Dig Until You Find Blood:

A Textual and Archaeological Investigation into Egyptian Menstrual Seclusion Practice at Deir el-Medina

by

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Abstract

Cultural restrictions placed on individuals during menstruation, commonly called menstrual seclusion, deeply affect the daily and social lives of women in cultures that engage in this practice. This thesis will investigate the possibility for a menstrual seclusion practice among the inhabitants of the Egyptian site of Deir el- Medina during the New Kingdom (1550-1070 BCE) by examining both the textual and the archaeological evidence. The textual analysis suggests that menstrual seclusion was tied into a larger system of behaviors marking important transitions in the lives of women during the New Kingdom. The texts suggest that menstrual seclusion occurred within the household. With this location in mind, my investigation utilizes the archaeological record to identify locations within houses where seclusion may have occurred. Using space syntax, I analyzed the architecture of the domestic structures at Deir el-Medina for evidence of purposefully isolated rooms that were intentionally separated from the rest of the house. The analysis identified two rooms, within the 28 houses analyzed, that had particularly limited access which could have been specially built and used for menstrual seclusion. However, every structure contained one to two spaces that could have been used opportunistically for menstrual seclusion. The identification of multiple spaces that could have been used for menstrual seclusion with the houses at Deir el-Medina shows that scholars need to be aware of this possibility of space use. Future analysis of these spaces at Egyptian domestic sites will allow us to more fully examine the role of menstrual seclusion and the role of women more generally in Egyptian culture.

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Introduction

Menstrual seclusion is a cultural practice wherein restrictions are imposed on women's[1] behavior for the duration of their menstruation. Menstrual seclusion can range from the exclusion of menstruating women from religious spaces (Ferro-Luzzi 1974) to the relocation of women to an isolated structure outside of the community for the duration of their menses (Buckley 1982). This practice is common throughout the world and its many variations have been recorded by ethnographers (e.g. Buckley and Gottlieb 1988; Van de Walle and Renne 2001). Knowing the extent of this practice in recorded history, it is likely that comparable behaviors also existed in the past. Here the textual and archaeological record of ancient Egypt will be investigated for evidence of menstrual seclusion behavior.

Historically, menstrual seclusion has been understood as a misogynistic practice (Young and Bacdayan 1965; Montgomery 1974), but in-depth ethnographic research has shown that the cultural rational and social implications of menstrual seclusion are various and not necessarily linked to male social dominance or misogyny (e.g. Buckley 1982; Agyekum 2002; Gottlieb 1982; Pederson 2002; Powers 1980). Instead, menstrual seclusion behaviors are embedded within the culture that practices them (Bock 1967). The seclusion behaviors reflect and are explained by the religious and social systems of

[1] This paper will use the terms men and women to differentiate the two gender groups conceptualized by ancient Egyptians. Egyptians determined gender through the presence or absence of external genitalia. This is exemplified in the New Kingdom story *The Tale of Two Brothers* wherein the character Bata identifies himself as a woman after his penis is removed and eaten by a fish (Simpson 2003, pg. 86). In the story, Bata undergoes no other change suggesting that for the Egyptians presence of external genitalia is a main determiner in being male. This similarity in the conceptualization of gender between the Egyptians and the modern English speakers is why it is appropriate to use the terms male/man and female/woman in this paper.

the culture (Bock 1967). Thus, researchers can and should investigate menstrual seclusion behaviors in order to answer questions about the social life and ideology of ancient peoples.

Analysis of menstrual seclusion behavior can be especially useful in determining the expected and allowed social behavior of female gendered individuals. Societal expectations for each gender in a society have an enormous impact on the life of every individual in that society. In the western world, for example, studies have shown that current societal expectations of women often discourage professional careers (Einsenhart and Holland 1992) and promote spousal rape (Reid 1992). Similarly, studies of menstrual seclusion behaviors have resulted in deeper understanding of the social expectations placed on women and the cultural effects of these expectations (Morrow 2002; Hoskins 2002; Pederson 2002; Powers 1980; Kothari 2010; Agyekum 2002; Gottlieb 1982, Phipps 1980). The scholarship of menstrual seclusion practices in living communities shows that menstrual seclusion has the potential to provide valuable insight into social lives and cultural ideologies. However, the potential of studying menstrual seclusion practices has not been applied to ancient communities where insight into social lives and cultural ideologies is most needed due to the limitations of texts and archaeological material (Galloway 1997). This investigation into ancient Egyptian menstrual seclusion behavior will show how an investigation of such behavior can make valuable contributions to our understanding of ancient communities.

Ancient Egyptian cultural behavior surrounding menstruation is not well understood. Texts attesting to and discussing menstrual seclusion behaviors are rare and date only to the New Kingdom or later. Discussion on the topic of menstrual seclusion in ancient Egypt has consisted solely of an analysis of these few texts. Scholars

have assumed that the behaviors discussed in the texts would not be recognizable in the archaeological record. My investigation will show that archaeology can be a valuable source of information and should be utilized alongside textual analysis when discussing menstrual seclusion practices. In this paper, I will analyze the textual discussions of menstrual seclusion behavior in order to create a criterion for determining menstrual behavior in the archaeological record. Then, space syntax will be used to determine the levels of isolation and integration present in each of the rooms at New Kingdom site of Deir el-Medina. Finally, the results of both analyses will be compared to determine whether or not any of the spaces at Deir el-Medina could have been used for menstrual seclusion.

Chapter 1:

Egyptian Ideology and Practices Surrounding Menstruation

The Current Understanding of New Kingdom Egyptian Menstrual Practices

The use of menstruation (*ḥsmn*) as a reason for workplace absence by Deir el-Medina workmen in the 19th dynasty was the starting point of scholarly interest in Egyptian menstrual behavior. Throughout the 19th dynasty, workers' reasons for absence were recorded on a series of ostraca, broken pieces of pottery with writing on them, that are formally known as the absence lists. The *ḥsmn* of a worker's wife or daughter is recorded as a reason for absence infrequently and is only found on eight of the hundreds of excavated absence lists: BM EA 5634, MMA 14.6.217, Cairo CG 25782, Cairo CG 25784, Ashmolean Museum 0167, DeM 00898, DeM 00908, and Turin 57388. In these eight ostraca *ḥsmn* is not mentioned as regularly as we know menstruation to have occurred among the wives and daughters of these men. For the past 40 years scholars have attempted to explain this discrepancy within the context of Egyptian culture.

The first scholar to tackle the infrequency of *ḥsmn* in the absence lists was Janssen in 1980. Janssen's argument hinged on his interpretation of the *ḥsmn* not as menstruation, but as the purification ritual that women undergo after childbirth (Janssen 1980, pg. 142). Since childbirth is not nearly as frequent as menstruation, Janssen's interpretation of *ḥsmn* means that the frequency of *ḥsmn* in the absence lists is no longer a discrepancy.

Ostracon BM EA 5634 contradicts Janssen's argument. This ostracon records the *ḥsmn* of the same women occurring twice within a three-month period. Janssen does not think that this record contradicts his argument. He states that in this case the first *ḥsmn* is referring to post childbirth purification and the second *ḥsmn* to purification

after a miscarriage (Janssen 1980, pg. 142-3). While this explanation is biologically plausible, it is unlikely. Further, Egyptians had knowledge of contraceptives which could have allow for family planning and given women more control over pregnancy if widely used (Toivari-Viitala 2001, pg. 142). Finally, there is no attestation of ritual behavior following miscarriage. Therefore, Janssen's explanation is not seamless in regard to ostracon BM EA 5634.

