the object-marking particle represented *-l. Some dispute YKM's interpretation of the phonograrn for the verbal suffix as ***-r*** since, according to Ramsey (1996:1063), the Middle Chinese reading of this character ****Si***, is not a liquid at all. Ramsey points out, however, that regardless of the exact phonetic nature of this phonogram, the fact remains that there was a phonemic distinction between the above two phonograms, which merged to become MK (and modern) ***/l/***.

8.4.4.5 MK Internal Evidence for Other Liquids

Ramsey (1996:165) looks at the distribution of ***/l/*** in MK to aid in the reconstruction of other liquids. As with Modern Korean native words, MK ***/l/*** does not occur word initially. In morpheme final position, ***/l/*** is either ***-l***, or ***-l*** alternating with –t, or consonant clusters involving ***/l/*** (-lh, ***-lk, -lW, -lm, -lG***).

8.4.4.5.1 MK ***-t / -l*** Stem Alternations

Martin (1954:30) treats stems in which ***–l*** alternates with ***–t*** as ending in I. He later suggests (1992:234), however, that the ***–t / -l*** alternation arose from the lenition of a dental stop, ****-t***. Ramsey (1996:1065) believes the stop was actually the voiced counterpart, ****-d***.

8.4.4.5.2 ***l*** Stem Verbs

Based on modem Korean segmental behavior, Martin (1954:32) classifies I-stem verbs into three groups: I-extending, I-doubling, and I-inserting verbs. Ramsey points out that since NK does not preserve earlier accent distinctions, it is necessary to look at MK data. From the MK data, Ramsey determined that the distinction between the above classes is actually one of accent.

Ramsey (1996:1066-7) discovers that earlier accentual differences resulted

in the later segmental differences between I-inserting and I-doubling stems. Specifically, for I-inserting stems, the pitch of the second syllable was high; for I-doubling stems, the pitch is low, or unaccented. Thus, if a minimal vowel carries a high pitch, it is not elided; if a minimal vowel is low pitch, however, it is elided, resulting in the segmental differences that can be seen even in NK. (For examples, see: Table 70).

Ramsey also points out that in addition to the accent and the second syllable vowel phenomena, these two MK stem classes also differ by the vowel in the first syllable. With the exception of 'be blue, green', the vowels in the first syllable of the two stem classes are in complete complementary distribution. Ramsey (1993:1068) found that the vowel of the first syllable of 1-doubling stems is a 'minimal vowel' *u* or o, but that the vowel of the first syllable of 1-inserting is a 'full' vowel.

Ramsey (1986, 1991, 1992) has argued elsewhere that the MK pitches are predictable in general, and phonological changes in earlier segmentals resulted in MK accent distinctions. Ramsey (1996:1068) suggests that the above accent distinction may be another example of such phenomena.

8.4.4.5.3 I-extending Stems

Ramsey notes that the number of 1-extending stems is far greater than stems ending in any other consonant. Other MK consonant stem endings include: p, *t*, *s*, *c*, *k*, *h*, *W*, *t/l*, *z*, *m*, n. Unlike these other consonant stem endings, I-extending stems are distinguished by accent. Ramsey lists the following examples (1996:1069):

Table 70: MK I- extending verb stem accentual distinctions

Class I: (17 stems)	*ko(l)-*	'exchange'
Class II: (16 stems)	*ko(l)-*	'grind'
Class V: (2 stems)	*ce(l)-*	'limp'

Class VI: (40 stems) ***kel-/ke(l)-*** 'hang'

For Class VI, both Ramsey (1996) and Martin (1992:240) reconstruct disyllables in pre-MK, eg. ****kelu*** > kel- / ***ke(l)-*** 'hang'. The first syllable vowel of Class I and II stems is a 'minimal vowel' ***u*** / o, while that of Class VI is a 'full vowel'. Ramsey also notes that ***m-*** stems and n-stems occur in Class II, but never in Class I. Obstruent-stems occur in Class I, but rarely in Class II. In other words, Class I I-stems behave like obstruents, while Class II 1-stems behave like sonorants. Therefore, Ramsey suggests the following historical developments:

Table 71: Ramsey's suggested accentual developments

Class I:	kol-	'exchange'	<	****kol$_1$-***	[+ obstr]
Class II:	kol-	'grind'	<	****kol$_2$-***	[– obstr]

8.4.4.6 Final Consonant Clusters

Ramsey notes that a great number of MK stems end in ***–lh-*** or ***–lk-*** (e.g. ***alh-*** 'ail', ***kolk-*** 'scratch', respectively), and that of these stems, the majority of them were low-pitched and Class I stems. The distinction between ***–lk-*** and ***–lh-*** stems was again, one of vocalism: ***-lh-*** stems tend to have a 'full vowel', whereas ***–lk-*** stems generally have a 'minimal vowel' o / u. MK nouns ending in ***–lk*** also exhibit this pattern.

8.4.5 Pitch Accent

There are three pitch distinctions in MK, and they are marked as follows:

Table 72: MK pitch distinctions

1. No mark: represents a low pitch
2. One mark (dot): represents a high pitch
3. Two marks: represents a rising pitch

The MK pitches are contrastive, as shown by the following examples of minimal

pairs:

Table 73: Examples of MK pitch minimal pairs

1. low vs. high: ***phol*** L 'arm' :: ***phol*** H 'fly'
2. high vs. rising: ***nwun*** H 'eye' :: ***nwun*** LH 'snow'

Ramsey (1993:435), following KWC, concludes that in MK, pitch differences were not distinctive after the first high pitch.

8.5 Conclusions

Although there is much controversy in the Korean linguistic community regarding issues such as MK aspiration, vowel rotation, vowel harmony, for the purposes of this study, I will assume that vowel rotation did not occur, and vowel harmony is not as important to reconstructing PKJ as was once thought. Martin has recently argued against vowel harmony in MK and, although the results are far from conclusive, I will leave that discussion to another study.

As mentioned in the previous section, understanding the history of a language is important in reconstructing a proto-language. For example, in my PKJ reconstructions, we will see how certain constraints in MK have caused a metathesis (see: 10.5 Metathesis). By undoing the metathesis, we can uncover a closer possible cognate match. For example, MK has a constraint against initial ***u*** or ***o***. Understanding this constraint allows us to reconstruct Pre-MK forms with ***u*** or o in initial position, which may be helpful in relating the forms to vocabulary items in OJ. In the process of reconstructing, one has to keep all of the potential processes in mind.

9.0 Proto-Koreo-Japonic

9.1 Introduction

Japonic and Korean have each been compared to many different language families, the most frequent comparison being to Altaic. Attempts have been made to relate Japanese, in particular, to everything from Ainu to Dravidian to Austronesian, although unsuccessfully in the eyes of the linguistic world. The linguistic community has generally come to accept a linguistic genetic relationship between Korean and Japonic, though it seems clear that the split between these two languages is early. Strong arguments have been made by Starostin and Vovin to relate Korean and Japanese to Altaic, and although it is likely the case, it is beyond the scope of this study.

When examining the Korean and Japonic languages, the syntactic similarities are overwhelming. Complex sentences can often be translated morpheme for morpheme with very little adjustment. Both languages are agglutinative in showing case and tense. Syntax, however, cannot be a basis for showing a genetic relationship. There are only a limited number of ways in which the words of a simple sentence can be ordered and there is a distinct probability of chance similarities between unrelated languages.

9.2 Martin 1966

In 1966, Martin set the standard for PKJ reconstructions. For the first time, the question of genetic relationship was examined in a thorough and scientific manner. No longer would a PKJ hypothesis be based on a few lists of possible cognates, but rather, a set of phonemes, correspondences and reconstructions was now available for argument and further development. In the following sections, Martin's work will be briefly explained and reviewed. Then we will review the works that came afterwards, all based on

or related back to Martin's landmark work.

9.2.1 Some Weaknesses

The most obvious weakness stems from Martin's choice to ignore OJ A-B vowel distinctions. Martin's reasoning (1966:193) was that the vowel distinctions "are inadequately established for the necessary vocabulary." In his 1973 article, Mathias (1973:31) states that "it is imperative that those vowels that can be distinguished in OJ derive from separate rules." Mathias, based on some proposals made earlier by Miller (1971:66), suggests modifications that clear up the above problem quite economically. We will return to Mathias' modifications, in addition to modifications made to Mathias' article.

The second major weakness of Martin's work stems from the methodology of comparative reconstruction itself. Whitman, in his 1985 work, points out that one of the by-products of comparative reconstruction is an over-rich phonemic inventory. Whitman chooses to utilize rules of sound change in his reconstructions, rather than expanding the phonemic inventory. We will return to Whitman's work and modifications to Whitman's theories later on.

9.3 Martin's Reconstructions

Martin's 1966 work is the first serious attempt to establish a systematic set of correspondences. Martin chose lexical items out of a set of basic vocabulary, thought to be more resistant to replacement. This assumption itself brings up some interesting questions. Given the fact that taboo words often retain older pronunciations, it could actually be that the most commonly used words undergo the most change, and are likely candidates for lexical replacement. After borrowing and what Martin refers to as

'happy coincidence' have been excluded, Martin defines criteria to categorize the degree of 'fit' for both form and meaning for the proposed cognates. Martin notes that longer words are desirable to reduce the chance of accidental correspondence, even if both the form and meaning do not fit well. The possibility of accidental correspondence decreases as the length of the sequence increases.

9.4 Martin's Proto-Vocalic System

The following is Martin's Proto-Koreo-Japonic vowel system:

Table 75: Martin's PKJ vowel system

	Front		Central				Back
High	*Cy-*	*i*					*u*
		yi					
Mid		*e*				o	
		ye				*yo*	
			a	*a̓*	*ɜ*	*ɜ̓*	
Low			*ya*		*yɔ*		
			wa		*wɔ*		

Martin himself notes "it is difficult to say what quality may have distinguished **a* from **a* or **ɔ* from **ɔ̓*; **ɔ̓* accounts for cases where K *ɔ* corresponds to J o rather than u, **a* accounts for cases where K *ɔ* corresponds to J *a* (1966:196)". This problem of a seeming superfluity of phonemes can be dealt with in a more economic manner, as pointed out by Whitman. In the above inventory, there are actually only eight vowel nuclei.

9.5 Martin's Consonantal Inventory

9.5.1 Initials

The following are Martin's (1966:196) inventory of initial consonants and consonant clusters, which this author has rearranged into the chart below:

Table 75: Martin's inventory of initial consonants and consonant clusters

	Bilabial	Dental-Alv.	Palato-Alv.	Palatal	Velar
Stops	***p, b***	***t, d***		***č***	k
Fricatives	***v, vx (= F)***	***s***			***x***
Affricates	***px, bx***	***tx***	***tš, tšx***	***čx***	***kx***
Continuants				***ǰ***	
Nasals	***m***	***n***			

Martin (1996:196) comments that ****bx*** "stands out conspicuously" and only occurs in three words: 'sell', 'grass', and 'green'. Also, the phoneme ****vx*** only occurs in one word, 'redbean'.

Martin reconstructs the following non-initials for PKJ, which this author has left in the matrix given by Martin:

Table 76: Martin's PKJ non-initials

-dx-	***-nx-***	***-mp-***		***-l(-)***	***-r(-)***	***-ř-***	***-š(-)***	***-g-***	***-ǧ-***
		-mpx-		***-lpx-***	***-rx-***				
		-mb-		***-lb-***					
				-ld-					
				-ldx-					
			?-sk-	***-lk-***	***-rk-***				
			?-sg-	***-lg-***					
				-lǧ-					
				-lm-					
				-lmp-					

This author has chosen to leave the matrix as Martin presented it because it is not clear why he has set it up the way he has. For example, if we examine the first item, ***/-dx-/***, it appears that the ***/d/*** is more important in the cluster and therefore is classified in a region typically reserved for dentals. After that, however, Martin lists ***/-mp-/***, both of which are bilabials and usually listed before dentals. After the liquids, Martin lists ***/-s(-)/***, which should be near ***/-dx-/***. Cluster ***/-ldx-/*** is confusing and unnatural. It would seem that ***/d/*** is

the central segment with /*l*/ and /*x*/ being the onset and coda, respectively; however, Martin lists it in the same column with other /*l*/ initials, implying that the /*l*/ is actually the core of the cluster and /*-dx-*/ a segment that follows. A common criticism of Martin's reconstruction is the unnaturalness of this phonemic inventory. See the discussion of Whitman below.

9.6 Martin's Correspondences

Since we will be studying Martin's work, along with some other key works, in detail, and for the purposes of understanding this author's etymologies in relationship to Martin's work, a condensed, rearranged, but complete version of his correspondences is listed here (Martin 1966:198-224). For specific examples of each correspondence, the reader may refer back to Martin's work itself:

Table 77: Martin's correspondences

#	pKJ phoneme	Allophones	M's Correspondence #'s	Correspondence K : J
1.	*/*p*/	[*p*]	1, 1a	*p* : *p*
2.	*/*b*/	[*b*]	3, 1b	p : b
3.	*/*t*/	[*t*]	6, 6a	t : t
4.	*/*d*/	[d_1], [d_2]	8; 6b	*t* : *y*; *t* : *d*
5.	*/*k*/	[*k*]	4, 4a	k : k
6.	*/*g*/	[g_1], [g_2]	4b; 5b, 5bb	*k* : *g* ; *h* : *g*
7.	*/*v*/	[*v*]	3a	*p* : ø
8.	*/*s*/	[s_1], [s_2]	14; 14a	*s* : *s* ; *s* : *t*
9.	*/*š*/	[*S*]	14c, 14cc	*l* : *s*
10.	*/*c*/	[c]	9, 9a	*c* : *t*
11.	*/*x*/	[x_1], [x_2], [x_3]	5, 5a; 5aa; 5c	*h* / *k*: *k* ; ø : *k* ; *Ch* : *C*
12.	*/*ts*/	[*ts*]	9b, 9c, 9d	*c* : *s*
13.	*/*m*/	[m_1], [m_2]	2, 2a	*m* : *m* ; *m* : ø
14.	*/*mp*/	[*mp*]	1c	*p* : *m*
15.	*/*mb*/	[mb]	1d	*m* : *b*
16.	*/*n*/	[n_1], [n_2]	7, 7a; 7b	*n* : *n* ; ø : *n*

17.	*/nx/	[nx]	7aa	nh : n
18.	*/r/	[r]	11	l : r
19.	*/ry/	[ry]	11a	y : r
20.	*/rk/	[rk]	11b	lk : r
21.	*/ř/	[R]	13	l : y
22.	*/l/	[l_1], [l_2]	12; 12b, 12c, 12cc	l : t ; l : ø
23.	*/ld/	[ld]	12a	l : d
24.	*/lg/	[lg]	12d	l : k
25.	*/ǰ/	[j_1], [j_2]	10; 14b	c : y ; s : d
26.	*/a/	[a_1], [a_2]	17; 17a, 17b	a : a ; ë / a : a
27.	*/a'/	[a']	21d, 21dd, 21e-f	ɔ : a
28.	*/ya/	[ya_1], [ya_2]	15b; 23a	i' : i ; i : a
29.	*/i/	[i]	15, 15a	i : i
30.	*/yi/	[yi_1], [yi_2]	15c; 15d	ë : i ; ø : i
31.	*/y/	[y]	15e	i : ø
32.	*/e/	[e]	16	ë : o
33.	*/ye/	[ye_1], [ye_2]	16a; 16b	i / y : e ; ø : e
34.	*/u/	[u_1], [u_2]	19, 19a, 19b; 19c, 22b	u : u ; ø : u
35.	*/o/	[o]	20, 20a, 20b	o : o
36.	*/yo/	[yo]	20c	o : i
37.	*/yɔ/	[yɔ]	20d	ɔ : i
38.	*/ɔ/	[ɔ]	21, 21a, 21aa	ɔ : u
39.	*/ɔ'/	[ɔ']	21b, 21b', 21bb, 21c, 21c', 21cc	ɔ : o
40.	*/wa/	[wa]	18	u : a
41.	*/wɔ/	[wɔ]	18a	o : a

9.6.1 Implied Sound Changes

The above correspondences imply the following sound changes for Korean and Japanese from Martin's reconstruction of PKJ.

9.6.1.1 Implied Korean Sound Changes

Table *78:* Implied Korean sound changes

1. ***p** > **p***
2. ***b** > **p***
3. ***mp** > p / V__V [Cf. **Vovin**]*
4. ***mb** > **m** / V__V*
5. ***m** > **m***
6. ***v** > **p** / #___*
7. ***k** > **k***
8. ***g** > **k** / {V__V / ____#}*
9. ***x** > **h***
10. ***ǧ** > **h***

11. ***h*** > ***ø*** / V__V
12. ***Vi*** > *Vy*
13. ***t*** > ***t***
14. ***d*** > ***t***
15. ***n*** > ***ø*** / __ {***ye*** / *i*}
16. ***n*** > *n* / **elsewhere**
17. ***č*** > ***c***
18. ***š*** > ***c***
19. ***j*** > ***c*** / #__
20. ***j*** > ***s*** / V__V
21. ***r*** > ***l*** / V__V
22. ***r*** > ***ø*** / __ {***y***, ***i***}
23. ***l*** > *1*
24. **ld* > *1* / V__V
25. **lg* > *lk* / V__V
26. **lG* > ***l*** / V__V
27. ***ř*** > ***l*** / {V__V / __#}
28. ***s*** > *s*
29. **š* > ***l*** / V__V
30. ***h*** > ***ø***
31. ***i*** > ***i***
32. ***yi*** > ***ë*** / # *(C)*__
33. ***yi*** > *$1* __#
34. ***y*** > **i** / C__+
35. ***e*** > **e**
36. **ye* > {***i***, ***y***} / *(n*, *r*, *ts*, *x*} __
37. **ye* > ***ø*** / **elsewhere**
38. **a* > *a*
39. **a* > **a (environments unspecified)**
40. ***wa*** > ***u***
41. ***wɔ*** > ***o***
42. ***u*** > ***ø*** / ___#
43. ***u*** > *(u*,*o)* / **elsewhere**
44. ***o*** > {***o***, ***u*** } ?
45. **yo* > *o*
46. ***yɔ*** > ***ɔ***
47. ***ɔ*** > *(a)*
48. ***ɔ*** > *a*
49. ***ɔ*** > ***ĩ***
50. ***ɔ*** > *a*
51. ***ɔ*** > ***ë***
52. ***ɔ*** > ɔ
53. ***ɔ*** > ***u***
54. **a* > ***ɔ***
55. ***ɔ*** > ***i***
56. ***ɔ*** > {***a*** / ***ë***}
57. ***ɔ*** > {***ĩ*** / *a)*

9.6.1.2 Implied Japanese Sound Changes

Table 79: Implied Japanese sound changes

1. ***p*** > *hw*
2. ***hw*** > ***h*** / #___
3. ***hw*** > {***w*** / ***ø***} / **elsewhere**
4. ***b*** > {***w***, ***ø***, ***b***} / #___
5. ***b*** > *b* / **elsewhere**
6. ***mp*** > *m* / {V__V / __#}
7. ***mb*** > ***b*** / {V__V / __#}
8. ***m*** > ***ø*** / +..._#
9. ***m*** > ***m*** / elsewhere
10. ***v*** > ***ø*** / #___
11. ***k*** > ***k***
12. ***g*** > ***g*** {V__V / __#}
13. ***x*** > ***ø*** / C___
14. ***x*** > *k* / {#__ / V V)
15. ***t*** > ***t***
16. ***d*** > ***d*** / V__V
17. ***d*** > ***y*** / #__
18. ***n*** > ***n***
19. ***nx*** > ***n***
20. ***c*** > ***t*** / {#__ / V__V}
21. ***ts*** > ***s*** / {#__ / V__V}
22. ***ǰ*** > ***y*** / #__
23. ***ǰ*** > ***d*** / V__V
24. ***ř*** > ***r*** / V__V
25. ***řya*** > ***ra*** / __#
26. ***řk*** > ***r*** / V__V

27. **l* > *t* / V__V
28. **ld* > *d* / V__V
29. **ř* > *y* / V__V
30. **s* > *s* / #__
31. **s* > *t* / V__V
32. **š* > *s* / {V__V / __#}
33. **i* > *i*
34. **ya* > *i*
35. **yi* > *i*
36. **y* > *ø* / C__+
37. **e* > *o*
38. **ye* > *e* / {n, r, ts, *x*}___
39. **ye* > *e* / ___#
40. **a* > *a*
41. **wa* > *a*
42. **wɔ* > *a*
43. **u* > *u*
44. **o* > *o*
45. **yo* > *i*
46. **yɔ* > *i*
47. **ɔ* > *o*
48. **a* > *a*

9.6.2 Miller's Modifications

Miller (1971:66) first proposed modifications to Martin's rules regarding the OJ distinctions for A-Type and B-Type ***e***. Miller suggests Type A ***e*** should be reconstructed as ****ye*** and Type B ***e*** as ****ey***. The phonological motivation for the reconstructions is that the OJ pronunciations may have been distinguished by an on-glide and off-glide.