Ostracon Cairo CG 25517 presents another challenge to Janssen's interpretation. In this text a man is absent due to the birth of his child. In this text the word *mst* is used to signify a birth not *ḥsmn*. This text attests to a conceptual separation of the practices surrounding childbirth and those surrounding *ḥsmn* invalidating Janssen's interpretation.

Almost 20 years later, Wilfong proposes a different explanation for the presence of *ḥsmn* in the absence records. He argues that the irregularity is due to the presence of certain conditions that must be fulfilled in order for a man to miss work due to *ḥsmn*. Wilfong proposes some conditional requirements that a woman must fulfill before a man can miss work: exceptional menstrual pain or absence from domestic duties due to a menstrual seclusion practice (Wilfong 1999, pg. 424). Underlying both of these conditions is the assumption that the men have to leave work in order to accomplish the daily domestic tasks that their wives or daughters are currently incapable of performing (Wilfong 1999, pg. 424). This argument raises the question of what domestic tasks were so necessary that they could not be left undone for a couple days? The grinding of grain, other aspects of food processing and production come to mind. Textual records show that workmen were provided with a certain amount of servant time as part of their payment from the state (Toivari-Viitala 2001, pg. 6; Meskell 1994, pg. 209). It is unclear

what these servants did, but it is possible that they could have alleviated the pressure when menstruating women were otherwise occupied. Further, what necessitated the workmen to label their absence as *ḥsmn* when on other occasions no reason is presented in the absence lists?

For Wilfong, the evidence of a menstrual seclusion practice and the menstrual synchronicity of the woman at Deir el-Medina answers these questions. If a majority of the woman are in-synch, a large workforce, perhaps including servants, would be absent from the village simultaneously. Further, the action of a large group of women retiring to a specific location for menstrual seclusion would easily be seen and become public knowledge. Therefore, there would be reason to identify the absence as *ḥsmn* in the absence lists. This interpretation requires textual evidence of both menstrual synchronicity and a menstrual seclusion practice.

Evidence of a menstrual seclusion practice is found in the text of O. OIM 13512 which Wilfong translates as follows:

> "1. Year 9, fourth month of the season of Inundation, day 13: The day when these eight women came out [to/from
> 2. the] place of women while they were menstruating. They got as far as the rear of the house which [...
> 3. ...] the three walls."
>
> Wilfong 1999, pg. 420

This text records the movement of eight menstruating women to/from the place of women. The inclusion in this text of a space specifically being used by menstruating women suggests that the women of Deir el-Medina, where this text was found, participated in a menstrual seclusion behavior. Further, it suggests that for this practice women were required to remove themselves from their general spaces and retire to the place of women. This removal of women from their regular activities for an uncertain

length of time is what leads Wilfong to argue that occasionally workmen were required to stay home and perform domestic activities (Wilfong 1999, pg. 424).

Wilfong finds evidence of menstrual synchronicity by plotting the mentions of *ḥsmn* in O. BM 5634 on a calendar and calculating out the women's previous and successive periods (Wilfong 1999, pg. 425-6). Through this analysis he finds evidence of two small groups of women who regularly began their periods near the same day implying that their menstrual cycles were synchronistic (Wilfong 1999, pg. 426). Supporting himself with biological research, Wilfong takes this evidence of proximal starting dates for women's menses as evidence of menstrual synchrony (Wilfong 1999, pg. 426-8). This supports the interpretation that a considerable number of women were out of commission simultaneously necessitating male assistance in completing domestic activities in the village.

Recent biological scholarship has argued against menstrual synchronicity as a biological function. Critical reading of the initial studies of this phenomenon have shown that the studies were full of statistical errors that led to unsound conclusions (Wilson 1987 and 1992; Strassmann 1990). The latest scholarship has been unable to find any evidence of a biological mechanism for menstrual synchronicity within western populations (Jarett 1984; Wilson et al. 1991; Trevathan et al 1993). There is so much variability inherent in the menstrual cycle that patterns created through the tracking of women's menstrual cycles regularly appear synchronistic, but no biological mechanism ensuring synchronicity has been identified (Strassmann 1997, pg. 128). Ethnographic research of natural fertility populations has reported similar results suggesting that the lack of synchronicity is natural and not an effect of modern contraceptives or pheromone blockers available in modern western populations (Strassmann 1997).

Therefore, the pattern Wilfong identifies among the women of Deir el-Medina is not menstrual synchronicity, but the result of coincidence. Thus, it is unlikely that the workmen were required to miss work due to a deficit of women in the village.

Nevertheless, O. OIM 13512 reports of the existence of the place of women that was used by Deir el-Medina's menstruating women. Some form of menstrual seclusion was practiced among the women of Deir el-Medina. Frandsen presents an interpretation of why menstrual seclusion was practiced at Deir el-Medina in his 2007 paper. He argues that menstrual seclusion was necessary at this site due to an Egyptian cosmological incompatibility between human fertility and mortuary rejuvenation (Frandsen 2007, pg. 105). Therefore, the women of Deir el-Medina were required to seclude themselves in order to not contaminate their fathers or husbands before the men left to work on the royal tombs (Frandsen 2007, pg. 99). Men would only miss work when their wives and daughters did not vacate the premises promptly (Frandsen 2007, pg. 99). Thus, Frandsen's interpretation allows for the irregularity of *ḥsmn* seen in the absence records.

Gottlieb's 1982 paper on menstrual seclusion among the Beng of the Ivory Coast shows that their practices operate similarly to Frandsen's proposed system for Egypt. The Beng follow strict behavioral protocols to maintain separation between human fertility and the fertility of the natural world (Gottlieb 1982, pg. 39-40). However, the Beng include both sex and menstruation in their conception of human fertility (Gottlieb 1982). Frandsen's argument does not provide evidence as to how other aspects of human fertility, aside from menstruation, were controlled to mitigate the possibility of human fertility polluting the mortuary sphere.

Further, artifacts and depictions that emphasize human fertility are often found in the mortuary context. The 5th dynasty tomb of Niankhknum and Khnumhotep at Saqqara includes a depiction of a servant woman suckling a child (Robins 1993, pg. 78). A hunting scene on the wall of the 18th dynasty tomb of Menna at Thebes is rife with verbal wordplay alluding to sex (Robins 1993, pg. 188). Figurines of naked women decorated with wigs and perfume cones to emphasize their sexual allure are often found in tombs (Robins 1999, pg. 63). Grain mummies as well as royal mummies, most notably Tutankhamun, were mummified with erect phalli (Cooney 2010, pg. 227; Desroches-Noblecourt 1963, pg. 232). Finally, the sex act itself is a major component of the main Egyptian mortuary myth of Osiris. In the story, Osiris' body is still sexual after death and is able to impregnate Isis with their son Horus (Cole 2013, pg. 202). Thus, Frandsen's argument that human fertility and mortuary rejuvenation are incompatible is untenable.

The most recent scholar to discuss menstrual behavior at Deir el-Medina is Toivari-Viitala. In her study of the lives of women at Deir el-Medina, Toivari-Viitala suggests that there were "normative or customary practices" surrounding critical life transitions for women, specifically menarche, circumcision, and childbirth, that included the giving of gifts or goods and feasting (Toivari-Viitala 2001, pg. 181). Toivari-Viitala supports this interpretation with a series of additional documentary ostraca from Deir el-Medina: O. DM 230, O. Brussels E 6311, O. OIC 9, and O. Turin 57356 (Toivari-Viitala 2001, pg. 164-5). These texts record the gathering of food and goods for of the *iw/ily m ḥsmn* (coming in *ḥsmn*) of a female family member (Toivari-Viitala 2001, pg. 165).