Miller (1971:63-65) offers phonetic evidence from reconstructed Chinese sound values used to write OJ syllables. Mathias (1973:32) points out that the strongest case that can be made for the above hypothesis is actually a negative statement: that A-type /***e***/ probably did not end in /*y*/. Mathias also questions the accuracy of the MC reconstructions. Miller based his findings on Karlgren, and many scholars since, such as Pulleyblank, Baxter, and Miyake, have completely redone Karlgren's reconstructions.

Internal evidence offers some interesting clues. Mathias (1973:32) notes that both types of ***/e/*** are rare. Out of the OJ vowels, Type B ***e*** comprises only 2%, and Type A just over 1%. Even including the neutral vowel e, Type **A and** Type B e only comprise **3%** of all OJ vowels. Mathias also notes that these vowels usually occur at morpheme junctures, such as the link between verb roots and suffixes, and at the end of nouns. Mathias concludes, therefore, that both Type **A** and Type B e are not original.

Mathias cites the well-known alternation of Type B e with a in OJ; e.g. ***takëti*** (= ***take$_2$ti***) '(placename)', and taka- 'high'. Mathias (1973:32) derives ***ë*** (= ***e$_2$***) from a **+ *i***. Although it is possible that an original final e became a in compounds, a more acceptable interpretation is that the process of compounding protected an original a.

Miller proposes a modification that would account for both types of e in OJ. Martin's (1966:214) rules for e are:

Table 80: Martin's (1966) rule for e

{*n*, *r*, *ts*, 5aa} *ye* > *i* / *y* : *e

(where 5aa is ***..*x*.. > / *Vhi* >** Vy? : ***Vk***)

****ye* > ø : *e***

Miller's modifications to the above rules are as follows:

Table 81: Miller's proposed modifications

{*n*, *ts*} *ye* > *i* / *y* : *ë

{*n*, *r*, *ts*, 5aa} *ey* > *i* / *y* : *ë

****ye* > ø : *ë***

*ey > ø : ***e***

Mathias (1973:35) notes that the above modifications assume that the PKJ split occurred before the development of OJ ***e*** from ***a*** plus i. Given the hypothesis that OJ e postdates the split, Mathias revises Miller's rules as follows:

Table 82: Mathias' modification to Miller

{*n*, *ts*} *a* > *i* / *y* : (*) *a

..*a* > ø : (*) *a

The economic fact about Mathias' revision is that it can be incorporated under another rule of Martin's, which states that:

Table 83: Economic version of Mathias and Martin's rule

*(*C*) *a* > ø : *a*

Relevant examples of this then underwent a change of a + *i* > e in the OJ line. Mathias then is able to account for the OJ Type **A** and B distinction for ***e*** with the addition of only one more rule.

Mathias claims that the development of OJ i_1 and i_2 parallels that of e_1 and e_2 described above, claiming that OJ *ï* (= /i_2/) derives from **ö* + *i*, or **u* + *i*. Mathias bases his claim on two examples of an (*)*ö* / *ï* alternation, similar to the a / e alternation described above. The examples are ***kï*** 'tree' alternating with kokage 'shade of tree', and pi 'fire' alternating with pokage 'firelight'. Mathias (1973:36) also notes that there are only a few cases of root-internal ***ï***. Looking at Martin's rules, seven of them give ***i*** in Japanese. Mathias (1973:36) suggests that Martin's rule *yo > o : ***i*** be revised to *yo > o : *ǐ* (= i_1) In addition to this revision, Mathias, following Miller, proposes ****oy*** > o : ***ï*** (= i_2), with ****myom*** 'body' revised to ****moym***. Given the hypothesis that OJ ***isi*** 'stone' is derived from a pre-OJ form with root-internal ***ï***, then Mathias modifies Martin's reconstruction of 'stone' from ****dyoš*** to ****doyš***, noting that this results in a form slightly closer to the probable proto-Altaic cognate ****täl***$_2$ 'stone'.

Mathias (1973:37) also suggests that cases such as 'body' ****myom*** (his ****moym***), can be accounted for by Korean adding a suffix ***–m*** to nouns, possibly related to

the deverbal nominalizer –m, rather than having a final –*m* delete in the Japanese line. On the assumption that *-i, was added in the Japanese line, his would allow Mathias to reconstruct ***mo*** for 'body'. Mathias (1973:35) points out that Miller only rewrites one of Martin's reconstructions and continues to refer to the rest of the Martin's reconstructions without modification.

9.7 Whitman's Work

In his 1985 doctoral dissertation, John Whitman submitted what has become the second landmark of research in the area of Proto-Koreo-Japonic. Below we shall examine Whitman's advancements in this field, in addition to the modifications to such advancements, by Martin, Serafim, and others.

Whitman subscribes to the theory of diphthongal origins, which claims that the eight vowel system of OJ derives from a simpler system. Whitman assumes a four vowel system for pre-OJ, namely *i, ***u***, ***o***, and *a, which itself comes from an earlier, richer, system; he does not find sufficient evidence for an original ***ë*** (= e_2). Whitman sees the critical implications that the theory of diphthongal origins has in regard to Korean correspondences. Specifically, the theory implies Korean sequences such as the following corresponding to OJ vowels (1993:513):

Table 84: Predictions of Korean sequences for comparison to OJ vowels

OJ Vowel		Compared with possible Korean segments
1. ***ï*** (= i_2)	:	***u / o*** X ***i***
2. ***e*** (= e_1)	:	***i*** X ***a***
3. ***ë*** (= e_2)	:	***a*** X ***i***
4. ***o*** (= o_1)	:	***u*** X ***a / (o)***

The obvious question arises concerning the nature of the X. Miller and Mathias seem to view X as zero; for example, Miller reconstructs PKJ ***taxey*** and Mathias *taka for OJ 'bamboo' ***take*$_2$** – taka-, corresponding to MK tay id., and Mathias reconstructs ****po*** for OJ 'fire' ***pi***, po- (Note: Miller reconstructs PKJ ****pywal***, similar to Martin's ****pyal***, and neither reconstruction reflects the theory of diphthongal origins, which would require a sequence of ****oXi*** or ****uXi*** for OJ i (= ***i*$_2$**)).

Whitman points out that Mathias' reconstructions utilize the theory of diphthongal origins to better account for comparisons of OJ and MK. Specifically, Mathias, as mentioned above, accounts for comparisons such as 'bamboo', where PKJ ****y*** is attested in the MK stem, and also 'fire', where the OJ /***y***/ comes from the PKJ nominative suffix *-i. Mathias holds the view that final ****y*** is secondary, coming from ****i***, a nominal suffix. The hypothesis of ****i*** being a nominal suffix was first proposed in earlier research, such as Yoshitake 1925 and Kamei 1954. The OJ forms where final /***y***/ does not appear occur in the environment preceding the genitive – noor in compounds, that is, exactly as one would expect.

Miller (1971:29) discusses the above possibility and rejects it on the basis that most of the instances of OJ nominative –***i*** occur in Buddhist texts of a likely Korean origin. The examples given in Yamada (1954:421-434) are strong candidates for this possibility. Whitman (1993:541), however, points out that in the examples cited by Omodaka (Omodaka et al. 1967), –***i*** appears predominantly as a suffix that follows deverbal nominalizations.

Whitman argues in favor of –***i*** as an earlier nominative suffix, explaining the

apparent difficulties by claiming that it was no longer productive by the time of OJ. If it were, Whitman (1993541) states, we would not expect the non-compound forms in final lyl to appear before other case suffixes, such as the locative marker –ni and accusative marker –***wo***. As mentioned earlier, the compound form (without /***y***/) appears only in compounds and before the genitive suffix –no. Whitman claims that the function of a suffix after deverbal nominalizations was reanalyzed to a substantivizing suffix. Whitman (1993:541-542) notes the parallel function in substantivized forms of OJ adjectives, such as 'blue' awo and 'indigo' awi. Therefore, ****-i*** was absorbed into noun stems and then followed by other suffixes. The non-compound forms preceding the genitive – no showed no final lyl, becoming frozen genitive compounds.

Whitman, however, also points out some problems with Mathias' modifications, to which he offers his own solution. First of all, Unger (1977) points out that the distribution of final /***y***/ in OJ nouns must be explained due to the fact that there are many nouns ending in final /***a***/, /***o***/, and /***u***/, which do not exhibit the above apophonic alternation. We will return to this point later on.

Secondly, Whitman challenges Mathias' assertion that Korean was innovative in adding final –l or –***m*** for cases where it appears in MK but not in OJ, e.g. 'body' or 'fire', as mentioned above. Specifically, for OJ 'body' mu- / ***mĩ*** corresponding to MK mom id., Mathias reconstructs PKJ ****mo***, and ****mö*** + i for pre-OJ. In the case of 'fire', OJ ***po*** ~ ***pĩ*** corresponding to MK ***pul***, recall that Mathias reconstructs ****po*** for PKJ and ****po*** + ***i*** for pre-OJ. Mathias suggests that the –***m*** is related to the Korean deverbal nominalizing suffix –***m*** /***-um***, and that the apparent additions of /***l***/ and lml in Korean are Korean

developments since they are lacking in OJ.

9.7 Whitman's Law

Whitman (1985; 1993:514-515) offers a solution to both situations in what has now become known as "Whitman's Law." Whitman begins by pointing out that both the Japanese and Korean languages have historically not allowed vowel or consonant clusters from suffixation. In other words, a vowel-initial suffix alternant would attach to a consonant-final stem, and vice-versa. Based on these facts, Whitman asserts (1993:515) that *-i attached only to nouns with original final consonants in pre-OJ, rather than to all of the nouns. This is in agreement with the development of the CV(CV) OJ noun stem structure. At the same time, original stem-final ***m*** and ***r*** were lost medially in specific environments.

9.7.1 Environments of *m and *r loss in pre-OJ

Since there are many cases where medial ***r*** and ***m*** do not disappear in OJ, let us examine the environments carefully. Based on philological evidence and internal reconstruction, Whitman (1993528) asserts that medial ***r*** and ***m*** loss occurred only after a short vowel, and only short ***u*** for *m-loss; in other words, a preceding long vowel blocked the deletion of medial ***r*** and ***m.*** Whitman bases this on the assumption that a rising tone on the first syllable in Korean represents earlier vowel length. Whitman (1993528) queries as to whether we can find any reflex of original vowel length in Japanese.

Whitman (1993531) concludes that there were two sources for pre-OJ initial syllable vowel length: primary long vowels, and secondary long vowels resulting from contraction. The primary long vowels are reflected by class 2.3 accent pattern

and the retention of medial /*r*/ and /*m*/ in OJ. The secondary long vowels are reflected by class 2.4 and class 2.5 accent patterns, and initial vowel length in Ryukyuan dialects. Both types of initial syllable vowel length are reflected by initial low register. Whitman states that all Japanese dialects lost the quantity reflex of primary as opposed to secondary vowel length.

9.7.2 Internal Evidence for ***r*** and ***m*** Loss

Whitman (1993:533) claims that medial ***–r-*** loss has been an on-going process in the Japanese line. He cites examples where /*r*/ is deleted intervocalically, usually before /*i*/, and often in later forms; e.g. ***nurite*** > ***nute*** 'bell, clapper', ***karite*** > ***kate*** 'foodstuff', and ***karimo*** > ***kamo*** 'axle wedge'.

Whitman (1993:334) cites Unger's examples (also Serafim) of reduplication as actually being further evidence of medial ****r*** loss. Unger asserts that there was a productive process in Japanese where the first syllable of a verb root was duplicated and a new root formed with enhanced meaning. Unger cites examples, such as OJ ***tuke$_2$-*** 'attach' and ***tutuke$_2$-*** 'continue', and ***yam-*** 'get sick' and ***yayam-*** 'be troubled', which exhibit this pattern. Unger (1993 [1977]:33) then notes that there exists a group of such verb and adjective pairs with an apparently odd consonantism:

Table 85: Unger's examples of odd consonantism

utape$_2$- 'appeals, sues' – ***urutape$_2$-*** id.
wogam- 'bow' – ***woro$_2$gam-*** 'revere'
name$_2$- 'line up, put in order' – ***narabe$_2$-*** id.
i- 'mints, casts' – ***ir-*** 'scorch'
yo$_2$- 'good' – ***yo$_2$ro$_2$-si*** 'id., all right'

Unger offers an explanation (following an idea from Serafim for ****#ro$_2$*** > ***#wo$_2$***,

personal communication with Unger) for the above consonantism by claiming that if we reconstruct an initial ***r***, we can treat the problem, since initial ***lrl*** is not allowed by the time of OJ. Unger therefore reconstructs the following:

Table 86: Unaer and Serafim's reconstruction

rutape$_2$- > (? ***wutape$_2$-*** >) ***utape$_2$-*** – ***rurutape$_2$-*** > (? ***wurutape$_2$-*** >) ***urutape$_2$***

ro$_2$gam- > ***wogam-*** – ***ro$_2$ro$_2$gam-*** > ***woro$_2$gam-***

rabe$_2$- > ***nabe$_2$*** – ***name$_2$-*** – ***rarabe$_2$-*** > ***narabe$_2$-***

ri$_1$- > (? ***yi$_1$-*** >) ***i-*** ~ ***ri$_1$ri$_1$*** > (? ***yi$_1$r[i$_1$]-*** >) ***ir-***

re$_2$- > ***ye-*** (attested in dialects) > ***yo$_2$-*** – ***re$_2$r$_2$e-*** > ***ye$_2$re$_2$-*** > ***yo$_2$ro$_2$ (-si)***

Unger (1993 [1977]:34) then posits the following sound changes, hypothesizing that ***r*** could occur initially before any vowel in PJ, but before none in OJ.

Table 87: Unger's posited sound changes for ***r***

r > (? ***y*** >) ***ø*** / # ___ ***i***

r > (? ***w*** >) ***ø*** / # ___ ***u***

r > ***w*** / # ___ ***o$_2$***

r > ***n*** / # ___ ***a***

(***r*** > ***y*** / # ___ ***e$_2$***)

Unger then furthers the theory by relating OJ ***siri*** 'buttocks' and ***usiro$_2$*** 'behind' to OJ ***wo*** 'tail'. Unger reconstructs ****ro$_2$*** for 'tail' and therefore words like ***woro$_2$ti*** 'large serpent' can be seen as ****ro$_2$*** 'tail' (doubled) + ****ti,*** rather than the traditional analysis of ****wo*** 'tail' + ****ro$_2$*** (suffix) + ****ti*** 'spirit'. Unger also analyzes ***siri*** 'buttocks' < ****so$_2$-i$_1$*** 'back (general)' + ****ro$_2$-i$_1$***, since neither OJ ***lsil*** or ***/ri/*** show a vocalic distinction. Similarly, Unger reanalyzes ***usiro$_2$*** 'behind' as ***u*** (prefix) + ****so$_2$-i$_1$*** + ****ro$_2$***. Whitman (1993:535), however, explains the above set of doublets of Table 87 as contractions of ***an*** older ***VrV***

sequence. Note that Whitman's explanation does not refute the initial hypothesis of productive reduplication in cases that do not contain /*r*/, such as OJ ***tuke*$_2$-** 'attach' and ***tutuke*$_2$-** 'continue', and ***yam-*** 'get sick' and ***yayam-*** 'be troubled'.

9.7.3 Alternations of /*r*/ and /*y*/ in OJ

Whitman (1993:535) argues that a subcase for the rules for medial ****r*** loss is ****VrV* > *VyV***. This accounts for cases where Korean /*l*/ corresponds to Japonic /*y*/, and /*y*/ does not result in diphthongization. This result would occur whenever medial ****r*** loss is not blocked by vowel length, and diphthongization does not occur because the environment for it is not met. Whitman cites the following ***–r- / -y-*** doublets in OJ and NJ (I leave his orthography intact):

Table 88: Whitman's examples of ***–r-/-y-*** doublets in OJ and NJ

OJ ayum- 'walks'	–	MJ ***arik- / aruk-*** id.
OJ ***kayA-*** 'departs	~	OJ ***karA-*** id.
OJ ***kOyU-*** 'freezes'	–	OJ ***kor-*** id.
OJ ***tayu-*** 'listless'	~	MJ ***daru-*** 'id.'

9.7.4 Medial ***–m-*** loss in OJ

Whitman (1993:535) asserts that there are OJ examples that indicate an early process of /*m*/ loss after a high back vowel. His examples are as follows:

Table 89: Whitman's OJ examples of ***lml*** loss after a high back vowel

OJ ***numa* – *nu*** 'pond' (cf. MK ***nwup,*** K ***nuph*** 'pond')

OJ ***yuwe*** 'woman servant who bathes infants' < ***yu*** 'hot water' + ***mye*** 'woman'

OJ ***yuduka*** 'bowgrip' < ***yumi*** 'bow' + ***tuka*** 'grip, handle'

Whitman states that these OJ examples give 'clear evidence' for such a process.

9.7.5 Overall Advantages of Whitman's Law

Whitman's approach of combining the results of comparative work with internal reconstruction within Japonic is advantageous for many reasons. We can account for Koreo-Japonic cognate pairs without pressing the limit of the phonemic inventory of the proto-language beyond probable reality, while at the same time offering a rather consistent phonological basis for the comparisons. Medial **r* and **l* loss along with subsequent diphthongization also firm up several problematic cognate pairs proposed earlier by Martin and others.

9.7 PKJ Conclusions

Martin's (1966) landmark work set the foundation for all further comparative work between Japanese and Korean. Whitman (1985) also added significantly to the field of PKJ in many ways; specifically, he did IR in both languages before reconstructing PKJ. In addition, he proposed what is now known as "Whitman's law," which is a rule for medial **r* and **m* loss in the J line.

As far as vowels are concerned, I initially followed Whitman's vowel correspondences; after some research, however, I have come to support Serafim's vocalic theory in my own reconstructions (See: 10.6 PKJ Vowels). Specifically, I found overwhelming evidence for the correspondence MK o : OJ *o*, causing me to reevaluate my PKJ vocalic analysis. Based on cognate pairs that I have proposed, I now concur with Serafim's PKJ vowels.

Part C: Some New Hypotheses for Proto-Koreo-Japonic

10.0 PKJ Phonology

10.0.1 Introduction

In the following sections, I will introduce the main hypotheses of this thesis. Through the acceptance of these hypotheses, many more potential cognates are discovered that had previously gone unnoticed. Just as with archaeology, artifacts often get covered over and obscured over time; with the right tools, however, previously missed artifacts can be uncovered. I offer these hypotheses and cognate proposals and look forward to further research and review from myself and others.

I introduce the PKJ consonants first, since the majority of the hypotheses are consonantal in nature. In the first section, I discuss Serafim's (1996) labiovelar hypothesis; this claim states that there is a correspondence of MK ***p*** to OJ k, for which he reconstructs PKJ *k^w. Following his hypothesis, I have added several more cognate pairs which exhibit this correspondence. Then, I argue that due to dialectal mixing, there also exists a reverse correspondence of MK k to OJ p. Since Serafim's correspondence set is stronger, I assign to it the label PKJ ***k^w_1*** and to the reverse correspondence set, PKJ *k^w_2.

Next, I discuss a process of simplification of liquid plus obstruent clusters. I hypothesize that there is a general simplification of PKJ liquid plus obstruent clusters where the K line keeps the liquid and the J line keeps the obstruent. Specifically, PKJ ***p***, ***t***, and ***k*** lenite in MK, whereas ***r*** is lost in the J line (cf. Whitman). It is very likely that ***k*** and ***p*** lenite to ***G*** and *W, respectively, before becoming zero, but without any evidence for such a stage, it is only speculation. Next comes a discussion on how to handle the fact that ***lG*** and ***lW*** clusters are allowed in MK; alternations in MK could be

the key in explaining why some forms were protected from obstruent loss.

Next comes a hypothesis regarding nasal plus obstruent clusters. First I briefly review Vovin's nasal plus consonant hypothesis. I follow this with a proposal for a phenomenon that occurs with PKJ nasal plus obstruent clusters that appears to occur in both directions. I attribute the 'reverse' correspondence to dialect mixing, which I present in detail in a later discussion. Specifically, I argue that PKJ ***Np*$_1$ becomes ***p*** in the K line and m in the J line (cf. Martin 1966). The sub-1 marking indicates that this hypothesis is primary, and the reverse correspondence, that is, MK m and OJ p, is marked as PKJ ***Np*$_2$.

Next, I present a more tentative hypothesis regarding the apparent correspondence of MK ***t*** to OJ k, for which I reconstruct PKJ ***K***; i.e. probably ***K*** > ***t*** in the Korean line. For some cases, affrication seems to be the cause of the correspondence, but for others, affrication will not suffice. More research will undoubtedly be helpful in illuminating the situation. Accepting the correspondence, however, allows access to many more potential cognate pairs than before.

I also present a 'reverse' correspondence phenomenon with this hypothesis. That is, MK k corresponds to OJ ***t***. I attribute this reverse correspondence to dialect mixing. Since this hypothesis is more tentative, I have included only those proposed cognates that otherwise have minimal problems; if this hypothesis is accepted, however, many more cognates can join the body of PKJ forms.

Next I present the subject of metathesis, most frequently occurring in the K line. Metathesis, as well as the other arguments mentioned above and below, are interlocked, and explaining one requires referring to another. In other words, it is difficult to lay out

the arguments in a completely linear fashion and at times the reader is necessarily referred to a later (or earlier) section.

The next hypothesis presented, dialect mixing, is also interconnected with aspects of other hypotheses. Rather than just using it as a 'junk pile' of unexplained phenomena, I present a discussion regarding why dialect mixing would be expected and which early PKJ dialects would likely be involved; specifically, Kaya, Izumo, Silla, Paekche, Koguryŏ, and Yamato dialects. Given the nature of the transfer of PJ from the Korean Peninsula into the Japanese Islands over the course of several hundred years, dialect mixing would be expected.

The next section covers PKJ vowels. Here I introduce Serafim's proposals for a six-vowel PKJ system. I offer support of my own for some of his correspondences; in particular, MK o corresponding to OJ o. Specifically, I found examples where MK o corresponds to OJ o, o_1, and o_2. In addition, I found examples where MK wo, as well, corresponds to OJ o, o_1, and o_2. In order to solve this apparent conundrum, two vowels are reconstructed in PKJ with three different subscripts each; at this point, the source is not entirely clear, but further research should clarify the subject.

10.1 PKJ Consonants

10.1.1 Serafim's Labiovelar Hypothesis

Serafim (1996) first presented a hypothesis of PKJ labiovelars at the AAS Annual Meeting. His hypothesis is that there appears to be a correspondence of MK k to OJ p, for which he reconstructs PKJ *k^w. Accepting this correspondence allows us to pair up several more cognates that had previously gone undetected. Osada (2001) also has proposed a labiovelar hypothesis for PKJ. A list of Serafim's proposed set of cognate

pairs follows, with *OJ* examples in Yale romanization:

Table 90: Serafim's proposed *PKJ* labiovelar cognate pairs

1. 'complete': *MK kuth* : *J pate* 2.3 'end; limits'; *PKJ* *k^{w}ete-x*
2. 'a fly': MK ***pholi***, *phol* : OJ ***papey***; PKJ *k^{w}apar-i / *x^{w}apar-i*
3. 'first; one': *OK hotu-* : *Jpatu-; PKJ* *x^{w}atV* [suggested by Vovin]
4. 'rope; string': K *nwoh* : *J* ***napa***; *PKJ* ****nax^{w}a***
5. 'top': *K wuh* : *J upa* : *PKJ* ****ux^{w}e-***
6. 'nose': K *kwoh* : OJ ***pana***; *PKJ* ****k^{w}aŋa***
7. 'untie': K ***kulG-*** : *OJ podok-;* ****k^{w}ö(N)dö-k-***
8. 'go wrong': K ***kulG-*** : *J kuru-p-; PKJ* ****kuru-k^{w}V-*** / ****kudu-k^{w}V-***
9. 'salt': K *swokwom* : *J sipwo; PKJ* *$suuk^{w}um$*
10. 'embrace': MK ***phwum-*** < pre-K ****hupwum-*** : *J pukum-/kukum-; PKJ* ****x^{w}u-x^{w}um-***
11. 'deep': *K* ***kiph-*** : *J puka-; PKJ* *$k^{w}ix^{w}e$-* / ?****x^{w}ix^{w}e-*** [link suggested by Riley]
12. 'small; few': *OJ sukuna-* '(only) a little' : NK *cak-* 'small'; ***cek-*** 'small; few, little quantity'; *PKJ* ?****cuk^{w}u-***
13. 'loom': *MK* ***thul*** < pre-K ****hutul*** : *OJ pata < pre-OJ* ****pätä***; *PKJ* *$*x^{w}eter$*
14. 'mother': native *Jpapa* : loan stratum *J kaka < PXJ* *$*k^{w}ak^{w}a$*
15. 'warp (of a loom)' (< 'warp it (i.e., thread the warp [a repetitive action]: pre-MK ****nonolo-***, ***nolo-***, ***nolo-h-***: *OJ nu-p-; PKJ* ****nuru-kh^{w}V-***
16. 'and': K ***-kwa*** : *J to;* PKJ *$*-k^{w}a$*

Table 91: Further evidence from other Altaic languages [provided by Vovin]

1. 'twenty' : *OJ pafa-ti* :: *PJ* ****pata-ti*** 3.3 *(HLL-L)*:: *PMT* ****xorin*** :: *PM* ****korin*** :: *PA* *$*k^{w}oRV$*
2. 'beak': *OJ pasi* :: *PJ* ****pasi*** :: *PM* ****kusi-gun*** / ****kosi-gun*** :: *PA* *$*k^{w}osi$* / *$*k^{w}asi$*

3. 'wing': OJ pane :: PJ ****pana-Ci*** 2.1 :: PT *kana-t and? pre-T ?****kaga-t*** :: ?MK nolkay 'wing' < nol- 'fly' + ***-kay*** < pre-K *kana-i / ****kaga-i*** :: PKJ ****k^{w}aŋa-Ci*** :; PA *k^{w}ana

4. 'leaf: OJ pa < PJ *pa 1.2 :: PMT ****xab-da*** :: PA *k^{w}ab- 'leaf

5. 'eagle': OJ wasi [Azuma] (MJ ***wasi***) < PJ ****basi*** 2.2a / 2.3 :: PMT ****gusi*** :: PA ****g^{w}asi*** 'eagle'

6. 'intestines': OJ wata < PJ ****bata*** 2.3 'intestines, guts' :: PMT ****gude-*** ? ****gudi-*** 'peritoneum, stomach' :: MK kwulm- 'starves' [semantics?] << PA *g^{w}adV- 'intestines'

7. 'to divide in two': OJ war- < PJ *bar-A 'split it, halve it' :: PMT ****gure-*** 'unties it; dismantles it into parts; it falls apart' << PA ****g^{w}aR-***

8. 'fin' [more doubtful]: OJ pata < PJ ****pata*** 2.1 'fin' :: PMT ****xar-pun***

I agree with most of Serafim's proposed cognate pairs; I suspect that number eleven in the previous table, which I originally helped suggest, is actually a metathesis in the K line. Therefore, I reconstruct pre-K ****puyko-*** for MK kiph- 'deep', which corresponds to OJ puka-, reconstructing PJK ****puyko-***. This means that it is no longer evidence for the labiovelar hypothesis, but I believe that it fits better.

10.1.2 Correspondence of MK k : OJ *p*

I offer the following additions (for more explanation regarding a particular cognate pair, see the Part E: Appendix). Note that since I also offer a reverse scenario — that is, MK ***p*** : OJ k — I reconstruct the following as *k^{w}$_{1}$ to show that the MK k : OJ p correspondence is primary. In other words, this is equivalent to a hypothesis that the word within which *k^{w}$_{1}$ occurs has moved down each lineage to the attested language from PKJ directly and is a genetic match with no borrowing involved.

Table 92: Proposed labiovelar cognate pairs: MK k : OJ p

1. **CLEAR,** TO **BE**
   MK kay- 'clear up'
   OJ ***par-*** 'id.'
   PJK ****k^{w}$_{1}$ar-, * k^{w}$_{1}$ara-***

Cf. Whitman[7]'s **(1999)** arguments for splitting off many cases of ****e$_{2}$*** at the end of ***nidan*** verbs.

2. CORNER
   MK ***kwuk*** 'corner'
   OJ ***kuma*** 'id.'
   PJK ****kuŋk^{w}$_{1}$a***

Since PKJ ****mp*** > MK ***p*** :: OJ ***m***, it follows that PKJ ****Nk^{w}*** should yield MK ***k*** :: OJ ***m***.

3. CORRECT, REPAIR, TO
   MK ***nak-*** 'right, proper'
   OJ ***napo-*** 'straight, correct'
   PKJ ****nak^{w}$_{1}$o-***

4. DIG UP
   MK 'khoy- 'dig ***up,*** unearth'
   Pre-MK ****koC-i***
   OJ ***por-*** 'dig'
   PKJ ****k^{w}$_{1}$or-***

For aspiration, cf. Martin **1966** ****Cx***. I provisionally choose not to recosntruct it.

5. EAT, TO
   MK ***mak-, mek-*** 'eat'
   pre-MK ****kam-***, ****kem-*** metathesis
   OJ ***pam-*** 'id.'
   PKJ ****k^{w}$_{1}$am-***

Metathesis in the MK line. Note also J ***kam-*** 'to bite', which would be a loan through Izumo from Silla.

6. END, EDGE
   MK ***kuti***
   pre-MK ****tuki*** metathesis
   OJ ***tupi$_{1}$***
   PKJ ****tuk^{w}$_{1}$i***

7. **FART**

MK ***kwuy*** 'fart'
Pre-OJ ****po$_2$ri***
OJ ***pe***
PKJ ****k^w$_1$ori***

Vowels are problematic.

8. FEATHER

MK ***theli***
Pre-MK ****telk-i***
Pre-OJ ****turpa-sa***
OJ ***tubasa***
PKJ ****turg^w$_1$e-***

Lenition of pre-OJ ****b*** to ***w*** blocked by ****r***. That means that intervocalic ****b*** > ***w*** before ****r*** > ∅ / ___ ****C***.

9. FLAT

MK ***task-*** 'level, make flat'
Pre-MK ****tak-Vs-***
OJ ***tapi$_1$-*** 'flat, even, plain'
PKJ ****tak^w$_1$i-***

The ***s*** in MK is metathetic. Perhaps pre-MK ****-s(V)-*** is a pre-lenition form of the root for 'do', functioning here as a verbalizer/predicator.

10. FLOWER

NK ***kkoch***
MK ***kwos, kwoc, kwoch***
Pre-K ****k^{w}ocoh*** > ****kwocoh***
Pre-J ****padan*** > ****panan***
OJ ***pana***
PKJ ****k^w$_1$ojoŋ***

Assimilatory nasalization in the Japanese case. Cf. Altaic **daban* :: J *yama* 'mountain'. This is originally part of Serafim's labiovelar hypothesis. MK ***h*** is a result of denasalization (Serafim: personal communication, **2001).**

11. JAW

MK thok, thek, thak '**jaw**'
Pre-MK ****otokok*** word-initial neutral-vowel metathesis
Pre-OJ ****otokap-i***
OJ ***otokapi*** 'id.'
PKJ ****otokok^w$_1$-i***

Automatic metathesis of initial ****o*** in K line.

12. NAVEL

M K pwok, kwop 'navel'
OJ ***poso*** 'id.'
NJ ***heso*** 'navel', ***hozo*** 'tenon, pivot, cog; navel; calyx'
PKJ ****k^{w}$_{1}$optyo***

The MK forms show a ***k, p*** alternation which may be caused by metathesis of the consonants. This etymology is weak, but the MK metathesis is intriguing.

13. NOSE

M K kwoh
Pre-MK ****kwoŋo***
OJ ***pana***
PKJ ****k^{w}$_{1}$ogo***

This is originally part of Serafim's labiovelar hypothesis (personal communication, 2001). MK ***h*** is a result of denasalization, which, according to Serafim's denasalization hypothesis would be: ***kwo.h*** < ****k^{w}$_{1}$oŋo***.

14. PLANE, SHAVE, TO

MK ***kak-***
Pre-MK ****kank-*** Vovin's ****NC*** hypothesis
Pre-J ****pank-***
OJ ***pag-***
PKJ ****k^{w}$_{1}$aNk-***

15. THICK, TO BE

MK ***"kwulk-*** 'thick'
Pre-MK ***"kwul-k-***
OJ ***puto$_{1}$-*** 'id.'
PKJ ****k^{w}$_{1}$uto-***

The MK –k– is calved off as a derivational suffix/verb, possibly related to ***–ho-*** 'do'.

16. TWO

MK ***twul*** 'two'
Pre-MK ****twup(w)ul***
Pre-OJ ****tupa*** metathesis
OJ ***puta*** 'id.'
PKJ ****tuk^{w}or***

Perhaps the metathesis on the J side is due to analogical pressure from the number system, i.e., the ***pVtV*** of ***pi$_{1}$to$_{2}$-*** 'one'. There is a possibility of a medial labial in MK.

17. WHIP
MK swok 'whip'
Pre-OJ ***supa-ye***
OJ ***supaye*** 'whip, cane'
PKJ ****suk^{w}ɹo*** (+ OJ ye 'stick')

Taking Vovin's **NC* into consideration, one would expect ****sunk^{w}ɹo*** because the ****k*** did not delete in MK. One possibility for ****k*** not deleting could be that ****o*** dropped out earlier; since Vovin's hypothesis works only medially, this would no longer be in medial position. Another possibility is that since there is a final suffix ****-k-*** in MK, the *-k- could have been either retained or added back on by analogy.

18. VAGINA; HOLE
MK kwumkwu 'vagina; hole, depression'
Pre-MK ****kumku***
Pre-OJ ****kunpo***
OJ kubo 'id.'
PKJ *kumk^{w}u

19. WINTER
MK ***kyeol***, ***keywel***, ***kyeGul***, ***kyeGulh***, kyezul 'winter'
OJ puyu 'id.'
PKJ *k^{w}edzur ?

10.1.3 Correspondence of MK ***p*** : OJ k

Serafim's labiovelar hypothesis only allows cases where PKJ *k^{w} becomes k in the K line and p in the J line. I found examples, however, that support the reverse of that outcome; namely, PKJ *k^{w} shows up as p in the K line and k in the J line. Since this is the reverse of the above correspondence, I label it *k$^{w}_{2}$. Osada **(2001)** also shows MK ***p*** : OJ k correspondences, but offers little explanation and does not indicate whether one is primary.

As mentioned above, the original labiovelar hypothesis, that is MK k : OJ p, is considered primary; in other words, it is genetically matched, with no borrowing involved. The "reverse" correspondence, MK ***p*** : OJ k, would actually be a case of two dialect borrowing incidences. This process will be discussed in detail in Section 1.7

Dialect Mixing.

I offer the following proposed cognate pairs which have MK ***p*** : OJ ***k:***

Table 93: MK p to OJ ***k*** proposed correspondences

1. CHOP, CUT
   MK ***phoy-*** 'chop, split'
   Pre-MK ****poCi***
   OJ ***kar-*** 'mow'
   PKJ ****k$^{w}{}_{2}$or-***
MK aspiration; cf. Martin **1966** ****Cx***.

2. COMB
   MK ***pis*** 'comb'
   Pre-MK ****pisu/o***
   Pre-Pre-MK ****pu/osi*** vocalic metathesis
   OJ ***kusi*** 'id.'
   PKJ ****k$^{w}{}_{2}$usi***

3. DISLIKE, TO
   MK ***mwuyp-, mip-*** 'dislike'
   Pre-MK ****mipu-*** metathesis
   OJ ***niku-*** 'id.'
   PKJ ****ŋ^{w}ik$^{w}{}_{2}$u-***

4. FRESH
   MK ***senolep-*** 'fresh, new'
   Pre-MK ****selonep-*** metathesis
   Pre-OJ ****saronka***
   OJ ***so$_{1}$ga*** 'refresh'
   PKJ ****seroNVk$^{w}{}_{2}$-***

5. GRASS
   MK ***'phwul, phwul-, 'phul-, phwu-, phus-*** 'grass'
   OJ ***kusa*** 'id.'
   PKJ ****k$^{w}{}_{2}$urzo***
MK aspiration; cf. Martin **1966** ****Cx***.

6. MUSHROOM
   MK ***peses***
   Pre-MK ****sepe-s*** MK metathesis
   Pre-pre-MK ****tepe-s*** assibilation
   Pre-OJ ****taka- + -i***
   OJ ***take$_{2}$***

PKJ *$tek^{w}{}_{2}e$-

7. WIND, COIL, TWIST, TO
   MK pwuy- 'braid, twist'
   Pre-MK *$pwu(r)$-*i*-
   OJ kur- 'turn, wind'
   PKJ *$k^{w}{}_{2}ur$ (+ MK -*i*-)

In order to distinguish the correspondences, I will designate the PKJ *k^{w} that becomes k in the K line and p in the J line, which is Serafim's original labiovelar hypothesis, as *$k^{w}{}_{1}$, and the PKJ *k^{w} that becomes p in the K line and k in the J line, the reverse of the original labiovelar hypothesis, as *$k^{w}{}_{2}$. There are fewer examples and therefore it is labeled with a sub-2, indicating that this hypothesis is not as strong. A possible reason for the crossover could be dialect mixing, which is explained in detail below. There were other possible cognate pairs that could have been included under this category, but I have opted to view them as cases of metathesis in the K line instead. These examples, however, cannot be explained by metathesis.