Toivari-Viitala does not associate this behavior directly to menstruation preferring a looser interpretation of *ḥsmn* that is inclusive of menstruation, childbirth or miscarriage purification, abortion, circumcision, or menarche depending on the status of the woman in question (Toivari-Viitala 2001, pg. 165-6). This interpretation allows Toivari-Viitala to pull in other texts where men are recorded participating in ritual feasting and gift giving due to the purification or childbirth of his wife or daughter: O. Michaelides 048, O. Nelson 13, O. IFAO 1069, and O. CGC 25521 (Toivari-Viitala 2001, pg. 166-167 and 179-181). Her analysis of these texts argues that there are regular customary practices concerning women's fertility that men were actively involved in.

Since *ḥsmn* was not the focus of her work, Toivari-Viitala does not delve deeply into how these different behaviors functioned and were integrated into female lives. In this paper, I will argue that there was a system of customary behavioral practices concerning fertility that operated similarly and delineated important transition points in women's lives. I will attempt to reconstruct the regular series of rituals undergone by women over the course of their lifetime. But first, the interpretation of *ḥsmn* must be discussed. As displayed in the preceding discussion of current scholarship, scholars disagree on the correct interpretation of the word *ḥsmn*. The interpretation of this word is integral in understanding the texts because it determines what cultural behavior is being discussed, so a definition must be decided upon.

Contextualization of *Ḥsmn*

For the past forty years scholars have disagreed on the appropriate interpretation of the Egyptian word *ḥsmn*. Frandsen and Wilfong argue that the correct interpretation of *ḥsmn* is menstruation due to its use in the medical corpus (Frandsen 2007; Wilfong 1999). Janssen thinks that post-childbirth purification is more appropriate (Janssen 1980). Toivari-Viitala prefers a looser interpretation of *ḥsmn* that is inclusive of a variety of gynecological events including menstruation, childbirth or miscarriage purification, abortion, circumcision, or menarche (Toivari-Viitala 2001, pg. 165-66). It is possible that all interpretations are correct. The Egyptians commonly used words in a polysemic way where one word is used in reference to a variety of interrelated activities, events, or things (Borghouts 2000; Jørgensen 2015). Perhaps *ḥsmn* is another case of polysemy in the Egyptian language and should be understood as a comprehensive term for many behaviors relating to female fertility, as Toivari-Viitala argues. This hypothesis will be tested by analyzing the context surrounding the use of the word *ḥsmn* in Egyptian texts in order to determine its contextually enforced meaning.

There are many cases of polysemy in Egyptian vocabulary as well as in medical terminology. The two polysemic words that will be discussed here are *mdw (.t)* and *pḥ*. The Middle Egyptian word *mdw (.t*) can be translated as word, speech, recitation, matter, or affair (Borghouts 2000, pg. 8). Similarly, *pḥ* is often translated as anus, but does not seem to have been that anatomically specific (Jørgensen 2015). Instead it seems that *pḥ* was a more general reference to something situated at the end or bottom of the body (Jørgensen 2015). Jørgensen proposes that *pḥ* may have been used to refer to a vagina as well as an anus (Jørgensen 2015). These two examples show that there is a

precedent for the use of polysemic words in the Egyptian language, even in medical terminology.

The conflation of multiple parts of the genital region within the word *pḥ* suggests that Egyptians may not have separated body parts or biological systems in the same way the western world does currently. Paul John Frandsen argues that the Egyptians did not separate the different events of female fertility (Frandsen 2007, pg. 85-86). According to Frandsen, Egyptians believed that the blood shed in menstruation was the same as the blood that nourished the embryo during pregnancy thus conflating the two events of menstruation and miscarriage (Frandsen 2007, pg. 86). Frandsen supports his claim with a discussion of the Hippocratic corpus where women's gynecological functions are often conflated (Frandsen 2007, pg. 85). His application of a Greek medical text to the Egyptian period should be questioned. However, if gynecological functions were conceptually united to the Egyptians, there should be a single term that refers to all of the events. If *ḥsmn* is this term, the meanings enforced by its context should be variable.

In the absence records, the context does not enforce a specific interpretation of *ḥsmn*. The only information recorded in the absence records is the date, the name of the worker, *ḥsmn*, and occasionally the name of the wife or daughter *ḥsmn*-ing. However, in this type of text, there is no reason for recording more specific information. The absence records were meant to serve as quick records of workmen's activities. Nonetheless, the absence records do confirm that *ḥsmn* was something that happened to women, but they do not aid in determining possible interpretations of *ḥsmn*.

Contemporary with the absence records, are a series of ostraca from Ramesside Deir el-Medina that discuss the gathering of ritual provisions and gifts for *ḥsmn*-ing women:

O. DeM 230: framed by list of festival provisions
"The coming in *ḥsmn* of his daughter Nofru" (*p3 ỉy m ḥsmn n s3t=f nfrw*)
Frandsen 2007, pg. 95
Toivari-Viitala 2001, pg. 164

O. OIM 19208: man bringing something the woman
"because she came *ḥsmn*-ing" (*m-dr ỉw=s m ḥsmn*)
Toivari-Viitala 2001, pg. 165

O. Turin 57356: unknown context
"the one who comes in *ḥsmn*" (*rdyt n=f m p3 ỉỉy m ḥsmn n*)
Toivari-Viitala 2001, pg. 165

O. Brussels E 6311: coppersmith fetches his god because the wife of his son had
"come in *ḥsmn*/*ḥsm*-ing" (*ỉỉy m ḥsmn*)
Toivari-Viitala 2001, pg. 165
Frandsen 2007, pg. 96

O. Berlin P 10631: gifts given to 1nw.t-wa.ti in association with the
"the coming of *ḥsmn* of PN" (*rdyt n.s p3 ỉw ḥsmn n* PN)
David 2010, pg. 174

Here *ḥsmn* is associated with the verb to come, one time as the subject of the verb (O. Berlin P 10631) and four times as the action that is coming upon a person. This contextual use of *ḥsmn* suggests that it was something that came upon the woman uncontrollably. This still does not necessitate a particular interpretation of *ḥsmn* because many different gynecological events cannot be controlled. However, similar to the absence records, it is not surprising that these texts do not require a specific interpretation because *ḥsmn* is not the focus of the text. In O. OIM 19208 and O. Brussels E 6311, the man and his activities are the subject of the text. While in O. Berlin P 10631 and O. DeM 230, the list of goods is the focus. Thus, these texts do not provide possible interpretations of *ḥsmn* and there is still ambiguity surrounding its meaning.

It is in literature that *ḥsmn* begins to be definable by its context. The only occurrence of *ḥsmn* in literature is found in the Demotic story of Setne. In Setne I, Ihweret marks the onset of her pregnancy by recalling that:

> "He slept with me that very night. He found me [very pleasing and he slept] with me again and again. Each one of us loved the other. My *ḥsmn* came, and I did not *ḥsmn*"
>
> Simpson 2003, pg. 455

Soon after, Ihweret gives birth to a son. In Setne I, there is a clear progression of gynecological events: Ihweret has sex with a man, her *ḥsmn* does not occur as expected, she gives birth to a child. Menstruation is the only gynecological event that halts due to pregnancy. Therefore, in this context, *ḥsmn* must refer to Ihweret's menstruation. However, in this text *ḥsmn* conflates the actual event of menstruation, a noun, with the act of bleeding, a verb. In the phrase "my *ḥsmn* came," *ḥsmn* is used as a noun to refer to the event of menstruation, the period of time wherein a woman expects to begin bleeding. In the second phrase "I did not *ḥsmn*," *ḥsmn* is used as a verb referring to the act of blood leaving the vagina. However, the English word menstruation can also conflate these two meanings. It would not be inaccurate to write that “my menstruation came, and I did not menstruate” where the same stem word is used with an ending change to delineate between the noun and the verb. Thus, in this context, the text requires the interpretation of *ḥsmn* as menstruation.