10.2.0 Simplification of Liquid Plus Obstruent Clusters

There is a general simplification of PKJ liquid plus obstruent clusters where MK keeps the liquid and the J line keeps the obstruents. Specifically, I am referring to the loss of p, *t*, and k in the K line, which will be discussed individually. Perhaps p and k get lost in steps, namely through *G* and W, respectively, but we do not have evidence for such an intermediate stage as yet.

10.2.1 Cluster Simplification in the Korean Line with *k or *k^{w}

PKJ liquid plus obstruent clusters behave in a general way. Specifically, with PKJ *rk the *k is lost in the K line, and the *r is lost in the J line. I offer the following cognate pairs that exhibit this phenomenon:

Table 94: Cluster simplification in the Korean line with ***k***

1. BECOME
   MK ***twoy-*** 'become'
   Pre-MK ****twor-i***
   OJ ***tuk-*** 'attach; become'
   PKJ ****tork-***

2. BIND
   MK colo- 'tie up'
   OJ ***tak-*** 'tie up (hair)'
   PKJ ****corko-***

3. BLOCK
   MK tilo- 'interrupt, obstruct, hinder'
   OJ ***sek-*** 'dam'
   PKJ ****tirko-***

4. BLOW
   MK ***pwul-*** 'blow'
   OJ ***puk-*** 'id.'
   PKJ ****purk-***

This is an old etymology but I include it to show MK lenition.

5. BROOM
   MK poy, puy, pwuy 'broom'
   Pre-MK ****por-i-***
   Pre-OJ ****(pa+) *paki*** reduplication
   OJ ***papaki***$_1$ 'id.'
   PKJ ****pork-i-***

Cf. # 27.

6. BURN
   MK tol- 'burn'
   OJ ***tak-*** 'id.'
   PKJ ****tork-***

7. CHANGE
   MK *kol-*
   OJ *kap-ar-, kak-ar-* 'change'
   PKJ ****kork***^{w}***-***

The OJ form ***kakar-*** would be + Silla, +Izumo in distinctive features.

8. CONTAINER
MK ***twuli, tuli*** 'container'
OJ ***tuki$_1$*** 'id.'
PKJ ****turki***

9. CORD
MK ***cwul*** 'cord'
Pre-OJ ****suki***
OJ ***suki$_1$*** 'cord, sash'
PKJ ****curki***
Cf. Martin's (1966) link to OJ ***sudi*** 'sinew'.

10. ENCIRCLE, TO
MK ***kwol*** 'ring'
Pre-OJ ****kak-***
OJ ***kak-om-,kak-op-, kak-um-*** 'encircle, enclose'
PKJ ****kork(-)***

11. FLY, TO
MK ***nol-*** 'fly, soar'
Pre-OJ ****naNka-r-***
OJ ***nagar-*** 'cast, throw away'
PKJ ****nork-***
As for the semantics, cf. Modern Greek ***petó*** 'fly; throw away'. The loss of ****k*** is unexpected in MK given the voiced consonant in OJ (Vovin's ****NC*** hypothesis); therefore, *I* assume that the sonorant was originally an ****r*** which assimilated to an ***n*** in the J line. The ****r*** would not stop the consonant from leniting in MK. This is a case where PKJ ****rk*** > PJ ****nk*** rather than PJ ****k,*** and requires further study.

12. GRAIN/BARLEY
MK ***pwoli*** 'barley'
Pre-OJ ****muNki***
OJ ***mugi*** 'id.'
PKJ ****Nporgi***
This is another case where PKJ ****rk*** > PJ ****Nk*** rather than PJ ****k***. Cf. Section 10.3.1 for MK ***p*** : OJ ***m.***

13. GRAVE
MK ***mwoy,*** 'grave', ***"mwu- 'bury'***
Pre-MK ****mol-i***
OJ ***paka*** 'grave'
PKJ ****Nporko***

14. HANG, TO
MK ***kel-*** 'hang'
OJ ***kak-*** 'id.'
PKJ ****kerk-***
Cf. Martin **1966.**

15. HIT, TO-a
MK ***tal-*** 'strike, hit'
Pre-OJ ****tak-*** (partial reduplication)
OJ ***tatak-*** 'hit, beat'
PKJ ****tark-***

16. HIT, TO-b
MK ***twutwul-*** (reduplication)'hit', ***tho-, chu-, thi-*** 'hit'
Pre-MK ****toho-, *cuhu-, *tVhi-*** < ****toko-, *cuku-, *tVki-***
J ***tutuk-*** 'hit', ***tuk-*** 'poke', ***tuk-*** 'pound (mochi rice)'
PKJ ****turk-*** or ****tork-*** (reduplication for some OJ)

17. LEAK, TO
MK ***suy-*** 'leak'
Pre-MK ****sul-i-***
Pre-OJ ****su(N)k-*** (with partial reduplication)
OJ ***sosog-*** 'leak', ***susuk-*** 'pour out'
PKJ ****surk-***
Unexplained voicing in the J line.

18. LEG
MK ***pal*** 'foot'
Pre-OJ ****paNki***
OJ ***pagi*** 'shin'
PKJ ****parki***
Unexplained voicing in the J line. Cf. Martin **1966.**

19. LONG, TO BE
MK ***nule-*** 'lengthen'
OJ ***naga-*** 'long'
Pre-OJ ****naNka-***
PKJ ****norko-***
Unexplained voicing in the J line.

21. MEASUREMENT **UNIT**
MK ***hvoy*** 'unit of measure'
Pre-MK ****twol-i***
OJ ***tuka*** 'handful'
PKJ ****turka***

22. PICKLE, TO
MK ***cel-*** 'pickle'
J ***tuke-*** 'pickle'
PKJ ****cerko-***
Cf. 'salt'; cf. Martin 1966.

23. PLANE, SHAVE, TO
MK ***pyeh-***
Pre-MK ****pelk-***
Pre-J ****pank-***
J ***pag-, peg-***
PKJ ****perk-***
Voicing in the J line is unexplained. Or PKJ ****peyrk-*** with metathesis in the K line?

24. ROLL, TO
MK mol- 'roll, wind'
OJ ***mak-*** 'id.'
PKJ ****mork-***

25. SAVE, RESCUE, TO
MK salo- 'save, rescue'
Pre-MK ****solo-***
OJ ***suku-*** 'id.'
PKJ ****sorko-***
I assume ***-p-*** of OJ ***suku-p-*** is a derivational suffix.

26. SEAT, CHAIR
MK ***ca'li*** 'seat'
OJ ***siki$_1$*** 'id.'
PKJ ****coyrk-*** (+ ***i***)

27. SWEEP, TO
MK ***polu-*** 'clear away (seeds)'
OJ ***pak-*** 'sweep'
PKJ ****porku-***
Cf. # 5.

28. UNDERSTAND, TO
MK ***mwolo-***
Pre-MK ****molo-***
Pre-OJ ****bak-***
OJ ***wak-, wakar-*** 'distinguish'
PKJ ****Nborko-***

Cf. Martin 1966.

29. YOUNG, TO BE
MK ***'wol-*** 'younger', ***'wola'pi*** 'girl's younger brother[7]',
emek-wolapi 'mother's younger brother'
OJ ***waka-*** 'young'
PKJ ****borka-***
****b*** > ***w*** / # in K line; ***w*** + ***o*** merging ***as*** vowel ***wo.***

10.2.2 Cluster Simplification in the Korean Line with ****p***

The case for PKJ ****p*** loss is more tenuous. Perhaps it is actually from a 'reverse' labiovelar but there is no evidence of the ****k*** in the ***K*** line so it cannot be reconstructed. Outside evidence will perhaps reveal that some of these are actually labiovelars of the 'reverse' dialect scenario.

Without being able to reconstruct a labiovelar, however, I go with PKJ ****p***. Given PKJ ****rp***, the p is lost in the K line, and the ***r*** is lost in the J line. I offer the following cognate pairs exhibiting this phenomenon:

Table 95: Cluster simplification in the Korean line with ****p***

1. CHANGE
MK ***kol-*** 'change'
Pre-OJ ****kapa-r-***
OJ ***kapar-*** 'change'
PKJ ****korp-***

2. CALM, QUIET
MK ***tal-*** 'calm, quiet'
Pre-MK ****otal-***
OJ ***odap-*** 'id.'
PKJ ****oNtarp-***

3. CONTAINER
MK ***twuli, tuli*** 'container'
Pre-MK ****tul-i***
OJ ***tupu*** 'container', ***tupo*** (later ***tubo*** 'wide-bellied covered jar')
PKJ ****turpo*** (+ MK ***i***)
Or:

MK ***kwoli*** 'container'
OJ ***kupi*** 'id.'
PKJ ****kurpi***

Together:
Pre-PKJ ****Kurpo-*** (+ MK ***i***)

4. LOVE, TO
MK ***kwoy-*** 'love'
Pre-MK ****kori***
OJ ***ko$_1$pi-*** 'id.'
PKJ ****korpi***

5. RECOMMEND, TO
MK ***twulu-*** 'recommend'
Pre-MK ****otulu-***
Pre-OJ ****atorp-***
OJ ***atopey-, atorapey-*** 'invite; ***ask*** for hand in marriage'
PKJ ****otorp-***

6. SALT
MK ***cyel-*** 'salted'
OJ ***sipo*** 'salt'
PKJ ****cyerpo***

Cf. 'pickled'. Presumably PKJ ****cye*** > ****tye*** > ****ti*** > ***si*** in the J line. Cf. Whitman 1985.

7. SOUR
MK suy- 'sour'
Pre-MK ****suli-***
Pre-pre-MK ****silpu-*** metathesis
Pre-OJ ****sinpu-***
OJ ***sibu-*** 'puckery'
PKJ ****sirpu-***

Cf. Martin 1966. PKJ ****rp*** > ****np*** in the J line (reason unknown).

8. SPOON
MK ***kal*** 'spatula'
OJ ***kapi$_1$*** 'shell, spoon'
PKJ *karpi

The above forms exhibit PJK ****p*** loss in the K line and ****r*** loss in the J line.

10.2.3 Cluster Simplification in the K Line with *t

In this section, I briefly introduce and discuss *t* lenition in MK. I mention it here because it may be possible that the same process above occurs with PJK *t, but the evidence may be lost. In other words, ***t*** becomes l in K anyway, so medial l may actually be PJK ****rt***, but we can no longer tell.

10.2.4 MK *lG* and *lW* clusters

For PKU ****rC*** > MK 1, the only problem is that there are ***lG*** and ***lW*** allowed in MK; it is not yet clear how to account for the fact that there are ***lG*** and ***lW*** clusters in MK. It may be that k and p get lost in steps, namely through G and W, respectively, but there is no evidence.

10.2.4.1 Alternations as a Solution

Clusters like ***lW*** and ***lG*** typically alternate with ***lp*** and lk, respectively. Given that, the fact of alternation could have protected them from obliteration. If there was no alternation to shield them, then the syllable structure would have been changed. This alternation would have been an opposing force to the obstruent loss.

10.3 PKJ Nasal Plus Obstruent Clusters in the J and K Lines

Another phenomenon occurs with PKJ nasal-plus-obstruent clusters. This also appears to occur in both directions, that is, the opposite, unexpected results sometimes occur. I attribute the resulting reverse correspondence to dialect mixing across the Japanese archipelago and the Korean Peninsula.

1.3.1 MK *p* : OJ *m*

Here are examples where PJK ****Np$_1$*** becomesp in the K line and m in the J line. These forms are marked with a sub-1 to distinguish them from cases where the results go the

other way, and to some extent, to indicate that this is the primary and expected result, although in this case, that is less clear from the relative numbers of etyma. This correspondence does accord, however, with the Vovin ***NC* > *C*** hypothesizes for the K line. Martin also proposes a similar correspondence.

Table 96: Examples of MK p : OJ ***m***

1. BARLEY
   MK pwoli 'barley'
   Pre-OJ ****munki***
   OJ ***mugi*** 'id.'
   PKJ ****Np$_1$orki***

2. BEND, TO
   MK ***kwop-, kwup-*** 'bend'
   Pre-OJ ****kum-ar-***
   OJ ***kumar-*** 'id.'
   NJ ***kubo***
   PKJ ****kuNp$_1$-***

3. BURN, TO
   MK ***phwuy-, mwu-*** 'burn'
   OJ ***mo$_1$ya-*** 'id.'
   PKJ ****Np$_1$uy-***

The MK ***m*** is a case of dialect mixing. MK aspiration is unexplained.

4. CORD
   MK ***poyp*** 'cord, small string'
   Pre-MK ****pyop*** metathesis
   Pre-Pre-MK ****pyoNp*** Vovin's hypothesis
   OJ pi$_1$mo 'rope'
   PKJ ****pyoNp$_1$o***

Regarding MK not having the ***yo*** sequence, SEM has argued that ***ho-*** 'do' originally was ****hyo-***, and that they was either dropped or metathesized, as in the case of ***hoya*** 'to do'. The example would also be explained as a metathesis. Note that MK does not allow ****yo*** sequences. Note also that J does not allow sequential voicing with its reflex, as if Lyman's Law were operating.

5. FULL, SATISFY, TO-a
MK ***mil*** 'high (tide)'
Pre-OJ ****mita-***
OJ ***mi$_1$t-*** 'full'
PKJ ****mito-***

And:

FULL, SATISFY, TO-b
MK pwul-, pul-, poy- 'to be full'
OJ ***mot-*** 'full (moon)'
PKJ ****Np$_1$oto-***

Together:
Pre-MK ****mpoyto-***
Pre-OJ ****mo$_2$ta-***
PKJ ****Np$_1$oyto-***

The ****o*** drops out in some J dialects leaving ****i,*** whereas the reverse happens in other J dialects; that is, the ****i*** drops out leaving ****o***. This weakens the etymology. Cf. Martin 1966.

6. GATHER, TO
MK top- 'collect'
OJ ***tum-*** 'id.'
PKJ ****toNp$_1$-***

7. GLARE, TO/EYE
MK ***pal-*** 'glare at'
Pre-OJ ****mar-i***
OJ ***me$_2$*** 'eye'
PKJ ****Np$_1$ar-***

8. HAPPY, TO BE
MK ***pank-*** 'happy'
Pre-MK ****poNk-***
Pre-OJ ****omuNka-***
OJ ***omuga, umuga*** 'id.'
PKJ ****oNp$_1$oNko(-)***

MK ***n*** unexplained.

9. HOOF
MK kwup 'hoof
OJ ***tume*** 'nail, hoof
PKJ ****TuNp$_1$o***

10. HUNDRED
    MK *'pouy* 'hundred'
    Pre-MK ***po-i***
    OJ ***mo$_1$mo$_1$*** 'id.', ***-po*** 'id.'
    PKJ ****Np$_1$o***

11. INCREASE, TO
    MK ***pwul-*** 'increase'
    Pre-MK ****pul-***
    OJ ***mor-*** 'pile up'
    PKJ ****Np$_1$or-***

12. LEEK
    MK ***pha*** 'leek'
    Pre-MK ****pika***
    OJ ***mi$_1$ra*** 'id.'
    PKJ ***Np$_1$irka***

13. MILLET
    MK ***phi*** 'millet, type of
    Pre-MK ****piki***
    Pre-pre-MK ****kipi*** metathesis
    OJ ***ki$_1$mi$_1$*** 'millet'
    PKJ ****kiNp$_1$i***
Note *kibi* occurs later in J.

14. PILLOW
    MK ***pyekay*** 'pillow'
    Pre-MK ****pyekoy***
    OJ ***makura*** 'id.'
    PKJ ****Np$_1$(y)eko-*** (+ OJ ***–ra***) or ****Np(y)ekor-*** (+ ***-a*** in J, + ***-i*** in K)

15. SAD, TO BE
    MK ***syelp-, syelm-, sulp-*** 'sad'
    Pre-MK ***syelNp-***
    Pre-OJ ****saNpu-***
    OJ ***sabu- / sabi$_2$-*** 'sad'
    PKJ ****s(y)erNp$_1$o-***
Cf. Martin 1966. It appears that PKJ **r* became **N* in the J line.

16. SKIRT
MK ***pwolwo*** 'skirt'
Pre-MK ****polo***
Pre-Pre-OJ ****muro***
Pre-OJ ****mo$_1$***
PKJ ****Np$_1$oro***

17. SPOT
MK ***patwok*** 'spot; checker'
Pre-MK ****paNto-k*** Vovin's hypothesis
Pre-OJ ****maNta- (+ ra)***
OJ ***madara*** 'spots', ***padara - podoro*** 'id.'
PKJ ****Np$_1$oNto***
In terms of distinctive features, OJ ***padara - podoro*** might be +Silla.

18. VARIOUS
MK ***capa*** 'miscellaneous'
Pre-MK ****caNpa*** Vovin's hypothesis
OJ ***sama'(-zama)*** 'ways'
PKJ ****caNp$_1$a***
The expected reflex in OJ for PKJ ****c*** is ***t***.

19. WRAP, TO
MK ***tyep-*** 'fold, wrap up'
Pre-MK ****tyeNp-*** Vovin's hypothesis
Pre-OJ ****tum-*** Reduplication
OJ ***tutum-*** 'id.'
PKJ ****t(y)eNp$_1$-***
Cf. 'winter' for MK ***ye*** : OJ ***u*** correspondence.

10.3.2 MK *m* : OJ *p*

These proposed cognate pairs exemplify the reverse situation, where PKJ ****Np***, named ****Np$_2$*** in this case, becomes ***m*** in the K line and ***p*** in the J line.

Table 97: Examples of MK ***m*** : OJ ***p***

1. DIM, **TO** BE
MK ***elmuy-*** 'faint, hazy, dim'
Pre-MK ****emul-i-*** metathesis
OJ ***opo-*** 'dim', J ***oboro-*** 'faint, hazy'
PKJ ****eNp$_2$oro-***

2. DRIVE AWAY, TO
MK mwol- 'drive, chase away'
Pre-MK ***mol-***
Pre-OJ *para-p-
OJ ***parap-*** 'id.'
PKJ ****Np$_2$oro*** (+ OJ ***-p-***)

3. DRY, TO
MK mol- 'dry'
Pre-MK ****omol-*** Constraint against initial ****o***
OJ pur-, abur- 'to dry or burn through application of heat of sun or fire'
PKJ ****oNp$_2$or-***

4. END, EDGE
MK ***mol*** 'end'
OJ pata 'edge'
PKJ ****Np$_2$o(r)to***

5. FAR, TO BE
MK mel- 'far'
OJ ***paru/o*** 'id.'
PKJ ****Np$_2$ero-***

6. FIGHT, TO
MK ssom 'fight (n.)'
Pre-MK ****sisom***
OJ ***iso$_1$p-*** 'id.'
PKJ ****zisoNp$_2$-***
Cf. MK sil, OJ ito, 'thread'; PKJ ****zito***. Cf. Whitman 1985.

7. FINISH, TO
MK mot- 'end, close'
Pre-OJ ****pata-***
OJ pata-s-, ***pate$_{(2)}$-*** 'complete, do to the fullest'
PKJ ****Np$_2$oto-***
It is possible that the OJ forms are related to OJ ***pata*** 'edge' mentioned above.

8. FREE TIME
MK thum 'crack, gap; spare time'
Pre-OJ ***tapa-***
OJ ***tapabur(e)-, tapak-***
PKJ ****tok$^w{}_1$oNp$_2$(-)***
The opposite subscripts weakens the hypothesis, unless we can suppose

that ***Np$_2$*** is the genetic one.

9. FROG

MK ***kemeli*** 'frog'
Pre-MK ****kemel-i***
OJ ***kape$_1$ru*** 'id.'
PKJ ****keNp$_2$eru*** (+ MK ***i***)

Note also: J ***kawazu*** 'toad' < ***kapadu*** < ? ****kapaNru***, due to dialectal borrowing with semantic specialization?

10. GRAVE

MK ***mwoy, "mwu-*** 'grave, tomb'
Pre-MK ****mor-i***
OJ ***paka*** 'grave'
PKJ ****Np$_2$orko***

11. MILLET-b

MK me 'millet'
Pre-MK ****ome*** Constraint against initial ****o***
OJ ***apa*** 'foxtail millet'
PKJ ***oNp$_2$e***

Cf. Street **1974;** PA ****arpa***.

12. SAD, TO **BE**

MK molp- 'sad'
Pre-MK ****omol-p-*** Constraint against initial ****o***
Pre-OJ ****aparo-(C)i***
OJ ***apare*** 'sadness, dearness, emotion'
PKJ ****oNp$_2$or-***

13. SEA BREAM

MK twomi 'sea bream'
OJ ***tapi$_1$*** 'id.'
PKJ ****toNp$_2$i***

Cf. Martin **1966.**

14. SHRUB

MK tempul, tempwul 'thicket, bush, shrub'
Pre-MK ****teNpul***
Pre-OJ ****tiNpa***
OJ ***siba*** 'shrub'
PKJ ****tyeNp$_2$or***

Loss of ****r*** in J line by Whitman's law. Unexplained retention of ***mp*** in K line.

15. UNDERSTAND, TO
MK ***mwolo-***
Pre-MK ****molo-***
Pre-OJ ****bak-***
OJ wak-, wakar- 'distinguish'
PKJ ****Np$_2$orko-***

16. WINNOW
MK ***mis*** 'winnow'
Pre-pre-OJ ****Npo/uri***
Pre-OJ ****pori***, ****puri***, ****mori***, ****muri***
OJ ***pi$_2$***, ***mi$_2$*** 'winnow'
PKJ ****Np$_2$ori***, ****Np$_2$uri***
Note that this is heavily cultural vocabulary, and is associated with the Yayoi, or equivalent rice-farming culture. The variant forms suggest dialect mixing with survival through semantic specialization.

10.3.3 Possible Sources of Correspondences

Since the number of cases of MK ***p*** : OJ m and MK m : OJ p is about the same, it may be the case that p and m alternated in the proto-language, resulting in two correspondence sets which are the mirror images of each other. Or, another possible scenario could be that as the languages split, there was much contact among the dialects and consequently much dialectal mixing. One (or more) dialect(s) kept the m from PKJ ****Np*** while another, or others, kept the p.

10.4.0 Alternation of t and k Hypothesis

I found some possible cognate pairs that appear to exhibit a ***t*** and k correspondence. For some cases, it seems that affrication may be the cause of this apparent correspondence, which makes it more plausible, but there are other cases where affrication will not explain it. Accepting a ***t*** : k correspondence, although tentative, allows several more cognate pairs than previously found.

10.4.1 Hypothesis of MK *t* : OJ *k* Correspondence

The following are proposed cognates which exhibit a ***t*** : ***k*** correspondence. For these examples, I have reconstructed PJK ****K,*** indicating that the Japonic side is more likely to be original.

Table 98: Examples of a MK ***t*** : OJ ***k*** correspondence

1. **ARRIVE**
   MK ***tatot-*** 'reach'
   Pre-MK ****tot-*** (reduplication)
   OJ ***to$_1$k-*** **'arrive'**
   PKJ ****toK-***

J ***tador-*** is a better match, but I offer this as a related form through dialect mixing.

2. **BAG**
   MK ***pwutoy*** 'bag'
   Pre-OJ ****puku*** + ****ro***
   OJ ***pukuro$_1$*** 'id.'
   PKJ ****puKu*** (+ OJ ***–ro$_1$***)

3. **CARRY**
   MK ***tul-, thoy-*** 'carry'
   Pre-OJ ****ko$_1$-s-***
   OJ ***ko$_1$s-***
   PKJ ****Kor-*** (+ OJ ***s***)

MK aspiration; cf. Martin 1966, ****Cx***.

4. CHICKEN
   MK ***tolk*** 'chicken'
   Pre-MK ****tokl*** Metathesis
   Pre-Pre-MK ****tokilo***
   Pre-OJ ****kakiro***
   OJ ***kake$_1$*** 'id.'
   PKJ ****Kokori***

The MK form is frequently linked to OJ ***to$_2$ri***.

5. ENTRUST, TO
   MK ***masth-*** 'entrust'
   Pre-MK ***matos-CV-*** metathesis
   OJ ***makas-*** 'id.'
   PKJ ****maKos-*** (+ MK ***-CV-***)

6. FAN

MK ***pwutul*** 'fan'
Pre-MK ****opwutul***
Pre-OJ ****apuk-i***
OJ ***apuki$_1$*** 'id. (deverbal of ***apuk-)***'
PKJ ****opuKur***

7. FIRE

MK ***til-*** 'set fire to'
OJ ***ki$_1$r-*** 'make fire'
PKJ ****Kir-***

8. HE, SHE

MK ***tye*** 'he, she'
OJ ***ka*** 'id.'
PKJ ****Kye***

JBW links the MK form to OJ ***so$_2$***, which is less problematic, but I offer this as a result of possible dialectal mixing, with survival due to semantic specialization.

9. KICK

MK ***cho-*** 'kick'
Pre-MK ****toko-***
Pre-OJ ****kuba-, *kuwa-***
OJ ***kuwe-*** 'id.'
PKJ ****Kog$^{w}{}_1$o-***

10. LIGHT

MK ***pich*** 'light, ray'
Pre-MK ****pit-*** affrication
Pre-OJ ****pi$_1$k-ar-***
OJ ***pi$_1$kar-*** 'light shine'
PKJ ****piK-***

Aspiration unexplained.

11. LONG TIME

MK ***moto-*** 'long lasting'
Pre-OJ ***muka-si***
OJ ***mukasi*** 'long ago'
PKJ ****moKo-***

12. MONEY
MK ***"twon*** 'money'
Pre-MK ****tono***
Pre-OJ ****kana-(C)i***
OJ ***kane*** ~ ***kana*** 'metal'
PKJ ****Kono***

13. NUT
MK ***thwol*** 'nut, a grain'
Pre-MK ****tolok*** metathesis
Pre-Pre-MK ****tolo-k***
Pre-OJ ****kuru-i***
OJ ***kuri*** 'chestnut'
PKJ ****Koro-***
Dueling etymologies with 'chestnut'.

14. POUR, TO
MK ***swot-, pswot-*** 'pour out, spill'
Pre-MK ****ps-sot-*** Ramsey (1992)
Pre-OJ ****sok-*** reduplication
OJ ***sosok-*** 'pour'
PKJ ****soK-***
Ramsey (1992) argues for calving off the initial ***pc-*** / ***ps-*** consonant clusters as intensives.

15. VOMIT, TO
MK ***path-*** 'vomit'
Pre-MK ****pat(o)-kV-***
OJ ***pak-*** 'id.'
PKJ ****paK-*** (+ ***-kV-***)

16. SIDE
MK ***tahi*** 'side, direction'
Pre-MK ****taki***
OJ ***kaki***$_1$ 'outer bound(ary) (esp., of the grounds of ***a*** house)'
PKJ ****Kaki***

17. SOW, TO
MK ***mat-*** 'hit (the mark)'
OJ ***mak-*** 'sow'
PKJ ****maK-***
The semantics are less than ideal, but, assuming that seeds were sown by hand, hitting the mark would be a necessary goal for planting seeds. Cf. OJ ***matwo*** 'target'. All else being equal, MK ***mat-*** & OJ ***matwo*** appear closer, while the link with OJ ***mak-*** is more tenuous. Perhaps it is related

through dialect mixing.

There are other possible cognate pairs, but I have only included the ones that require minimal explanation or those with correspondences that I argue for in other places. If this correspondence is accepted, that would increase the cognate pool.

10.4.2 Hypothesis of a Reverse Dialect Correspondence of MK k : OJ ***t***

The following examples exhibit a reverse correspondence due to dialect mixing. I have reconstructed PKJ ****T***, indicating that the Japonic side is more likely to be original.

Table 99: Examples of a MK ***k*** : OJ ***t*** correspondence

1. CLAY
   MK ***kwuyley*** 'clay'
   Pre-MK ****kwule-i***
   OJ ***tuti*** 'earth'
   PKJ ****Tu(y)te-***

2. COMPARE, TO
   MK ***kacolp-*** 'compare'
   OJ ***tatop-*** 'id.'
   PKJ ****Tacorp-***

MK ***lp*** instead of *l* unexplained.

3. DESIRE, TO
   MK ***sikphu-, sitpu-***
   Pre-MK ****sik-pu-, *sit-pu-***
   Pre-Pre-MK ****siko -***
   OJ ***sika-, sita-***
   PKJ ***siko-, *siTo-***

4. HOLD, TO
   MK ***mek-*** 'hold, carry, take'
   OJ ***mot-*** 'id.', ***mos-, me$_2$t-*** (Azuma)
   PKJ *meT-

5. HOOF
   MK kwup 'hoof
   Pre-OJ ***tumo-(C)i***
   OJ ***tume$_2$*** 'nail, hoof'
   PKJ ****TuNp$_1$o*** (+ OJ ***i***)

6. PEOPLE
MK ***-yeki*** 'person' from ***holk.puy.Gye.ki*** 'cross-eyed person'
OJ ***yatu*** 'person'
PKJ ****yeTo*** (+ MK ***–i***)
I found the MK form only in this word, so that weakens the hypothesis.

7. PILE UP
MK ***tak-***
Pre-0J ****tata-n/m-***
OJ ***tatane-, tatam-***, ***kasana/e-*** 'pile up'
PKJ ****taKo-***

8. SHARP, TO BE
MK ***ko-*** 'sharpen'
Pre-OJ ****to$_1$- + g-***
OJ ***to$_1$-, to$_1$g-*** 'sharpen'
PKJ ****To-***

9. SHELF
MK ****keley*** 'hanger, rack'
Pre-MK ***kele-i***
OJ ***tana*** 'shelf
PKJ ****Terne***
Cf. OJ ***kak(e_2)-*** 'hang', which is a better match. I offer this etymology as a possible case of dialect mixing with survival due to semantic specialization. In other words, this hypothesis implies that both OJ ***tana*** 'shelf and ***kak(e_2)-*** 'hang' are from the same etymon. Since 'shelf and 'hang' are semantically distinct, both forms survived.

10.5.0 Metathesis

Metathesis occurs frequently in MK, often obscuring the phonological correspondences. There are cases of vocalic metathesis as well as consonantal metathesis. Here are some examples of vocalic metathesis in the Korean line.

Table 100: Vocalic metathesis in MK

1. DISLIKE, TO
MK ***mwuyp-, mip-*** 'dislike'
Pre-MK ****mipu-*** vocalic metathesis
OJ ***niku-*** 'id.'
PKJ ****ŋ^{w}ik^{w}$_2$u-***

2. EASY, GENTLE, TO BE
   MK mwuk- 'mild, gentle'
   Pre-MK ***miku-*** vocalic metathesis
   OJ ***niko$_1$-*** 'easy, soft'
   PKJ ****ŋ^w$_2$iku-***

3. WHALE
   MK kwoylay, kwolay 'whale' umlaut?
   Pre-MK ****kwotali***
   Pre-Pre-MK ****kwotila*** vocalic metathesis of last 2 syllables
   Pre-OJ ****kudira***
   OJ kuzira
   PKJ ****kodira***

Examples of consonantal metathesis are as follows:

1. SAD, TO BE
   MK ***molp-*** 'sad'
   Pre-MK polm- metathesis
   Pre-OJ ****aparo-(m)i***
   OJ apare 'sadness, dearness, emotion'
   PKJ ****oporom-***

2. EAT, TO
   MK mak-, mek- 'eat'
   pre-MK ****kam-***, ****kem-*** metathesis
   OJ ***pam-*** 'id.'
   PKJ ****k^{w}am-***
   Note also J kam- 'to bite'.

3. FLAT
   MK task- 'level, make flat'
   Pre-MK ****tak-Vs-***
   OJ ***tapi$_1$-*** 'flat, even, plain'
   PKJ ****tak^w-***
   The s in MK is metathetic, from some sort of suffix.

Metathesis also occurs in the J line but occurs far more regularly in MK. Understanding some of the constraints in MK allows us to find cognates that would appear to not match up unless the metathesis is undone.

10.6 PKJ Vowels

10.6.1 Introduction to PKJ Vocalic System

Recall that there has been some disagreement regarding the PKJ vowel system (for a complete discussion, refer to the chapter Proto-Koreo-Japonic Vowels). Most scholars, such as Martin, Whitman, and Vovin, accept a four-vowel system for PJ. Using the Yale system, here is a representation of the four-vowel system (subscripts added for further discussion):

Table 101: PKJ four-vowel system

i$_{1,2}$	*u*$_{3,4}$
o	
a	

Recently, Martin (1998) has argued some important points regarding the Korean vowel system. Included in this new thinking is an attack on two prevalent ideas in Korean vowel history: namely, Korean vowel harmony and vowel rotation. Martin views both positions as no longer viable given the evidence. Serafim (1999) has extended these two ideas by linking the Korean vowel-system developments with the Japonic vowel-system. Expanding upon Whitman's (1985) detailed arguments about the internal developments in both languages, Serafim proposes a six-vowel system:

Table 102: Serafim's six-vowel PKJ system

i$_1$		*u*$_3$
e$_2$	*ù*	*o*$_4$
	a	

If his vowel correspondences and proposed sound changes are accurate, then Serafim has

made a case for Proto-Japonic and Proto-Korean unitary vowel height being in accord with Proto-Koreo-Japonic unitary vowel height. Serafim notes that there are two qualifications for this: (1) proto-Japonic's central mid vowel (Serafim's *ò) comes from a high central vowel (Serafim's ***u***), and (2) some of Korean ye is unitary in origin; that is, ye < *è.

Serafim (1999) offers the following evidence for the six-vowel system:

(1) In the Nara period vowels of the Eastern dialects (Azuma), o occurs in certain words corresponding to the standard dialect u.

(2) Some of the vowels of the Standard dialect of modem Japanese exhibit o instead of ***u***, because they are examples of as tern-derived lexical items that have replaced Central ones.

(3) Serafim's reconstruction of mid-vowels in proto-Ryukyuan, where there are substantial numbers of both PR ***e*** and ***o*** corresponding to PJ ***e*** and ***o***.

As for Middle Korean, the Breaking Hypothesis would have all ye clusters come from ***i***, but Serafim (1999) points out that it can correspond to the tense Proto-Japonic vowel *é, which is quite palatal.

The MK vowel e has a complex correspondence to Proto-Japonic: *è, *ò, and *a. The MK vowel ***u***, a non-round back vowel, corresponds to PKJ *ù. Evidence within Japonic suggests that this vowel was mid within Japonic, and early enough to have given rise to some cases of PJ *ê (< *o_1) and OJ ï (= i_1) through fronting. The Koreo-Japonic correspondences also show that some Japonic-lineage mid vowels raised before the time

of reconstructible proto-Japonic.

Two of the conclusions that follow from Serafim's (1999) hypothesis are that: (1) MK vowel harmony is likely an independent development and not descended from PKJ; and that (2) the PKJ vowel system likely distinguished two series of vowels, namely tense and lax. Serafim notes that it may be possible to treat the tense and lax vowels as allophones, giving a five-vowel system for pre-proto-KJ.

10.6.2 Serafim's PKJ Vowel Correspondences

If Serafim's (1999) hypothesis is correct, then we should expect the following correspondences:

Table 103: Serafim's PKJ vowel correspondences

	PKJ	K	OJ	PJ	
1.	*i	i	i_1	*i_1	= 1
2.	*ẽ	ye	i_1	*e_1	= 2
3.	*è	e	e_2	*e_2	= 3a'
4.	*è	e	o_2	*o_2	= 3a"
5.	*è	e	a	*a	= 3b
6.	*a	a	a	a	= 4
7.	*ù	u	i_1	*e_1	= 5'
8.	*ù	u	o_2	*o_2	= 5"
9.	*ò	o	i_1	*e_1	= 6a'
10.	*ò	o	o_2	*o_2	= 6a"

11.	**o̗*	*o*	*a*	**a*	= 6b
12.	**ú*	*wu*	*u*	**u*	= 7
13.	**ó*	*wo*	*u*	** o_1*	= 8
14.	**ó*	*wo*	*(*)i_1*	**e_1*	= 8x

10.6.3 Particular correspondences

The following are some correspondences that are of interest from the point of view of this dissertation.

10.6.4 ***MK o : OJ o***

Of particular interest to my study is Serafim's correspondence number 10, namely MK ***o*** to ***OJ o***. I found several examples that fit this correspondence. In the following cases, the ***OJ*** vowel is either ***o_2*** or is neutralized and assumed to be ***o_2***.

Table 104: Examples of MK ***o : OJ o***

1. a. 'dig up-1': MK ***'phoy-*** 'dig up' : ***OJpor-*** 'dig'; ****por-***
   This should result from Silla borrowing from Kaya or Paekche.

   b. 'dig up-2': MK ***'khoy-*** 'dig up, unearth' : ***OJpor-*** 'dig'; ****k^wor-***

2. 'compare': MK ***kacolp-*** 'compare' : ***OJ tatop-*** 'id.'; ****Tacorp-***

3. 'cord': MK ***poyp*** 'cord, small string' : OJ ***pi_1mo*** 'cord, string'; ****pyoNp$_1$o***

4. 'jaw': MK ***thok, thak, thek*** 'jaw' : ***OJ otokapi*** 'id.'; ****otok-ak$^w{}_1$(-)i***

5. 'peak': MK ***woli*** 'peak' : ***OJ wo*** (< ***wo_1*** < ****wor***); ****wor***

6. 'hide': MK ***komchwo-*** 'hide, conceal' (< ***kom-chwo-***) : ***OJ ko_2mo_2-r-*** 'id.'; ****komo-***

7. 'life': MK ***nol, nwuy*** 'life' : ***OJ ino_2ti*** 'life'; ****$no_x$to*** (+ ***OJ –i***)

Serafim's correspondence allows me to present a larger number of possible cognate pairs, since he has already presented his hypothesis. I offer these examples as additional support for his vowel hypothesis.