The medical corpus is the other type of text where the context requires the interpretation of *ḥsmn* as menstruation.

Papyrus Ebers 832:

> "If you examine a woman having pain in one side of her vulva, you should say concerning it: this means that her *ḥsmn* has lost its regularity."
>
> Frandsen 2007, pg. 82-83

Papyrus Edwin Smith:

> "a woman having pain in her stomach, while *ḥsmn* does not come for her.... and you find (...) then you shall say concerning it: this is a case of obstruction of the blood in her uterus."
>
> Frandsen 2007, pg. 82

Papyrus Ebers 833:

> "If you examine a woman who has spent many years while *ḥsmn* does not come from her, she habitually spews up something like water, while her stomach being like that which is under fire, but it stops when she has spewed up, then you shall say concerning it: this is an accumulation of blood in her uterus because she is bewitched."
>
> Frandsen 2007, pg. 82

Here the context directly associates *ḥsmn* with the stomach, vulva, and uterus showing that it is used to reference a part of the female reproductive system. Both papyrus Ebers 833 and papyrus Edwin Smith make a clear connection between *ḥsmn* and blood and specifically blood's movement out of the body. They state that a lack of *ḥsmn* is due to an accumulation or obstruction of blood in the uterus. Papyrus Ebers 832 adds that *ḥsmn* should occur with regularity. The only visible, bloody, regularly occurring, female reproductive process is menstruation. Therefore, the context surrounding *ḥsmn* in the medical texts forces its interpretation as menstruation.

The context surrounding the use of *ḥsmn* in Egyptian texts does not support the hypothesis that *ḥsmn* is a polysemic word. All of the contexts that force a meaning of *ḥsmn* require the interpretation menstruation. Any other interpretation would render the texts incomprehensible. In documentary texts *ḥsmn* is used vaguely, but the length and style of this type of text makes an enforced interpretation unlikely regardless of the word under consideration. Further, the focus of these texts is the recording of men's actions and the gifts themselves, not *ḥsmn*. This makes a contextual enforced meaning unlikely. However, in texts where the focus is on *ḥsmn*, i.e. the literature and medical texts, context necessitates the interpretation of *ḥsmn* as menstruation. Thus, gynecological functions were not conceptually united in the Egyptians perspective and, for the remainder of this study, *ḥsmn* will be interpreted as referring solely to menstruation.

Situating *Ḥsmn* Within A Larger System of Behavior

Having concluded that *ḥsmn* refers to menstruation, the texts will now be analyzed as to what social behavior they suggest accompanied menstruation in New Kingdom Egypt. As discussed earlier, Toivari-Viitala argues that "normative or customary practices" were regularly performed by the inhabitants of Deir el-Medina centered around female life transitions like menarche or childbirth (Toivari-Viitala 2001, pg. 181). These transitions were marked by actions of feasting or gift-giving (Toivari-Viitala 2001, pg. 181). However, Toivari-Viitala crafts this argument around an inclusive interpretation of *ḥsmn* (Toivari-Viitala 2001, pg. 165-6), but it has been shown that menstruation is the only contextually accurate interpretation. Nevertheless, there is evidence of ritual behavior surrounding other important female life transitions. I proposed that all of these attested behaviors were part of a larger system of behaviors celebrated throughout a woman's life. Taken as a united system, an analysis of the behaviors will aid us in understanding the less documented behaviors, the socialization process of Egyptian women, and Egyptian culture as a whole.

The celebration of significant events in women's reproductive growth is well attested in both the modern and pre-modern world (Gottlieb 1982, Powers 1980, Morrow 2002, Buckley 1982, Sered 1994, Sered 1993, Hayami 1998). Understanding which biological events are celebrated and which are not can inform researchers of the cultural valuation or conception of women and fertility within a culture. In my experience of white secular America, the important and publically marked events are marriage and childbirth. Both of these events often result in the gathering of family members and gift-giving. This choice of behaviors to celebrate reflect the culture's value in family and children. Meanwhile, menarche, menstruation, and loss of virginity are

never publically acknowledged. This behavior reflects the unease in discussing the genital region's health or sexual activity publically. Further, the split between what is celebrated and what is not reflects the culture's strict separation of public and private life. Marriage and childbirth require restructuring of an individual's social life while menarche, menstruation, and sex do not change an individual's social life. Looking at Egyptian behavior as part of a larger system in this same way can affirm current understanding of Egyptian social life as well as suggest new and important periods of change in women's social lives.

The demotic story of Setne I suggests that pregnancy could have been occasioned with gift-giving suggesting that pregnancy was socially occasioned like *ḥsmn* by the Egyptians.

> **Setne I**: after Ihweret becomes pregnant
> "Pharaoh caused that many things be taken [from the treasury of Pharaoh]. He caused that they bring to me a gift of silver, gold, and royal byssus, all of which was exceedingly beautiful."
> Simpson 2003, pg. 455

Here, Pharaoh provides Ihweret with a substantial number of rich goods in celebration of her pregnancy. While this text is not substantiated by documentary evidence, it does suggest that similar behaviors were practiced surrounding pregnancy and *ḥsmn* implying that they might be both be part of a system of behavior.

There is more evidence of ritual behavior surrounding the process of childbirth. The textual and pictorial evidence suggest that childbirth was publically occasioned with both ritual purification and seclusion behavior. There are a few pictorial ostraca and wall paintings from Deir el-Medina that depict nursing women seated in plant-covered pavilions: O. BM EA 8506, Louvre E 25333, O. IFAO Inv. 3787, the *lit clos* of house SE I. These depictions have been interpreted as structures where women would retire post

childbirth for a purification ritual (Graves-Brown 2010, pg. 64-5; Toivari-Viitala 2001, pg. 176). It is thought that these structures were temporary and erected on the roof, inside, or in the yard of the woman's house (Toivari-Viiatala 2001, pg. 175). This interpretation is supported by a line in *The Birth of the Royal Children* where:

> **P. Westcar 11.18-19**:
> "Rudjedet purified (*w'b*) herself in a cleansing of 14 days"
> Blackman 1988, p. 15

The text is not specific as to what takes place during this purification period and the depictions do not add to our understanding. However, they do suggest a regularized ritual behavior took place in a distinctive location soon after childbirth. Further, in O. Cairo CG 25517, a man is listed as absent for the birth of his child. This suggests that men were at least occasionally involved either in the childbirth process or this post childbirth purification/seclusion behavior.

Recently, another text has been added to the discussion of female purification suggesting that it may have surrounded menstruation as well as childbirth. This text is a letter dating to the Middle Kingdom that was found in Lahun. The related part of the letter reads as such:

> **P. UC 32203**: letter from the Mistress of the House, Ir
> "because this humble servant had gone into the temple on day 20 for monthly purification"
> Graves-Brown 2010, pg. 55
> Quirke 2007, pg. 256

It was suggested that this text was evidence for the regular monthly purification of women and that it is likely related to menstruation (Quirke 2007, pg. 256). However, a close inspection of the text reveals that the humble servant referred to in the passage is male. Men do not menstruate and, therefore, this text should no longer be included in the discussion of female gynecological behaviors.

Speaking of menstruation, let us return to the series of documentary ostraca from Deir el-Medina that discuss the gathering of gifts and food for a *ḥsmn*-ing woman that were represented in full in the previous section (see page 14). From these texts it is clear that men were involved in this feasting and gifting behavior. To the Egyptians men were an integral part of fertility (Roth, 2000), so male involvement in these events is not unexpected. However, it seems unlikely that the behaviors occurring in these texts would have occurred for every instance of menstruation. This would have been an unsustainable drain on a family's resources. In addition, it is not recorded in the textual record often enough. If these texts are not referring to regular menstruation, but the word *ḥsmn* is being used, what type of menstruation is being celebrated?