10.6.5 *MK wo : OJ a* and *o*

In my research, I also found an apparent correspondence of MK *wo* to *OJ a.* Since *I* have not yet found an environment for what I assume will end up being an allophone, I subscript the *PKJ* vowel as ***$*o_x$***. Observe the following:

Table 105: Examples of MK *wo : OJ a*

1. 'expose': MK ***pswoy-***, *scwoy-* 'expose (to the sun)' : *OJ sar-* ; ****s(w)o_xr-***

2. 'nose': MK *kwoh, khwo* 'nose' : *OJ pana* 'id.'; ****$k^w o_x$ŋo***

3. 'plate': MK *swola* 'tray' : *OJ* ***sara*** 'dish, plate'; ****so_xra***

4. 'count': MK *kwop-* 'count' : *OJ* ***kazo$_1$p-*** + ***e_2-*** 'id.'; ****ko_xzop-***

5. 'direction': MK *cwok* 'direction' : *OJ* ***saki$_1$*** 'forward direction'; ****co_xki***

6. 'encircle': MK *kwol* 'ring' : *OJ kakom-, kakum-* 'encircle, enclose'; ****ko_xrk***(-) (+ *OJ* ****-(V)m-***)

7. 'first': MK ***mwoncey*** 'first, ahead' : *OJ madu* 'id.'; ****moncu***
[cf. Martin 1966.1

8. 'flower': MK *kwos, kwoch* 'flower' : OJ ***pana*** 'id.'; ****$k^w o_x$joŋ***

9. 'grave': MK *mwoy,* ***"mwu-*** 'grave, tomb' : OJ ***paka*** 'grave'; ****Npo$_x$ko***

10. 'head/hair': MK *kwoli* 'head' : *OJ* ***ke_2*** 'hair' (< ****kari***); ****ko_xri***

11. 'loom': MK *pwothul* 'loom', Pre-MK ****pwoto-hul*** : *OJ pata* 'id.'; ****$po_x$to***

12. 'money': *MK* ***"twon*** 'money' (< ****tono***) : *OJ kane* 'metal' (< ****kane*** – *kana-* < ****kana***(***C***)***i***); ****Ko$_x$no***

13. 'narrow': MK *swol-* 'narrow' : *OJ sa-, se-* (< **sari)* 'id.'; ****so_xri***

14. 'octopus': MK *kwoltwoki* 'type of octopus' (< *kwol* + ***twoki***) : OJ ***tako₁*** 'octopus' ; ****to$_x$ko***

15. 'sand': MK *mwoloy* 'sand, grit' (< *mwolo-)*: OJ ***manago*** 'sand' (****mana-***); ****mo$_x$rno-***

16. 'sea bream': MK ***twomi*** 'sea bream' : OJ ***tapi₁*** 'id.'; ****to$_x$mpi*** [cf. Martin 1966]

17. 'serve': MK *"mwoy-* 'attend, wait on' : OJ *maturap-* 'serve' (> *matu-r-ap-);* ****mo$_x$to-***

18. 'together': MK *twok* 'together with' : OJ *tagap-* (< **tank-ap-);* ****to$_x$Nk-***

In addition to these examples, there are others where MK *wo* corresponds to OJ ***o, o₂*** and even ***o₁***.

Table 106: Examples of MK *wo* : OJ ***o₂***

1. 'bottom': MK *swok* 'inside, interior' : OJ ***so₂ko₂*** 'bottom' ; ****so$_x$ko***

2. 'sing': *MK nwoloy-* 'sing' : OJ ***no₂r-*** 'proclaim, recite'; ****no$_x$ro-***

3. 'sound': MK *swo'loy, swo'luy* 'sound, noise' : OJ ***to₂yo₂-*** 'to sound'; ****co$_x$ydo***

Serafim suggests that this could come from unexplained tensing of ****o̖*** to ****ó*** in the K line.

There are also several examples of MK *wo* corresponding to OJ ***o₁***.

Table 107: Examples of MK ***wo*** : OJ ***o₁***

1. 'ask': MK ***cwolGwo-*** 'request; importune' : OJ ***to₁p-*** *'ask';* ****co$_x$rk^w$_1$o$_x$-***

2. 'cat': MK *nekwoli, nekwuli* 'badger, raccoon' : OJ ***neko₁*** 'cat'; ****neko$_x$r***

3. 'field': *MK nwon* 'field' : OJ ***no₁*** 'id.' (< ****non***); ****no$_x$n***

4. 'fight': MK *sswom* 'fight' : OJ ***iso₁p-*** 'id.'; ****iso$_x$Np-***

5. 'swell': MK *swos-* 'well up, gush' : OJ ***so₁r-*** 'upheaval, bulge'; **so-*

6. 'place': MK *kwol* 'place' : OJ ***-ko₁*** 'place' (from ***kasiko₁*** 'over there'); ****ko$_x$r***

In addition to these, there are examples of MK wo corresponding to OJ o, where the value of o is not known.

Table 108: Examples of MK wo : OJ o

1. 'hemp': MK pwoy 'hemp' (< ***opo-i***) : OJ wo 'id.'; ***$*o_x bo_x$***

2. 'lizard': MK ***twol-***, ***twoma*** 'lizard' : OJ tokage 'id.' (* < to, + kage); *tor

3. 'pour': MK swot-, pswot- 'pour out, spill' : OJ sosok- 'pour' (< ****sok-***, reduplication); ***$*so_x K$-***

10.7.0 Dialect Mixing

An important aspect of this dissertation is the concept of dialect mixing. In the past, claiming some unexplainable aspect of a theory as being 'dialectal' was like throwing an unresolved problem into a catch-all bin. And clearly it is unacceptable to use 'dialectal' as a label for the unexplainable. What I have offered here, however, is different from that; instead of merely labeling various aberrant forms as 'dialectal', I have tried to establish a pattern of correspondences that are due to dialectal contact in the two regions of Japan and Korea.

Given how proto-Koreo-Japonic spread, actually, one would expect just such a condition. Previous attempts to link Korean and Japonic have assumed a branching of parent language into fairly clean splits of daughter dialects and eventually languages. Thomason and Kaufman (1988) are the first to introduce a framework for analyzing and predicting the linguistic effect from language contact.

I would argue that the situation with Proto-Koreo-Japonic is rendered especially difficult because it is not two languages separating slowly over time and distance, but rather multiple sub-regions, with various connections to other regions. Some

relationships are of dominance, others close affiliation, others still are symbiotic in nature, such as trade or political alligiences. These relationships continued and overlapped over a considerable period of time. The historical situation must be taken into account, for otherwise the situation will appear incomprehensible.

Paleontologists in the Badlands, Montana, had to reconstruct the scenario of what happened when they discovered thousands of bones piled together in a concentrated area. What could have caused this? Did the animals all pile on each other and die? Surely that was illogical. Another theory was that this was where early man piled the remains of animals that had been hunted and killed. Initially that seemed like a viable theory except that, upon further examination, none of the bones showed any sign of having been eaten or even hunted. There were no arrows, spears, or broken bones. Instead, the carcasses were all intact. It was as if the animals had thrown themselves on top of each other in the thousands. Finally, paleontologists reviewed what was happening at that time: the earth was going through sudden upheaval and massive climatic changes, and hundreds of species were dying out dramatically. Paleontologists hypothesized from other evidence that due to the great climatic changes, huge rivers and floods swept over the region, picking up the many fallen dinosaurs along the way and depositing them in shallower waters downstream. This hypothesis explained the facts by taking into account the situation at that time.

10.7.1 Kaya, Izumo, and Silla

In the same way, previous examinations of proto-Koreo-Japonic have ignored the extra-linguistic situation. In the past, the term 'dialect mixing' has been the linguistic dumping ground for any aberrent form or unexplained phenomenon. This use of 'dialectal' has

come under well-justified criticism. That is, if one is to claim that neighboring dialects have influenced one another, and most especially, the central dialect that later became the common language, then reasons for such interference/influence and likely scenarios of the direction of the influence should be offered as well. Given the political and social upheavals of any given area, it is expected that the local language would collide and leave its mark on that of the conquering, prestigious dialect/language. The point is that a reasonable scenario based on known facts ought to be presented in order to render the term dialect mixing acceptable.

Looking at the the effects of dialect mixing would enhance one's understanding of the genetic relationship between the Korean and Japonic languages. Perhaps this is one of the reasons that the genetic classification of Japanese, especially, has remained so tentative up until relatively recently. Clearly, a convincing case has been made for the relationship between the two languages in the past 35 years, and it is getting stronger with every new study; however, there is a key that has been overlooked in explaining the elusiveness of the connection. And that key in this case is dialectal mixing.

In examining the political and social situation of the Korean Peninsula and the Japanese Archipelago, we find a great deal of political (with subsequent linguistic) upheaval over long periods of pre-history as various states emerged and were either conquered or conquerors. Since we are assuming that Japonic was carried over from the continent into Kyushu, the political state of both regions would affect the state of Japonic as it branched off from PKJ. The unique situation with PKJ, however, is that it was not all one-way transfer, but from historical records we know that there were several close alliances across the water that affected and influenced the languages.

On the Korean Peninsula, there are the Puyŏ, who later developed into Koguryii and Paekche, which are thought by some to have a close linguistic link to Japonic. There are, of course, the Three Kingdoms, Silla, Koguryŏ and Paekche and their constant battling for control of the Peninsula. Silla ultimately unified the Peninsula through a series of clever and changing alliances, first with Koguryii to conquer Paekche, and later with T'ang China to defeat Koguryii. When T'ang was ready to then turn on Silla to swallow it up, Silla was already prepared for such tactical maneuvering and survived as the final victor. We are left with the most distant cousin to relate to Japonic. Had Paekche or Koguryii been the victor, it is assumed that the relationship would have been much more obvious.

As (pre-)Japonic moved into Kyushu, the Jomon speakers shifted their language to Japonic. Since the waves of migration occurred over approximately 1000 years and there was continued communication and exchange even after that, one can assume dialectal mixing not only with geographically neighboring regions, but also through political "neighbors" as well.

There are two likely scenarios for much of the dialect mixing in the Koreo-Japonic region. Given that Kaya and Paekche were linked with Yamato, and Izumo with Silla, when Silla conquered and unifed the Korean Peninsula, Japonic-like elements were incorporated into the Silla language as Kaya and Paekche were folded into the new kingdom. In the same way, when Yamato swallowed up Izurno, it also incorporated Silla-type elements. The close alliances across the straits fostered an environment where dialects influenced and interfered with not only their geographical neighbors, but

politically allied regions as well. Dialect mixing is a key factor in understanding the Koreo-Japonic region and its languages. Just as Ledyard spoke of a 'thalassocracy' regarding the region of Korea and Japan, so it seems that the water was not a barrier but rather a route for communication between otherwise non-contiguous lands. Therefore, we may speak, of two thalassocracies; namely, Silla-Izumo and Kaya-Paekche-Wa.

1.7.2 Proposed Explanation for Labiovelar and Reverse Labiovelar Correspondence Sets

The following is a diagram explaining how the labiovelar correspondence sets could have occurred.

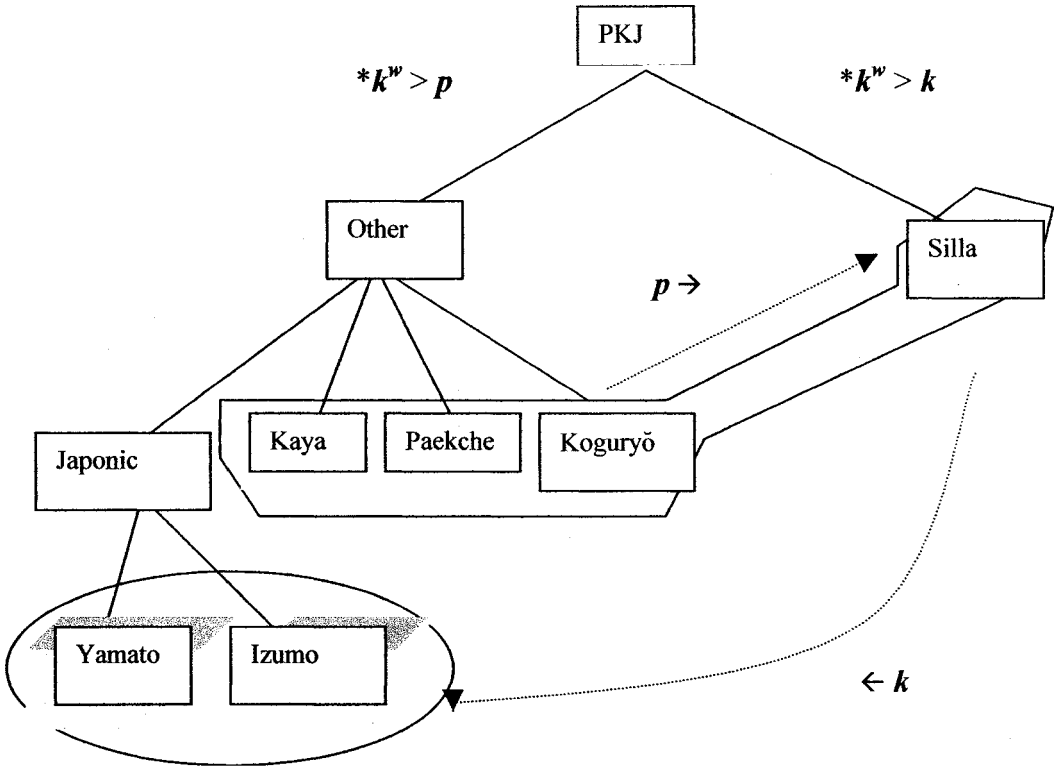


Table 209: Diagram of Posited Dialect Borrowing:Scenarios

In this study I found a correspondence set that supports Serafim's Labiovelar hypothesis (that is, MK k : OJ *p*); I also found, however, a correspondence set that seems

to be the reverse of Serafim's Labiovelar hypothesis (i.e. MK ***p*** : OJ k). Initially, I attributed this to an alternation in the proto-language. After much discussion, however, we came to the conclusion that this is most readily explained as a case of dialect borrowing. Actually, in order for the reverse correspondence to happen, two separate dialect borrowings had to have occurred.

Politics and language are two separate entities, and yet, politics can have an effect on what happens to a language; in other words, if a region is taken over, the conquerors' language will become the standard, overtaking the original language. Recall that Silla conquered the Korean Peninsula, swallowing up Kaya, Paekche, and Koguryŏ. Recall that Kaya, Paekche, and Koguryŏ are closer in genetic relationship to Japonic and would therefore likely have (*k^w >) ***p***. As these three languages were overcome, dialect borrowing likely occurred, meaning that words with p instead of (*k^w >) k were borrowed into the language of Silla. This is one of the posited cases of dialectal borrowing, explaining the anomalous p in Middle Korean.

The second posited case of dialect borrowing occurred when Yamato subsumed Izurno in the Japanese Islands. Since Silla had had close contact with Izumo, words with (****k^w***>) k were borrowed into Yamato through Izumo, replacing some words with p.

In order to account for the "reverse" correspondence, MK ***p*** : OJ k, therefore, both of the above cases of dialect borrowing must have occurred.

Now it is possible, indeed even more likely, that sometimes only one case of dialect borrowing occurred; however, we would no longer be able to tell, since it would show up as either a MK ***p*** : OJ ***p*** or a MK k : OJ k correspondence.

In other words, all things being equal, one would assume that most cases of MK ***p*** : OJ p came from PKJ ****p***, and MK k : OJ k came from PKJ *k. Given the above proposed scenarios for dialect borrowing, however, some cases of MK p : OJ p must have come from PKJ *k^w, and some cases of MK k : OJ k also must have come from PKJ *k^w. Until we find more evidence, it is impossible to discern at this point in time, which forms came from *k^w, and which did not. (Cf. MK nyep – nyek :: OJ ***yo$_2$ko$_2$***. This could be a potential case of two ***k***'s coming from a labiovelar, except for the existence of the variants in MK. Presumably nyep is from one of Koguryŏ / Paekche / Kaya, while nyek is from Silla. The J word would be from Izumo. Examples of *ny > y on the J side: nayamu – yayamu, onazi – ***oyazi***).

Observe the following chart of possible outcomes:

Table 110: Possible Outcomes for Posited Dialectal Borrowing

	MK	**OJ**	**PKJ**	**Situation**
1.	k	P	*k^w_1	Genetic
2.	P	k	****k$^w_2$***	Double Borrowing
3.	P	P	*k^w_3	Single Borrowing
4.	k	k	*k^w_4	Single Borrowing

If we look at the situation utilizing a distinctive-feature framework, where "Silla" and "Yamato" each stand for the word having come from that language, and in which "+" means "genetic" and "-" means "borrowed," each outcome could be assigned the following:

Table 111: Distinctive feature matrix

	MK	OJ	PKJ	Distinctive Feature
1.	k	P	****k$^w_1$***	+ Silla, + Yamato
2.	P	k	*k^w_2	– Silla, – Yamato
3.	P	P	*k^w_3	– Silla, + Yamato
4.	k	k	*k^w_4	+ Silla, – Yamato

Further research will surely lead to more understanding of the measurable effects of dialect borrowing.

10.9 Survival through Semantic Specialization

Survival through semantic specialization is a phrase that I have coined in the process of researching and reviewing MK, OJ, and PKJ. It appears that there were multiple forms due to dialectal mixing and interaction. Many, if not most, of the duplicate forms were lost as quickly as they came in, ***unless*** they found a unique semantic niche to fill. In other words, unless they were able to find an eddy or a branch to hang on to, these many forms were swept downstream and lost. Dialectal forms that came to mean something slightly different semantically were incorporated into the main dialect. I noticed this by grouping all forms of MK and OJ under general English glosses. It became apparent that words with slightly different forms and slightly different meanings survived.

Part D: Conclusion

In this study, I have examined evidence from a variety of fields in order to strengthen the hypothesis that Japonic and Korean are genetically related to one another. Although culture, ethnicity, and language are three separate entities that do not on their own show genetic linguistic relationship, the complementary evidence in multiple fields only strengthens the argument of how the Japonic language developed in the Japanese islands.

I hypothesize that the Japonic language was introduced into the Japanese Archipelago approximately 2,500 years ago. The people living in the Japanese Archipelago prior to this time were ethnically and linguistically unrelated to the incoming language group. The original population were Sundadonts, according to Turner's classification, and their language was likely Austronesian in origin. Over a period of approximately a thousand years, a culturally and technologically advanced group of Sinodonts began migrating into the Japanese Archipelago from the Korean Peninsula through Northern Kyushu. Rather than a sudden takeover as characterized by Egami in the Horse Rider Theory, instead there was a constant and steady influx of Continental culture, language, and people.

This resulted in the near-complete extinction of the original language, an overwhelming of the ethnic population with a new DNA gene group, and a complete cultural replacement by the dominant group. DNA, anthropological, archaeological, and other evidence support this claim. Further, rather than a sweeping, single takeover of the country, it appears that the cultural saturation occurred over a much longer period, with cooperation and co-existence of the two cultures. Historical records also confirm long-term relationships between the two regions: specifically, Izumo and Silla; and Paekche

and Wa. Even mythological accounts indicate that the rulers of Yamato came from the continent.

Linguistically, the language of the Jomonese people of the Japanese Archipelago was almost completely overwhelmed by the language of the Sinodont, or Continental population. From this, the Japonic language emerged. The linguistic evidence that we have to work with comes from written records from Old Japanese and Middle Korean. Middle Korean texts are written in the Silla-descended language of the 15th-century, Silla being the kingdom that first unified the Korean Peninsula. The Silla language overwhelmed the Puyŏ, Koguryŏ, and Paekche territory and languages, thought to be more closely related to Japonic. As for Japonic, records of Old Japanese go back as far as the 8th century.

I have hypothesized that there were two so-called "thalossocracies": one with Izumo and Silla, and the second with Yamato and Paekche/Kaya. Japonic elements were incorporated into the Silla language when Silla folded Kaya and Paekche into the new kingdom. In the same way, Yamato incorporated Silla-type elements into itself when Yamato overtook Izumo. The close alliances across the straits fostered an environment where dialects influenced regions of political allegiance.

Specifically, I found evidence that supports Serafim's Labiovelar hypothesis; i.e. MK *k* : OJ p, reconstructing PKJ $*k^{w}_{1}$. I also found, however, a correspondence set that seems to be the reverse of Serafim's Labiovelar hypothesis, that is, MK *p* : OJ *k*, for which I reconstruct $*k^{w}_{2}$. I hypothesize that this reverse correspondence is due to dialect borrowing; in fact, in order for the reverse correspondence to have occurred, two separate cases of dialect borrowing had to have occurred.

When Silla conquered the Korean Peninsula, it incorporated Kaya, Paekche, and eventually Koguryŏ into itself. As mentioned above, Kaya, Paekche, and Koguryŏ were closer in genetic relationship to Japonic and therefore would have ***(*k^{w} >) p***. As these three languages were overcome, dialect borrowing likely occurred, which means that words with p instead of ***(*k^{w} >) k*** were borrowed into Silla, sometimes replacing and sometimes forming doublets with words retaining ***k***. The second posited case of dialect borrowing occurred when Yamato overtook Izumo; since Silla had close contact with Izumo, words with ***(*k^{w} >) k*** were borrowed into Yamato, replacing, and sometimes forming doublets with, some words with p.

Both of these cases of dialect borrowing had to have occurred in order to account for the reverse correspondence, MK ***p*** : OJ ***k***. It is also very likely, therefore, that many instances of only one case of dialect borrowing occurred, but we would no longer be able to distinguish such instances because they would show up as either MK ***p*** : OJ p, or MK ***k*** : OJ ***k***. Further research will surely lead to more understanding of the measurable effects of dialect borrowing.

Understanding the political and linguistic situation of this region allows a greater understanding of Proto-Koreo-Japonic. Instead of a "catch-all" for aberrant forms, dialect borrowing can be studied in a logical manner with plausible scenarios based on fact. It is my hope that this study has contributed in some way to the understanding of how Japonic and Korean emerged and developed from Proto-Koreo-Japonic and to help explain why the relationship has become somewhat blurred.

Part E: Appendix

The Appendix consists of all the etyma treated in Part C of this dissertation, now arranged together according to their English gloss.

1. ARRIVE
   MK ***tatot-*** 'reach'
   Pre-MK ****tot-*** (reduplication)
   OJ ***to$_1$k-*** 'arrive'
   PKJ ****toK-***

J ***tador-*** is a better match, but I offer this as a related form through dialect mixing.

2. ASK, TO
   MK ***cwolGwo-*** 'request; importune'
   OJ ***to$_1$p-*** 'ask'
   PKJ ****co$_x$rk^w$_1$o$_x$-***

3. BAG
   MK ***pwutoy*** 'bag'
   Pre-OJ ****puku*** + ****ro***
   OJ ***pukuro$_1$*** 'id.'
   PKJ ****puKu*** (+ OJ ***–ro$_1$***)

4. BARLEY
   MK ***pwoli*** 'barley'
   Pre-OJ ****muNki***
   OJ ***mugi*** 'id.'
   PKJ ****Np$_1$orki***

This is another case where PKJ ****rk*** > PJ ****Nk*** rather than PJ ****k.***

5. BECOME
   MK ***twoy-*** 'become'
   Pre-MK ****twor-i***
   OJ ***tuk-*** 'attach; become'
   PKJ ****tork-***

6. BEND, TO
   MK ***kwop-, kwup-*** 'bend'
   Pre-OJ ****kum-ar-***
   OJ ***kumar-*** **'id.'**
   NJ ***kubo***
   PKJ ****kuNp$_1$-***

7. BIND
MK ***colo-*** 'tie up'
OJ ***tak-*** 'tie up (hair)'
PKJ ****corko-***

8. BLOCK
MK ***tilo-*** 'interrupt, obstruct, hinder'
OJ ***sek-*** 'dam'
PKJ ****tirko-***

9. BLOW
MK ***pwul-*** 'blow'
OJ ***puk-*** 'id.'
PKJ ****purk-***
This is an old etymology but I include it to show MK lenition.

10. BOTTOM
MK ***swok*** 'inside, interior'
OJ so_2ko_2 'bottom'
PKJ $*so_xko$

11. BROOM
MK ***poy, puy, pwuy*** 'broom'
Pre-MK ****por-i-***
Pre-OJ ****(pa+) *paki*** reduplication
OJ $papaki_1$ 'id.'
PKJ ****pork-i-***

12. BURN, TO-a
MK ***phwuy-, mwu-*** ***'burn'***
OJ mo_1ya- 'id.'
PKJ $*Np_1uy$-
The MK ***m*** is ***a*** case of dialect mixing. MK aspiration is unexplained.

13. BURN, TO-b
MK ***tol-*** 'bum'
OJ ***tak-*** 'id.'
PKJ ****tork-***

14. **CALM,** QUIET
MK ***tal-*** 'calm, quiet'
Pre-MK ****otal-***
OJ ***odap-*** 'id.'
PKJ ****oNtarp-***

15. **CARRY**
MK ***tul-, thoy-*** 'carry'
Pre-OJ ****ko$_1$-s-***
OJ ***ko$_1$s-***
PKJ ****Kor-*** **(+** OJ ***s)***
MK aspiration; cf. Martin 1966, ****Cx***.

16. CAT
MK ***nekwoli, nekwuli*** 'badger, raccoon'
OJ ***neko$_1$*** 'cat'
PKJ ****neko$_x$r***

17. CHANGE
MK ***kol-***
OJ ***kap-ar-, kak-ar-*** 'change'
PKJ ****korp-, *kork^w-***
The OJ form ***kakar-*** would be +Silla, +Izumo in distinctive features.

18. CHICKEN
MK ***tolk*** 'chicken'
Pre-MK ****tokl*** Metathesis
Pre-Pre-MK ****tokilo***
Pre-OJ ****kakiro***
OJ ***kake$_1$*** 'id.'
PKJ ****Kokiro***
The MK form is frequently linked to OJ ***to$_2$ri***.

19. CHOP, CUT
MK ***phoy-*** 'chop, split'
Pre-MK ****poCi***
OJ ***kar-*** 'mow'
PKJ ****k^w$_2$or-***
MK aspiration unexplained; cf. Martin 1966 ****Cx***.

20. CLAY
MK ***kwuyley*** 'clay'
Pre-MK ****kwule-i***
OJ ***tuti*** 'earth'
PKJ ****Tute-***
MK ***wuy*** resulting from umlaut after suffixation of ****-i.***

21. CLEAR, TO BE
MK kay- 'clear up'
OJ *par-* 'id.'
PJK **k^{w}$_{1}$ar-, * k^{w}$_{1}$ara-*
Cf. Whitman's **(1999)** arguments for splitting off many cases of **e$_{2}$* at the end of *nidan* verbs.

22. COMB
MK *pis* 'comb'
Pre-MK **pisu/o*
Pre-Pre-MK **pu/osi* vocalic metathesis
OJ *kusi* 'id.'
PKJ **k^{w}$_{2}$usi*

23. COMPARE, TO
MK kacolp- 'compare'
OJ *tatop-* 'id.'
PKJ **Tacorp-*
MK lp instead of *1* unexplained.

24. CONTAINER
MK twuli, tuli 'container'
OJ *tuki$_{1}$* 'id.'
PKJ **turki*
Or:
MK twuli, tuli 'container'
Pre-MK **tul-i*
OJ *tupu* 'container', *tupo* (later *tubo* 'wide-bellied covered jar')
PKJ **turpo* (+ MK *i*)
Or:
MK kwoli 'container'
OJ *kupi* 'id.'
PKJ **kurpi*
Together:
Pre-PKJ **Kurpo-* (+ MK *i*)

25. CORD-a
MK cwul 'cord'
Pre-OJ **suki*
OJ *suki$_{1}$* 'cord, sash'
PKJ **curki*
Cf. Martin's **(1966)** link to OJ *sudi* 'sinew'.

26. CORD-b

MK ***poyp*** 'cord, small string'
Pre-MK ****pyop*** metathesis
Pre-Pre-MK ****pyoNp*** Vovin's hypothesis
OJ ***pi$_1$mo*** 'rope'
PKJ ****pyoNp$_1$o***

Regarding MK not having the ***yo*** sequence, SEM has argued that ***ho-*** 'do' originally was ****hyo-***, and that they was either dropped or metathesized, as in the case of ***hoya*** 'to do'. This example could also be explained as a metathesis. Note that MK does not allow ****yo*** sequences. Note also that J does not allow sequential voicing with its reflex, as if Lyman's Law were operating.

27. CORNER

MK kwuk 'corner'
OJ ***kuma*** 'id.'
PJK ****kuNk$^w{}_1$a***

Since PKJ ****Np*** > MK ***p*** :: OJ ***m,*** it follows that PKJ ****Nk^w*** should yield MK k :: OJ ***m.***

28. CORRECT, REPAIR, TO

MK ***nak-*** 'right, proper'
OJ ***napo-*** 'straight, correct'
PKJ ****nak$^w{}_1$o-***

29. COUNT

MK ***kwop-*** 'count'
OJ ***kazo$_1$p-*** + ***e$_2$-*** 'id.'
PKJ ****ko$_x$zop-***

30. DESIRE, TO

MK ***sikphu-, sitpu-***
Pre-MK ****sik-pu-, *sit-pu-***
Pre-Pre-MK ****siko -***
OJ ***sika-, sita-***
PKJ ****siko-, *siTo-***

31. DIG UP-a

MK ***'khoy-*** 'dig up, unearth'
Pre-MK ****koC-i***
OJ ***por-*** 'dig'
PKJ ****k$^w{}_1$or-***

For aspiration, cf. Martin **1966** ****Cx***. I provisionally choose not to recontruct it.

32. DIG UP-b

MK ***'phoy-*** 'dig up'
OJ ***por-*** 'dig'; ****por-***

This should result from Silla borrowing from Kaya or Paekche.

33. DIM, TO BE
MK ***elmuy-*** 'faint, hazy, dim'
Pre-MK ****emul-i-*** metathesis
OJ ***opo-*** 'dim', J ***oboro-*** 'faint, hazy'
PKJ ****eNp$_2$oro-***

34. DISLIKE, TO
MK ***mwuyp-, mip-*** 'dislike'
Pre-MK ****mipu-*** vocalic metathesis
OJ ***niku-*** 'id.'
PKJ ****ŋ^{w}ik^w$_2$u-***

35. DIRECTION
MK ***cwok*** 'direction'
OJ ***saki$_1$*** 'forward direction'
PKJ ****co$_x$ki***

36. DRIVE AWAY, TO
MK ***mwol-*** 'drive, chase away'
Pre-MK ****mol-***
Pre-OJ ****para-p-***
OJ ***parap-*** 'id.'
PKJ ****Np$_2$oro*** (+ OJ ***-p-***)

37. DRY, TO
MK ***mol-*** 'dry'
Pre-MK ****omol-*** Constraint against initial ****o***
OJ ***pur-, abur-*** 'to dry or burn through application of heat of sun or fire'
PKJ ****oNp$_2$or-***

38. EASY, GENTLE, TO BE
MK ***mwuk-*** 'mild, gentle'
Pre-MK ****miku-*** vocalic metathesis
OJ ***niko$_1$-*** 'easy, soft'
PKJ ****ŋ^w$_2$iku-***

39. EAT, TO
MK ***mak-, mek-*** 'eat'
pre-MK ****kam-***, ****kem-*** metathesis
OJ ***pam-*** 'id.'
PKJ ****k^w$_1$am-***
Metathesis in the MK line. Note also *J* ***kam-*** 'to bite', which would be **a** loan through Izumo from Silla.

40. ENCIRCLE, TO
MK kwol 'ring'
Pre-OJ ****kak-***
OJ ***kak-om-, kak-op-, kak-um-*** 'encircle, enclose'
PKJ ****ko$_x$rk***(-) (+ OJ ****-(V)m-***)

41. END, EDGE-a
MK kuti
pre-MK ****tuki*** metathesis
OJ ***tupi$_1$***
PKJ ****tuk$^w{}_1$i***

42. END, EDGE-b
MK mol 'end'
OJ pata 'edge'
PKJ ****Np$_2$o(r)to***

43. ENTRUST, TO
MK masth- 'entrust'
Pre-MK matos-CV- metathesis
OJ ***makas-*** 'id.'
PKJ ****maKos-*** (+ MK ***-CV-***)

44. EXPOSE
MK ***pswoy-***, scwoy- 'expose (to the sun)'
OJ ***sar-***
PKJ ****s(w)o$_x$r-***
Perhaps with intensive pc- ~ ps- prefix.

45. **FAN**
MK pwutul 'fan'
Pre-MK ****opwutul***
Pre-OJ ****apuk-i***
OJ ***apuki$_1$*** 'id. (deverbal of apuk-)'
PKJ ****opuKur***

46. FAR, TO BE
MK mel- 'far'
OJ ***paru/o*** 'id.'
PKJ ****Np$_2$ero-***

47. FART
MK ***kwuy*** 'fart'
Pre-OJ ****po$_2$ri***
OJ ***pe***
PKJ ****k^w$_1$ori***
Vowels are problematic.

48. FEATHER
MK ***theli***
Pre-MK ****telk-i***
Pre-OJ ****turpa-sa***
OJ ***tubasa***
PKJ ****turg^w$_1$e-***
Lenition of pre-OJ ****b*** to ***w*** blocked by ****r***. That means that intervocalic ****b*** > ***w*** before ****r*** > ***ø*** / ___****C***.

49. FIELD
MK ***nwon*** 'field'
OJ ***no$_1$*** 'id.' (< ****non***)
PKJ ****no$_x$n***

50. FIGHT, TO
MK ***ssom*** 'fight (n.)'
Pre-MK ****sisom***
OJ ***iso$_1$p-*** 'id.'
PKJ ****zisoNp$_2$-***
Cf. MK ***sil***, OJ ***ito,*** 'thread' < PKJ ****zito***. Cf. Whitman **1985.**

51. FINISH, TO
MK ***mot-*** 'end, close'
Pre-OJ ****pata-***
OJ ***pata-s-, pate$_{(2)}$-*** 'complete, do to the fullest'
PKJ ****Np$_2$oto-***
It is possible that the OJ forms are related to OJ ***pata*** 'edge' mentioned above.

52. FIRE
MK ***til-*** 'set fire to'
OJ ***ki$_1$r-*** 'make fire'
PKJ ****Kir-***

53. FIRST
MK ***mwoncey*** 'first, ahead'
OJ ***madu*** 'id.'
PKJ ****moncu***
Cf. Martin 1966.

54. FLAT

MK task- 'level, make flat'
Pre-MK ***tak-Vs-***
OJ ***tapi$_1$-*** 'flat, even, plain'
PKJ ****tak$^w{}_1$i-***

The ***s*** in MK is metathetic. Perhaps pre-MK ****-s(V)-*** is a pre-lenition form of the root for 'do', functioning here as a verbalizer/predicator.

55. FLOWER

NK kkoch
MK kwos, kwoc, kwoch
Pre-K *k^{w}ocoh > ****kwocoh***
Pre-J ****padan*** > ****panan***
OJ ***pana***
PKJ ****k$^w{}_1$ojoŋ***

Assimilatory nasalization in the Japanese case. Cf. Altaic ****daban*** :: J yama 'mountain'. This is originally part of Serafim's labiovelar hypothesis. MK h is a result of denasalization (Serafim: personal communication, 2001).

56. FLY, TO

MK nol- 'fly, soar'
Pre-OJ ****naNka-r-***
OJ nagar- 'cast, throw away'
PKJ ****nork-***

As for the semantics, cf. Modem Greekpetd 'fly; throw away'. The loss of ****k*** is unexpected in MK given the voiced consonant in OJ (Vovin's *NC hypothesis); therefore, I assume that the sonorant was originally an ****r*** which assimilated to an n in the J line. The ****r*** would not stop the consonant from leniting in MK. This is a case where PKJ *rk > PJ *nk rather than PJ *k, and requires further study.

57. **FRESH**

MK ***senolep-*** 'fresh, new'
Pre-MK ****selonep-*** metathesis
Pre-OJ ****saroNka***
OJ ***so$_1$ga*** 'refresh'
PKJ ****seronVk$^w{}_2$-***

58. FREE TIME

MK thum 'crack, gap; spare time'
Pre-OJ ***tapa-***
OJ ***tapabur(e)-, tapak-***
PKJ ****tok$^w{}_1$oNp$_2$(-)***

The existence of opposite subscripts weakens the hypothesis, unless we can suppose that ****Np$_2$*** represents the genetic correspondence.

59. FROG
MK kemeli 'frog'
Pre-MK ***kemel-i***
OJ ***kape$_1$ru*** 'id.'
PKJ ***keNp$_2$eru*** (+ MK ***i***)
Note also: J kawazu 'toad' < kapadu < ?***kapaNru***, due to dialectal borrowing with semantic specialization?

60. FULL, SATISFY, TO-a
MK mil 'high (tide)'
Pre-OJ ***mita-***
OJ ***mi$_1$t-*** 'full'
PKJ ***mito-***

61. FULL, SATISFY, TO-b
MK ***pwul-***, pul-, poy- 'to be full'
OJ mot- 'full (moon)'
PKJ ***Np$_1$oto-***
Together:
Pre-MK ***mpoyto-***
Pre-OJ ***mo$_2$ta-***
PKJ ***Np$_1$oyto-***
The ***o*** drops out in some J dialects, leaving ***i***, whereas the reverse happens in other J dialects; that is, the ***i*** drops out leaving, ***o***. This weakens the etymology. Cf. Martin 1966.

62. GATHER, TO
MK top- 'collect'
OJ tum- 'id.'
PKJ ***toNp$_1$-***

63. GLARE, TO/EYE
MK pal- 'glare at'
Pre-OJ *mar-i
OJ ***me$_2$*** 'eye'
PKJ ***Np$_1$ar-***

64. GRASS
MK ***'phwul***, phwul-, ***'phul-***, phwu-, phus- 'grass'
OJ ***kusa*** 'id.'
PKJ ***k^w$_2$urzo***
MK aspiration; cf. Martin **1966** ***Cx***.

65. GRAVE
MK ***mwoy***, ***"mwu-*** 'grave, tomb'
Pre-MK ****mor-i***
OJ ***paka*** 'grave'
PKJ ****Np$_2$orko***

66. HANG, TO
MK ***kel-*** 'hang'
OJ ***kak-*** 'id.'
PKJ ****kerk-***
Cf. Martin 1966.

67. HAPPY, TO BE
MK ***pank-*** 'happy'
Pre-MK ****poNk-***
Pre-OJ ****omuNka-***
OJ ***omuga***, ***umuga*** 'id.'
PKJ ****oNp$_1$oNko(-)***
MK ***n*** unexplained.

68. HE, SHE
MK ***tye*** 'he, she'
OJ ***ka*** 'id.'
PKJ ****Kye***
JBW links the MK form to OJ ***so$_2$***, which is less problematic, but I offer this as a result of possible dialectal mixing, with survival due to semantic specialization.