Perhaps menarche is the occasion of menstruation being discussed. Menarche, the first occurrence of menstruation a woman experiences, is one the most distinct menstrual events as well as one that signifies a change in social status for women of many cultures. In O. DeM 230 *ḥsmn* comes to a man's daughter while in the absence records *ḥsmn* is regularly attributed to workmen's daughters. Perhaps, men were culturally required to participate in rituals surrounding the menarche of their daughters.

However, in O. Brussels E 6311 *ḥsmn* occurs to the wife of the man's son and in the absence records *ḥsmn* is regularly attributed to the wife of the workman. It is unlikely that the wives of men would have been young enough to experience menarche after marriage. Further, absence record O. BM EA 5634 records *ḥsmn* occurring for the same woman twice; menarche only occurs once. Thus, while the event being celebrating could have been menarche in the case of the daughters, *ḥsmn* did not always refer to this

type of menstruation. Perhaps the Egyptians did not separate menarche from other occasions of menstruation as many other cultures do historically.

If not menarche, what possible occasions of menstruation are receiving irregular ritual behavior? Given male presence at these events as well as the male connection to fertility it seems likely that this behavior was tied to fertility. The medical texts quoted in the previous sections (see pages 15-6) discuss how to identify menstrual irregularity. This implies a knowledge of the importance of menstrual regularity in ensuring fertility and a fear of a loss of regularity. Therefore, instead of celebrating menarche, it is possible that the behavior surrounding *ḥsmn* was ritual behavior focused on ensuring and promoting fertility through ritual behavior.

However, this evidence does not exclude the possibility of regular menstrual behavior or seclusion that did not involve men. All of the texts under analysis in this paper were made by men for the use of other men. Therefore, activities that do not involve men are unlikely to have been recorded. Further, there is evidence of behavior not involving men. O. OIM 13512 discusses the movement of eight menstruating women to the place of women (see page 7 for full text). This ostracon shows women engaging in some menstrual behavior without men. However, due to the male bias in the textual record, we must look beyond the textual realm for a full understanding of this behavior.

Marriage does not seem to have been celebrated or occasioned to the same extent as the life transitions discussed above. There is little evidence for a formal marriage ceremony in Egypt (McDowell 2001, pg. 32; Robins 1993, pg. 56). The sole significant act seems to have been cohabitation with the entry of one person, usually the woman, into the household of the other (Robins 1993, pg. 56). The only behavior that is suggested as marking this event is some form of payment or gift giving to one of the

spouse's parents. One text suggests the payment of a brideprice to the groom's family (McDowell 2001, pg. 47-8). A series of additional texts from Deir el-Medina discuss the giving of gifts to a woman or a woman's parents before marriage (Toivari-Viitala 2001, 62-67). This behavior echoes the gifting behavior suggested above but is not attested regularly enough in texts discussing marriage for it to have been a common practice and should not been seen as part of this system of behaviors.

There are some additional documentary texts from Deir el-Medina that discuss feasting and gift-giving for women but are not tied to a specific occasion within the text.

> **O. Michaelides 48**: list of goods intended for feasts
> "the purification (*sw'b)* of his daught[er]" (*p3 sw'b n t3y=f šr[ỉt]*)
> Toivari-Viitala 2001, pg. 166

> **O. CGC 25521**: work journal entry stating that a man
> "was [in] his feast [because of?] his daughter" (*p3y=f ḥb* [*n*] *t3y=f šrỉt*)
> Toivari-Viitala 2001, pg. 167

O. Michaelides 48 discusses purification which has only been tied to childbirth. Thus, this text may suggest that feasting behavior was also a way to celebrate birth. O. CGC 25521 seems to be related to the behaviors surrounding *ḥsmn* because those are the only texts where references are made to men's daughters. Nevertheless, these texts appear to be vaguer recordings of the same behaviors mentioned in the texts above.

Taken as a whole, the system of behaviors displayed here suggests that Egyptian culture privileged and placed importance in fertility and the production of children rather than the social structuring and networking produced by marriage. This fits well with what scholars currently understand about Egyptian social customs. Divorce was not unusual and even the proper choice under certain circumstances (Robins 1993, pg. 62-4). Egyptian medical texts about women focus on the birthing process, infant health, and the production of milk (Wilfong 2002, pg. 73). Further, it was important that on

monuments and stelae children acknowledge the role both of their parents had in their upbringing (Robins 1993, pg. 66-7 and 163). Finally, the creation of heirs and people to support you in old age was the end goal of marriage (Wilfong 2007, pg. 214). The fact that this system of behavior works well within current understanding of other aspects of women's social lives supported by other texts than those referenced here solidifies the conclusions found here. Namely that there were regular gift-giving, feasting, purification, and seclusion behaviors centered on female fertility that should be considered as components of a larger system of behavior that interacts with and influences each of its separate events and reflects Egyptian cultural perspective.

Indicators of Menstrual Behavior Archaeologically

In order to learn more about menstrual behaviors in New Kingdom Egypt, scholars must move beyond the textual resources. Texts are limited in their scope, inclusion, and representation in a way that archaeology is not. Archaeological investigation will allow scholars to understand how the menstrual behavior was incorporated into Egyptian life and how it was practiced across social levels. In order for the practice to be visible in the archaeological record it must have been repeated regularly and within a specialized space. Here O. OIM 13512 and Demotic housing contracts will show that menstrual seclusion was a regularized practice that required the use of a specialized place.

The only evidence from the New Kingdom itself for the use of a specialized location for menstrual seclusion practice is O. OIM 13512. This text describes eight menstruating women moving toward the/a place of women (Wilfong 1999, pg. 420).

> "1. Year 9, fourth month of the season of Inundation, day 13: The day when these eight women came out [to/from
> 2. the] place of women while they were menstruating. They got as far as the rear of the house which [...
> 3. ...] the three walls."
>
> Wilfong 1999, pg. 420

The mention of “the/a place of woman” suggests that there was some sort of spatial location associated with menstruating women that was located within or outside of the city of Deir el-Medina. The text itself does not record what type of space was being used nor if it was substantive enough to be preserved in the archaeological record. The determiner “the” or “a” is worn away on the ostracon and cannot be used as an indication as to how substantive the space was. Regardless, the use of either determiner does not necessarily imply a more substantial space (Wilfong, personal communication).

Grammatically, the space being indicated could be nothing more than a pile of stones on the ground. The only indication of the size of the space is the mentioning of eight women leaving it. This implies that the space must have been large enough to accommodate at least that many women.

Wilfong argues that the houses at Deir el-Medina were too small for menstrual seclusion and that the "place of women" was located outside the walled city (Wilfong 1999, pg. 429). Koltsida agrees, stating that “the whole argument (of menstrual seclusion) is implausible anyway, given the very limited space available with in the house” (Koltsida 2007, pg. 127). This interpretation is supported by the text of O. OIM 13512. The ostracon contains the phrase "the three walls" at the end of the text. This phrase implies movement of the women outside the city (Wilfong 1999, pg. 428-30). Many texts from Deir el-Medina attest to the existence of a number of "walls" enclosing the settlement. Such structures have never been identified archaeologically. It has been argued that these "walls" were symbolic rather than physical in nature and represented a series of guarded spaces intended to protect/confine the workmen (Wilfong 1999, McDowell 2001, Kemp 2012, pg. 159-60). Therefore, Wilfong suggests that the "place of women" is located outside of the walled settlement of Deir el-Medina within this system of guarded space (Wilfong 1999, pg. 430).

The strongest piece of written evidence suggesting where women practiced menstrual behaviors is a series of housing contracts dating to the Demotic period:

P. Louvre 2424

> “And your women *ḥsmn* in the *ḫrḫr.t* in accordance with their division/share”
>
> Johnson 2001, pg. 71
> Zauzich 1968
> Davis, personal communication

P. Louvre 2443

"You may go up the stairs to your half of the house and you may reside in the forehall in accordance with your share and you may *ḥsmn* in the *ḫlyl.t* in accordance with your half"

Johnson 2001, pg. 71
Zauzich 1968
Davis, personal communication

P. Louvre 2431

"You may go out from the middle door and up the stairs to your room and you may occupy the forehall in accordance with your half and your woman may *ḥsmn* in the *ḫrr.t* in accordance with the share"

Johnson 2001, pg. 71
Davis, personal communication

P. BM 10446

"And your half-share of the forehall, your half-share of the *ḫlyl3.t* in it"

Andrews 1990, pg. 66

These four texts discuss the existence of a specialized room called the *ḫrḫr.t* within the household that was to be used only by menstruating women. This implies a strict gendered use of space that would require this room to be set apart from the normal movement patterns of the house. The word *ḫrḫr.t* literally means "under the under part" suggesting that this space was located under another. Thus, it has often been interpreted as a space beneath the stairs (Wilfong 1999, pg. 429; McDowell 2001, pg. 35; Wilfong 2002, pg. 77). Additionally, P. Louvre 2443, P. Louvre 2431, and P. BM 10446 all suggest that this space was located near the front of the house specifically near the forehall. The phrasing "in accordance with the share" in all the documents suggests that this space was shared by the female members of different households within the structure and is commonly used when discussing the forehall and the forecourts as well. Thus, these texts suggest that the menstrual seclusion space was distinctly isolated by

gender while still being located near to or under communal spaces that were shared by each of the families living within the house.

It is unlikely that this Demotic practice was brought to Egypt through the Greek, Assyrian, or Nubian leadership that controlled Egypt during the approximately 700 years between these texts and New Kingdom Egypt. To begin with, there is no evidence of a menstrual seclusion practice among the ancient Greeks. While the Greeks did seclude women within the household, their type of seclusion resulted in the creation of male only space instead of female only spaces which is different from what is attested in the Egyptian texts (Nevett 1994, pg. 107). The Assyrians were not present in Egypt long enough to have had a lasting influence on daily life. The Nubians were interested in assimilating to and mimicking Egyptian life instead of adding new cultural behavior, so it is unlikely that they introduced a practice of menstrual seclusion. Further, there is little evidence for change in any sphere of Egyptian domestic life during the political control of foreign powers. Therefore, while the Demotic evidence is temporally distant from the New Kingdom, it likely represents indigenous Egyptian behaviors.

The idea that the houses of Deir el-Medina were too small for dedicated menstrual seclusion practices promoted by Wilfong and Koltsida should be questioned. There are many ways in which gendered practices can take place within ungendered locations (Meskell 1998; Belaunde 2001; Ferro-Luzzi, 1974). The Demotic housing contracts attest to designated spaces located within houses and used by menstruating women and, although temporally distant from the New Kingdom, the Demotic behavior likely reflects indigenous Egyptian practices. Due to the break in O. OIM 13512 before the mention of the three walls, the domestic spaces at Deir el-Medina should be tested

for the possibility of seclusion behavior before attention is turned to spaces exterior of the village.

The Demotic housing documents provide a hypothesis for how menstrual seclusion spaces operated within the household. The texts relate two main criteria for menstrual seclusion spaces: that they were isolated enough to have been used by a single gender and located near or under communal spaces of the house. I will use space syntax to test Deir el-Medina's domestic architecture for the presence of such spaces in order to determine whether or not menstrual seclusion behaviors were possible within the houses.

Chapter 2:

Case Study and Methodology

Menstruation and Archaeology

While menstrual seclusion behavior is well attested in the ethnographic and textual record, scholars have rarely attempted to identify the behavior within the archaeological record. Text and depictions can provide insight on the larger cultural perceptions, but only archaeology tells us how the practice was implemented and integrated into the daily lives of individuals. Patricia Galloway discusses the need to correct this inconstancy of research in her seminal paper titled "Where Have All the Menstrual Huts Gone?" (Galloway 1997). Galloway argues that since menstrual practices make up a substantial portion of women's lives, they have a large effect on social organization and thus should be a regular topic of investigation (Galloway 1997, pg. 47). Many aspects of women's lives, from involvement in their religion to their social power and agency must be understood in relation to their culture's menstrual seclusion behavior. Unfortunately, since Galloway's paper was presented and published, only three archaeological investigations have been published with the goal of identifying menstrual spaces archaeologically: Claassen 2011 in Kentucky, Faust and Katz 2017 in Israel, and Bengtson 2017 in Missouri.

There is a prevailing idea in scholarship that menstrual spaces were not substantial enough to be identified in the archaeological record. Galloway suggests that use of the word 'hut' is reinforcing the idea that these places are temporary and unidentifiable (Galloway 1997, pg. 48). A simple google search can bring up images contrary to this scholarly idea. The recent discussion of a woman dying in a menstrual hut in Nepal provides photos of substantial stone and mudbrick menstrual spaces (Pokharel 2017; Bowman 2018). If archaeologists can identify postholes from the early Neolithic, we can find evidence of menstrual seclusion in the archaeological record.

The only study to have successfully identified a space that was likely used to house menstruating individuals is Faust and Katz' 2017 study of house 101 at the Iron Age site of Tel 'Eton in Israel. Faust and Katz meld archaeological evidence together with textual information to argue that room J in building 101 was used to house impure, perhaps menstruating, individuals (Faust and Katz 2017). An analysis of biblical texts shows that women were seen as polluting when menstruating and must have been removed from daily life (Faust and Katz 2017, pg. 2). In order to find this behavior in the archaeological record, Faust and Katz employ the methodology of space syntax to analyze building 101's architecture for evidence of intentional isolation (Faust and Katz 2017, pg. 9-10). This methodology allowed them to uncover how the domestic structure itself was built to allow its inhabitants to follow these religious restrictions (Faust and Katz 2017).

Faust and Katz' space syntax analysis shows that the four-room house provides ample opportunity to regulate contact between individuals because one does not have to walk through rooms to get to other spaces (Faust and Katz 2017, pg. 10-11). Thus, architecturally the house is highly capable of seclusion. They isolate room J as an area of particular interest because no ceramics were found here while ample pottery was discovered in all of the other rooms (Faust and Katz 2017, pg. 9). Leviticus 6:21, 11:33 and 15:12 state that ceramics cannot be purified but have to be broken (Faust and Katz 2017, pg. 13). Therefore, it would be economically disadvantageous to provide impure individuals with ceramics (Faust and Katz 2017, pg. 13). Thus, the lack of pottery in room J allows them to move beyond a discussion of the capability of seclusion in this architectural structure and suggest that room J specifically was used to isolate individuals. Further, analysis of movement lines and viewsheds within the house

showed that the location of doorways within the house were purposefully arranged to keep individual's movements and eyesight away from room J (Faust and Katz 2017, pg. 15-16). From this analysis of the building's architecture and associated finds, Faust and Katz were able to determine that room J was architecturally constructed to best seclude impure individuals from the sight and activities of other members of the household.