69. HEAD/HAIR
MK ***kwoli*** 'head'
OJ ***ke$_2$*** 'hair' (< ****kari***)
PKJ ****ko$_x$ri***

70. HEMP
MK ***pwoy*** 'hemp' (< ****opo-i***) metathesis
OJ ***wo*** 'id.'
PKJ ****o$_x$bo$_x$***

71. **HIDE**
MK ***komchwo-*** 'hide, conceal' (< ***kom-chwo-)***
OJ ***ko$_2$mo$_2$-r-*** 'id.'
PKJ ****komo-***

72. HIT, TO-a
MK ***tal-*** 'strike, hit'
Pre-OJ ****tak-*** (partial reduplication)
OJ ***tatak-*** 'hit, beat'
PKJ ****tark-***

73. HIT, TO-b
MK ***twutwul-*** (reduplication) 'hit', ***tho-, chu-, thi-*** 'hit'
Pre-MK ****toho-, *cuhu-, *tVhi-*** < ****toko-, *cuku-, *tVki-***
J ***tutuk-*** 'hit', ***tuk-*** 'poke', ***tuk-*** 'pound (mochi rice)'
PKJ ****turk-*** or ****tork-*** (reduplication for some OJ)
Reason for survival of ***h,*** not *l,* in most MK forms is not clear; perhaps the words are borrowed Kaya or Paekche.

74. HOLD, TO
MK ***mek-*** 'hold, carry, take'
OJ ***mot-*** 'id.', ***mos-, me$_2$t-*** (Azurna)
PKJ ****meT-***

75. HOOF
MK ***kwup*** 'hoof
Pre-OJ ***tumo-(C)i***
OJ ***tume$_2$*** 'nail, hoof
PKJ ****TuNp$_1$o*** (+ OJ ***i***)

76. HUNDRED
MK ***'pouy*** 'hundred'
Pre-MK ****po-i***
OJ ***mo$_1$mo$_1$*** 'id.', ***-po*** 'id.'
PKJ ****Np$_1$o***

77. INCREASE, TO
MK ***pwul-*** 'increase'
Pre-MK ****pul-***
OJ ***mor-*** 'pile up'
PKJ ****Np$_1$or-***

78. JAW
MK ***thok, thek, thak*** 'jaw'
Pre-MK ***"otokok*** word-initial neutral-vowel metathesis
Pre-OJ ****otokap-i***
OJ ***otokapi*** 'id.'
PKJ ****otokok^w$_1$-i***
Automatic metathesis of initial ****o*** in K line.

79. KICK

MK cho- 'kick'
Pre-MK ****toko-***
Pre-OJ ****kuba-, *kuwa-***
OJ ***kuwe-*** 'id.'
PKJ ****Kog$^{w}{}_{1}$o-***

Unexplained ****t > c*** in K line.

80. LEAK, TO

MK suy- 'leak'
Pre-MK ****sul-i-***
Pre-OJ ****su(N)k-*** (with partial reduplication)
OJ ***sosog-*** 'leak', ***susuk-*** 'pour out'
PKJ ****surk-***

Unexplained voicing in the J line.

81. LEEK

MK ***pha*** 'leek'
Pre-MK ****pika***
OJ ***mi$_{1}$ra*** 'id.'
PKJ ***Np$_{1}$irka***

Reverse correspondences for ****rk*** suggest double borrowing.

82. LEG

MK ***pal*** 'foot'
Pre-OJ ****paNki***
OJ ***pagi*** 'shin'
PKJ ****parki***

Unexplained voicing in the J line. Cf. Martin **1966.**

83. LIFE

MK nol, nwuy 'life'
Pre-OJ ****ino$_{2}$to$_{2}$-i***
OJ ***ino$_{2}$ti*** 'life'
PKJ ****no$_{x}$to***

84. LIGHT

MK ***pich*** 'light, ray'
Pre-MK ****pit-*** affrication
Pre-OJ ****pi$_{1}$k-ar-***
OJ ***pi$_{1}$kar-*** 'light shine'
PKJ ****piK-***

Aspiration unexplained.

85. LIZARD
MK twol-, ***twoma*** 'lizard'
OJ ***tokage*** 'id.' (* < ***to$_x$*** + ***kage***)
PKJ *tor

86. LONG, TO BE
MK nule- 'lengthen'
OJ ***naga-*** 'long'
Pre-OJ ****naNka-***
PKJ ****norko-***
Unexplained voicing in the J line.

87. LONG TIME
MK moto- 'long lasting'
Pre-OJ ***muka-si***
OJ ***mukasi*** 'long ago'
PKJ ****moKo-***

88. LOOM
MK pwothul 'loom''
Pre-MK ****pwoto-hul***
OJ ***pata*** 'id.'
PKJ ****po$_x$to***

89. LOVE, TO
MK kwoy- 'love'
Pre-MK ****kori***
OJ ***ko$_1$pi-*** 'id.'
PKJ ****korpi***

90. MEASUREMENT UNIT
MK twoy 'unit of measure'
Pre-MK ****twol-i***
OJ tuka 'handful'
PKJ ****turka***

91. MILLET-a
MK ***phi*** 'millet, type of
Pre-MK ****piki***
Pre-pre-MK ****kipi*** metathesis
OJ ***ki$_1$mi$_1$*** 'millet'
PKJ ****kiNp$_1$i***
Note kibi occurs later in J.

92. MILLET-b

MK me 'millet'
Pre-MK ****ome*** Constraint against initial ****o***
OJ ***apa*** 'foxtail millet'
PKJ ***oNp$_2$e***

Cf. Street **1974;** PA ****arpa***.

93. MONEY

MK ***"twon*** 'money'
Pre-MK ****tono***
Pre-OJ ****kana-(C)i***
OJ kane – kana 'metal'
PKJ ****Ko$_x$no***

94. MUSHROOM

MK ***peses***
Pre-MK ****sepe-s*** MK metathesis
Pre-pre-MK ****tepe-s*** assibilation
Pre-OJ ****taka- + -i***
OJ ***take$_2$***
PKJ ****tek^w$_2$e-***

95. NARROW

MK ***swol-*** 'narrow'
OJ ***sa-, se-*** (< ****sari***) 'id.'
PKJ ****so$_x$ri***

96. NAVEL

MK ***pwok, kwop*** 'navel'
OJ ***poso*** 'id.'
NJ ***heso*** 'navel', ***hozo*** 'tenon, pivot, cog; navel; calyx'
PKJ ****k^w$_1$optyo***

The MK forms show a ***k, p*** alternation which may be caused by metathesis of the consonants. This etymology is weak, but the MK metathesis is intriguing.

97. NOSE

MK ***kwoh***
Pre-MK ****kwoŋo***
OJ ***pana***
PKJ ****k^w$_1$oŋo***

This is originally part of Serafim's labiovelar hypothesis (personal communication, **2001).** MK ***h*** is a result of denasalization, which, according to Serafim's denasalization hypothesis would be: ***kwo.h*** < ****k^w$_1$ogo.***

98. NUT

MK ***thwol*** 'nut, a grain'
Pre-MK ****tolok*** metathesis
Pre-Pre-MK ****tolo-k***
Pre-OJ ****kuru-i***
OJ ***kuri*** 'chestnut'
PKJ ****Koro-***
Dueling etymologies with 'chestnut'.

99. OCTOPUS

MK ***kwoltwoki*** 'type of octopus' (< ***kwol*** + ***twoki***)
OJ ***tako$_1$*** 'octopus'
PKJ ****to$_x$ko***

100. PEAK

MK ***woli*** 'peak'
OJ ***wo*** (< ***wo$_1$*** < ****wor***)
PKJ ****wor***

101. PEOPLE

MK ***-yeki*** 'person' from ***holk.puy.Gye.ki*** 'cross-eyed person'
OJ ***yatu*** 'person'
PKJ ****yeTo*** (+ MK ***–i***)
I found the MK form only in this word, so that weakens the hypothesis.

102. PICKLE, TO

MK ***cel-*** 'pickle'
J ***tuke-*** 'pickle'
PKJ ****cerko-***
Cf. 'salt'; cf. Martin 1966.

103. PILE **UP**

MK ***tak-***
Pre-OJ ****tata-n/m-***
OJ ***tatane-, tatam-, kasana/e-*** 'pile up'
PKJ ****taKo-***

104. PILLOW

MK ***pyekay*** 'pillow'
Pre-MK ****pyekoy***
OJ ***rnakura*** 'id.'
PKJ ****Np$_1$(y)eko-*** (+ OJ ***–ra***) or ****Np(y)ekor-*** (+ ***-a*** in J, + ***-i*** in K)

105. PLACE
MK ***kwol*** 'place'
OJ ***-ko$_1$*** 'place' (from ***kasiko$_1$*** 'over there')
PKJ ****ko$_x$r***

106. PLANE, SHAVE, TO-a
MK ***kak-***
Pre-MK ****kank-*** Vovin's ****NC*** hypothesis
Pre-J ****pank-***
OJ ***pag-***
PKJ ****k^w$_1$aNk-***

107. PLANE, SHAVE, TO-b
MK ***pyeh-***
Pre-MK ****pelk-*** [Better explained as borrowing from Kaya/Paekche?]
Pre-J ****pank-***
J ***pag-, peg-***
PKJ ****perk-***
Voicing in the J line is unexplained. Or PKJ ****peyrk-*** with metathesis ***in*** the K line?

108. PLATE
MK ***swola*** 'tray'
OJ ***sara*** 'dish, plate'
PKJ ****so$_x$ra***

109. POUR, TO
MK ***swot-, pswot-*** 'pour out, spill'
Pre-MK ****ps-sot-*** Ramsey (1992)
Pre-OJ ****sok-*** reduplication
OJ ***sosok-*** 'pour'
PKJ ****soK-***
Ramsey (1992) argues for calving off the initial ***pc-*** / ***ps-*** consonant clusters ***as*** intensives.

110. RECOMMEND, TO
MK ***twulu-*** 'recommend'
Pre-MK ****otulu-***
Pre-OJ ****atop-***
OJ ***atopey-, atorapey-*** 'invite; ask for hand in marriage'
PKJ ****otorp-***

111. ROLL, TO
MK ***mol-*** 'roll, wind'
OJ ***mak-*** 'id.'
PKJ ****mork-***

112. SAD, TO BE-a
MK ***molp-*** 'sad'
Pre-MK ****omol-p-*** Constraint against initial ****o***
Pre-OJ ****aparo-(C)i***
OJ ***apare*** 'sadness, dearness, emotion'
PKJ ****oNp$_2$or-***

113. SAD, TO BE-b
MK ***syelp-, syelm-, sulp-*** 'sad'
Pre-MK ***syelNp-***
Pre-OJ ****saNpu-***
OJ sabu- / sabi$_2$- 'sad'
PKJ ****s(y)erNp$_1$o-***
Cf. Martin 1966.

114. SALT
MK ***cyel-*** 'salted'
OJ ***sipo*** 'salt'
PKJ ****cyerpo***
Cf. 'pickled'. Presumably PKJ ****cye*** > ****tye*** > ****ti*** > ***si*** in the J line. Cf. Whitman 1985.

115. SAND
MK ***mwoloy*** 'sand, grit' (< ***mwolo-)***
OJ ***manago*** 'sand' (****mana-***)
PKJ ****mo$_x$rno-***

116. SAVE, RESCUE, TO
MK salo- 'save, rescue'
Pre-MK ****solo-***
OJ ***suku-*** 'id.'
PKJ ****sorko-***
I assume ***–p-*** of OJ ***suku-p-*** is a derivational suffix.

117. SEA BREAM
MK ***twomi*** 'sea bream'
OJ ***tapi$_1$*** 'id.'
PKJ ****toNp$_2$i***
Cf. Martin 1966.

118. SEAT, CHAIR
MK ***ca'li*** 'seat'
OJ ***siki$_1$*** 'id.'
PIU ****coyrk-*** (+ ***i***)

119. SERVE, TO
MK "mwoy- 'attend, wait on'
OJ ***maturap-*** 'serve' (> ***matu-r-ap-)***
PKJ ****mo$_x$to-***

120. SHARP, TO BE
MK ***ko-*** 'sharpen'
Pre-OJ ****to$_1$- + g-***
OJ ***to$_1$-, to$_1$g-*** 'sharpen'
PKJ ****To-***

121. SHRUB
MK ***tempul, tempwul*** 'thicket, bush, shrub'
Pre-MK ****teNpul***
Pre-OJ ****tiNpa***
OJ ***siba*** 'shrub'
PKJ ****tyeNp$_2$or***
Loss of ****r*** in J line by Whitman's law. Unexplained retention of ***mp*** in K line.

122. SIDE
MK tahi 'side, direction'
Pre-MK ****taki***
OJ ***kaki$_1$*** 'outer bound(ary) (esp., of the grounds of a house)'
PKJ ****Kaki***

123. SHELF
MK ****keley*** 'hanger, rack'
Pre-MK ***kele-i***
OJ ***tana*** 'shelf
PKJ ****Terne***
Cf. OJ ***kak(e$_2$)-*** 'hang', which is a better match. I offer this etymology as a possible case of dialect mixing with survival due to semantic specialization. In other words, this hypothesis implies that both OJ ***tana*** 'shelf and ***kak(e$_2$)-*** 'hang' are from the same etymon. Since 'shelf and 'hang' are semantically distinct, both forms survived.

124. SING
MK ***nwoloy-*** 'sing'
OJ ***no$_2$r-*** 'proclaim, recite'
PKJ ****no$_x$ro-***

125. SKIRT
MK ***pwolwo*** 'skirt'
Pre-MK ****polo***
Pre-Pre-OJ ****muro***
Pre-OJ ****mo$_1$***
PKJ ****Np$_1$oro***

126. SOUND
MK ***swo'loy, swo'luy*** 'sound, noise'
OJ ***to$_2$yo$_2$-*** 'to sound'
PKJ ****co$_x$ydo***

127. SOUR
MK ***suy-*** 'sour'
Pre-MK ****suli-***
Pre-pre-MK ****silpu-*** metathesis
Pre-OJ ****sinpu-***
OJ ***sibu-*** 'puckery'
PKJ ****sirpu-***
Cf. Martin 1966. PKJ ****rp*** > ****np*** in the J line (reason unknown).

128. SOW, TO
MK ***mat-*** 'hit (the mark)'
OJ ***mak-*** 'sow'
PKJ ****maK-***
The semantics are less than ideal, but, assuming that seeds were sown by hand, hitting the mark would be a necessary goal for planting seeds- Cf. OJ ***matwo*** 'target'. All else being equal, MK ***mat- &*** OJ ***matwo*** appear closer, while the link with OJ ***mak-*** is more tenuous. Perhaps the two sets are related through dialect mixing.

129. SPOON
MK ***kal*** 'spatula'
OJ ***kapi$_1$*** 'shell, spoon[7]
PKJ ****karpi***

130. SPOT
MK ***patwok*** 'spot; checker'
Pre-MK ****paNto-k*** Vovin[7]s hypothesis
Pre-OJ ****maNta- (+ ra)***
OJ ***madara*** 'spots[7], ***padara*** ~ ***podoro*** 'id.'
PKJ ****Np$_1$oNto***
In terms of distinctive features, OJ ***padara*** ~ ***podoro*** might be +Silla.

131. SWEEP, TO
MK ***polu-*** 'clear away (seeds)'
OJ ***pak-*** 'sweep'
PKJ ****porku-***

132. SWELL, TO
MK ***swos-*** 'well up, gush[7]
OJ ***so$_1$r-*** 'upheaval, bulge'
PKJ ****so-***

133. THICK, TO BE
MK ***"kwulk-*** 'thick'
Pre-MK ***"kwul-k-***
OJ ***puto$_1$-*** 'id.'
PKJ ****k^w$_1$uto-***
The MK -k- is calved off as a derivational suffix/verb, possibly related to ***–ho-*** 'do'.

134. TOGETHER
MK twok 'together with'
OJ tagap- (< *tank-ap-)
PKJ ****to$_x$Nk-***

135. TWO
MK ***twul*** 'two'
Pre-MK ?****twup(w)ul***
Pre-OJ ****tupa*** metathesis
OJ ***puta*** 'id.'
PKJ *tuk^{w}or
Perhaps the metathesis on the J side is due to analogical pressure from the number system, i.e., the ***pVtV*** of ***pi$_1$to$_2$-*** 'one'. There is a possibility of a medial labial in MK.

136. UNDERSTAND, TO
MK ***mwolo-***
Pre-MK ****molo-***
Pre-OJ ****bak-***
OJ wak-, wakar- 'distinguish'
PKJ ****Nborko-***
Cf. Martin 1966.

137. VAGINA; HOLE
MK kwumkwu 'vagina; hole, depression'
Pre-MK ****kumku***
Pre-OJ ****kuNpo***
OJ kubo 'id.'
PKJ ****kumk^{w}u***

138. VARIOUS
MK ***capa*** 'miscellaneous'
Pre-MK ****caNpa*** Vovin's hypothesis
OJ sama (***-zama***) 'ways'
PKJ ****caNp$_1$a***
The expected reflex in OJ for PKJ ****c*** is t.

139. VOMIT, TO
MK path- 'vomit'
Pre-MK ***pat(o)-kV-***
OJ pak- 'id.'
PKJ ***paK-*** (+ ***-kV-***)

140. WHALE
MK kwoylay, kwolay 'whale' umlaut?
Pre-MK ***kwotali***
Pre-Pre-MK ***kwotila*** vocalic metathesis of last 2 syllables
Pre-OJ ***kudira***
OJ ***kuzira***
PKJ ***kodira***

141. WHIP
MK swok 'whip'
Pre-OJ ***supa-ye***
OJ ***supaye*** 'whip, cane'
PKJ *suk^{w}$_{1}$o (+ OJ ye 'stick')
Taking Vovin's ***NC*** into consideration, one would expect ***suNk^{w}$_{1}$o*** because the ***k*** did not delete in MK. One possibility for ***k*** not deleting could be that ***o*** dropped out earlier; since Vovin's hypothesis works only medially, this would no longer be in medial position. Another possibility is that since there is a final suffix *-k- in MK, the *-k- could have been either retained or added back on by analogy.

142. WIND, COIL, TWIST, TO
MK ***pwuy-*** 'braid, twist'
Pre-MK ***pwu(r)-i-***
OJ kur- 'turn, wind'
PKJ ***k^{w}$_{2}$ur*** (+ Pre-MK -i-)

143. WINNOW
MK ***mis*** 'winnow'
Pre-pre-OJ ***Npo/uri***
Pre-OJ ***pori, puri, mori, muri***
OJ ***pi$_{2}$, mi$_{2}$*** 'winnow'
PKJ ***Np$_{2}$ori, Np$_{2}$uri***
Note that this is heavily cultural vocabulary, and is associated with the Yayoi, or equivalent rice-farming culture. The variant forms suggest dialect mixing with survival through semantic specialization.

144. WINTER
MK ***kyeol***, ***keywel***, ***kyeGul***, ***kyeGulh***, ***kyezul*** 'winter'
OJ ***puyu*** 'id.'
PKJ *k^{w}edzur?

145. WRAP, TO

MK ***tyep-*** 'fold, wrap up'
Pre-MK ****tyeNp-*** Vovin's hypothesis
Pre-OJ ****tum-*** Reduplication
OJ ***tutum-*** 'id.'
PKJ ****t(y)eNp$_1$-***

Cf. 'winter' for MK ***ye*** : OJ ***u*** correspondence.

146. YOUNG, TO BE

MK 'wol- 'younger', ***'wola'pi*** 'girl's younger brother',
emek-wolapi 'mother's younger brother'
OJ ***waka-*** 'young'
PKJ ****borka-***

****b*** > ***w*** / # ___ in K line; ***w*** + ***o*** merging as vowel ***wo.***

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