As Faust and Katz' work shows the ethnographic or textual record is required in order to identify menstrual seclusion against all other possibilities of space use. Their architectural analysis merely shows that room J distinctly facilitated the seclusion of individuals. In order to tie their architectural understanding to menstrual seclusion behavior, they must refer to biblical texts. These texts show that while men can be seen as impure in specific circumstances, impurity was more often associated with women especially menstruating women (Faust and Katz 2017, pg. 1). Therefore, while room J could have been used to seclude others, it was likely used most by menstruating women. Because of this difficulty in determining space use, Galloway says that archaeologists should begin to look for menstrual spaces by analyzing the ethnographic or textual record for evidence of how menstrual behaviors were manifested (Galloway 1997, pg. 54-9). This allows the scholar to develop a hypothesis as to what these spaces would look like in the archaeological record (Galloway 1997, pg. 54-9). This necessity in scholarship is why chapter 1 was focused on analyzing the textual material and determining a hypothesis as to how menstrual seclusion was manifested in New Kingdom Egypt. This hypothesis will be applied to the findings of my architectural analysis in order to support or dissuade the use of particular spaces for menstrual seclusion.

Menstrual behaviors are an important part of women's lives and it is only through continued scholarship and investigation into menstrual spaces that scholars can understand how these practices impacted daily life. These spaces are identifiable archaeologically and archaeological investigations into this practice will add to our current understandings of women's social lives. As we have seen, the textual analysis of Egyptian menstrual behaviors results in a vague and broad understanding of behavior. Archaeological analysis can and should be used to deepen our understanding.

The Case Study: New Kingdom Deir el-Medina

Deir el-Medina is a New Kingdom domestic site that housed a specialized artisan community located in the hills on the west bank of Thebes. The site consists of a walled village, two cemeteries, and a series of temples. It was first built during the reign of 18th dynasty king Thutmose I (1506-1493 BCE) and was inhabited until the reign of Rameses XI when the community moved to Medinet Habu (Toivari-Viitala 2001, pg. 3). There was a break in occupation during the reign of 19th dynasty king Akhenaten when the capital was moved to Amarna and a site with the same specialized purpose was erected there (Toivari-Viitala 2001, pg. 4). The inhabitants of Deir el-Medina were employed by the Egyptian state in the construction of royal tombs in the surrounding valleys. Due to their profession, the inhabitants of Deir el-Medina were more educated and literate than the typical Egyptian citizen. Therefore, their lives are not representative of the typical Egyptian experience. However, because of the level of education of the site's inhabitants, Deir el-Medina is the best documented New Kingdom Egyptian site and allows scholars a look into daily life that is unmatched in its detail and scope.

Because of the wealth of documentary evidence found at Deir el-Medina, the site has become the focus of any investigation of daily life in ancient Egypt. During excavation at Deir el-Medina, a massive number of ostraca and papyri were uncovered allowing for an unprecedented look into Egyptian daily life. The majority of these textual documents were recovered from rubbish heaps just south of the site, but they were also found in tombs, domestic contexts, and in the burial valleys (Gobeil 2015). Many scholars have analyzed the texts found at Deir el-Medina, but Jaroslav Černý's lifelong contribution is the most extensive. The majority of the texts discussed in the previous chapter were discovered at Deir el-Medina and document the lives of its inhabitants.

When looking for a specific practice, such as menstrual seclusion, at a site, it is important not to assume temporal or spatial similarity across sites. Thus, Deir el-Medina was chosen as this project's case study because the archaeological remains are temporally and spatially related to the textual attestation of the practice.

The walled village was excavated in full by French archaeologist Bernard Bruyère in 1935. The northern section village had been previously explored by archaeologists Ernesto Schiaparelli 1905, 1906, and 1909 and Georg Möller in 1913. This section was reexamined by Bruyère and included in his 1939 site publication. The site was excavated down to its Ramesside period (19th-20th dynasty). Prior occupation dating to the 18th dynasty is well attested in the textual record and on bricks stamped with the cartouche of 18th dynasty kings, but the settlement of the village and the domestic architecture of that period is not well understood archaeologically.

Bruyère cleared the village in a single season due to anxiety over looting activity at the site (Bruyère 1939, pg. 239). This rapid excavation as well as common excavation practices of the 1930s mean that a large amount of contextual information was not recorded. A scholar of his time, Bruyère was interested in recording and discussing engraved, painted, or written objects. However, even with these objects, Bruyère did not regularly record the room in which an object was recovered. Outside of these unique artifacts, Bruyère's recording of finds is limited. He notes the presence of grounded features within rooms such as columns, mortars, silos, or ovens because he uses these objects to determine room use. Small finds are ignored unless a room is otherwise devoid of finds, in which case he usually records the complete vessels discovered. The information most reliably recorded and available for legacy research is the architecture of the houses at Deir el-Medina. Therefore, my analysis will focus on what can be

understood about Egyptian menstrual seclusion behavior through an analysis of architectural structure of the houses at Deir el-Medina.

Standard Domestic Architecture at Deir el-Medina

During the Ramesside period, the walled village at Deir el-Medina consisted of 68 houses that were generally arranged around a street that ran through the middle of the settlement (fig 1). The settlement expanded beyond its original 18th dynasty wall. During the Ramesside period the wall was enlarged to include the current 68 excavated houses. The houses range from 40 to 120 m^2 in size with an average size of 72 m^2 (Meskell 1998, pg. 217-8).

The houses at Deir el-Medina are often described as following a standardized tripartite house plan consisting of 3-4 rooms (Koltsida 2007, pg. 121; Meskell 1998). The first room is rectangular in shape with an opening onto the street with a built platform structure called the *lit clos*. Bruyère labeled this space the *lit clos* room (Bruyère 1939, pg. 51). Next there is an almost square middle room that is identifiable by the presence of a central column, couch, and false door. Bruyère labeled this space the divan room (Bruyère 1939, pg. 51). Finally, there is a rectangular rear part of the house that is usually subdivided into two sections. One half is identified as a kitchen due to the presence of cooking instruments while the other half usually has a

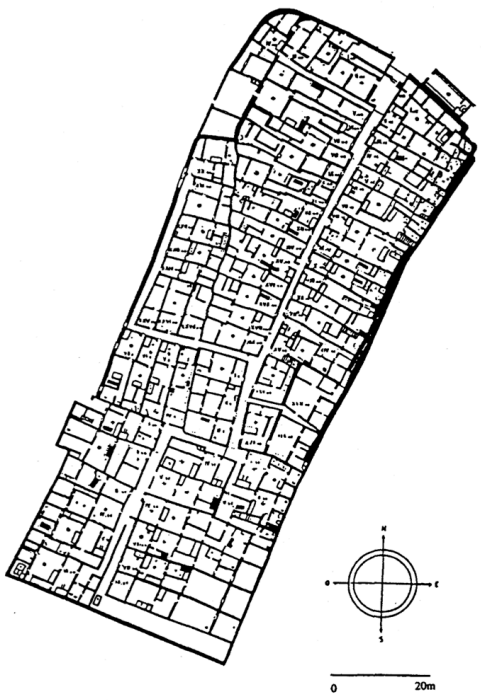

Figure 1: Plan of the Enclosed Village at Deir el-Medina (Meskell 1998)

series of benches along the walls and is seen as a bedroom (Koltsida 2007, pg. 124-5). This is the basic tripartite floorplan of the houses at Deir el-Medina.

Deir el-Medina's floorplan is often discussed alongside the workman's village at Amarna and is based more on the architectural floorplan found there than the floorplan seen at Deir el-Medina. The houses at Amarna are regular in floorplan and fit the description above much better than the houses at Deir el-Medina (fig 2). Koltsida acknowledges this bias in her paper, but still applies the basic floorplan for the houses at Deir el-Medina stating that those houses are "slightly less regular due to individual alterations over longer period of time" (Koltsida 2007, pg. 121).

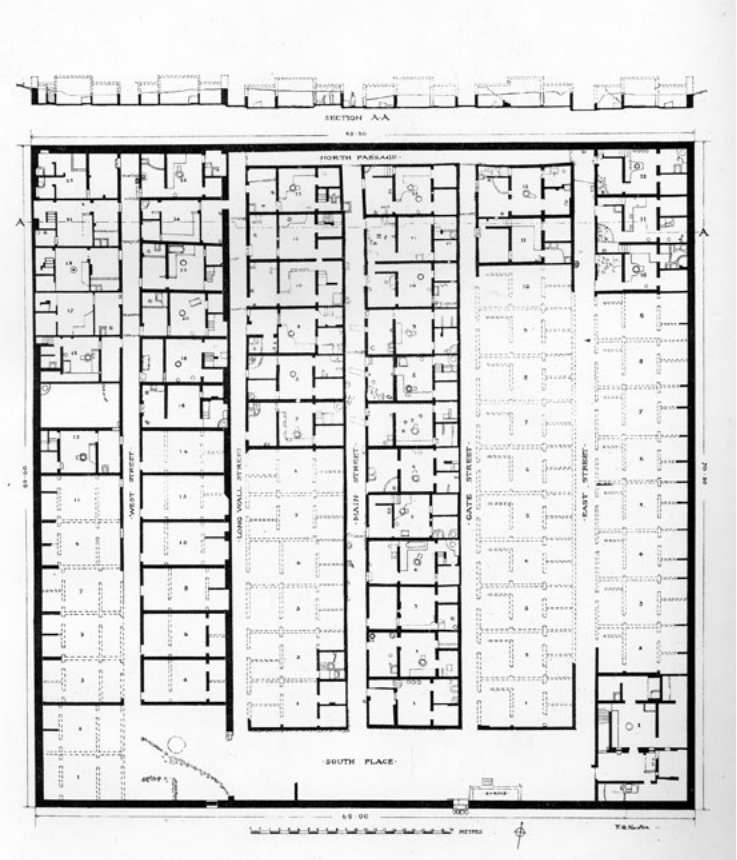

Figure 2: Plan of the Workmen's Village at Amarna (Kemp 2012)

Bruyère's original publication does not impose the tripartite system found in current scholarship onto the house of Deir el-Medina. Instead he claims that each of the houses at Deir el-Medina consisted of 7 different types of rooms that could be architecturally organized in different ways (Bruyère 1939, pg. 51). His standard house consists of all four parts of the tripartite system (the *lit clos* room, the divan room, the bedroom, and the kitchen), but also contains corridors, stairs, and cellars (Bruyère 1939, pg. 51). Alongside my investigation into menstrual seclusion practices, my study will test which,

if either, standardized floorplan accurately reflects the architecture of the houses at Deir el-Medina.

Hypothesized Spaces for Menstrual Seclusion

Over the years, scholars have suggested specific spaces within the houses at Deir el-Medina that may have been gendered toward female use or specifically used for menstrual seclusion. In this section, their arguments will be outlined and later these spaces will be analyzed as a group for their possible use as a space for menstrual seclusion.

The Lit Clos Room

The *lit clos* room within the houses at Deir el-Medina is marked by the presence of a raised, enclosed platform named the *lit clos* or enclosed bed by Bruyère. They were named due to their similarity to the *lits clos breton* or box-beds of the late medieval period (Bruyère 1939, pg. 57). The *lits clos* are rectangular elevated platforms approximately 75 cm in height, 170cm in length, and 80 cm wide (Weiss 2009, pg. 196). They all have a series of 3-5 small steps leading into the platform and are incorporated into the corners of rooms (Kolstida 2007, pg. 123). 29 platforms have been identified within the houses at Deir el-Medina and 10 have associated decoration painted on the plastered walls (Weiss 2009, pg. 197). This painted decoration regularly depict images related to women and fertility like Bes, general regenerative motives, dancing females, and perhaps one scene of offering (Weiss 2009). Some houses have associated cupboards next to the *lit clos* (NE XV, NW XV, SW VI). Approximately 53% of the houses at Deir el-Medina contain a *lit clos* (Meskell 1998, pg. 222). The *lit clos* room is regularly the first room upon entering the building.

One of Bruyère's interpretations of the *lit clos* was as a bed used for giving birth, having sex, or prophetic dreams (Bruyère 1939, pg. 57, 62-4). One recent paper has

compared the *lits clos* to similar structures in mammisi (Arnette 2014). Bruyère also marks this similarity (Bruyère 1939, pg. 56). However, most scholars have argued against this interpretation due to the public nature of this space (Koltsida 2007, pg. 124). However, we do not know if the Egyptian conception of privacy was similar to modern western notions where actions like sex and childbirth are kept to the utmost privacy. Therefore, this should not be used as an argument against Bruyère's interpretation. However, women are regularly depicted giving birth while standing on a stool or on a pair of bricks not on a bed (Meskell 1998, pg. 223). Thus, Bruyère's interpretation is possible, but unlikely.

Bruyère also suggests a ritual use of the *lit clos*. This interpretation is most accepted by current scholarship. Meskell interprets the *lit clos* as having a broad cultic function (Meskell 1998, pg. 225). This interpretation is supported by cultic artifacts found within the *lit clos* as well as in associated cupboards (Meskell 1998, pg. 225). Further, Weiss argues that the shape of the *lit clos* is comparable to the shape of official temple altars of the New Kingdom (Weiss 2009, pg. 206-7). Bruyère argues that it is in the vestibules of temples that people honor their gods and priests are purified so it makes sense that ritual paraphernalia would also be found upon entrance to domestic spaces (Bruyère 1939, pg. 63). Others have suggested a more specific ritual use as household altars for domestic cult. Bruyère dates the construction of the *lits clos* to the reign of 18th dynasty king Thothmes and later suggesting that they were an important part of solar dogma (Bruyère 1939, pg. 61). Koltsida disagrees, arguing that the *lits clos* were focused on domestic cultic activity due to their similarity with domestic shrines found in the front rooms at the workman's village at Amarna (Koltsida 2007, pg. 124).

Thus, it is most likely that the *lits clos* were used as household altars or at least strongly associated with cultic ritual.

Meskell goes beyond the *lit clos* itself and argues that the entire room was "notionally female-oriented, centered around elite, married, sexually potent, fertile females of the household" (Meskell 1998, pg. 219). Meskell does not argue against a daily use of the space by individuals of both genders but focuses on the Egyptian conceptualization of this space. She argues that the *lit clos'* associated ritual objects and associated imagery highlight women and fertility imply a cultural conceptualization of this space as female (Meskell 1998, pg. 222-229). However, Roth has shown that men were an integral part of fertility in ancient Egyptian thought (Roth 2000) and Meskell herself points out that many of the associated cultic artifacts found in the beds and associated cupboards have the names of men inscribed on them (Meskell 1998, pg. 226). Further, the *lit clos* is located within the front room of the house where all the individuals of the household regardless of gender are required to pass (Meskell 1998, pg. 225). Thus, if this space was conceptually gendered it was not a strict gendering of space due to the room's location within the house as well as knowledge of male involvement in fertility and associated ritual behaviors.

Scholarship of the *lit clos* room reflects what was seen in the textual discussion of behaviors surrounding menstruation; namely that men were not excluded from ritual behavior surrounding fertility. Even in these rooms, where the decoration and domestic activities point to female space use, men were not excluded and even an important addition with their names engraved on ritual objects. Thus, it is likely that these rooms were associated with the system of ritual behavior surrounding women's lives. However,

it is unlikely that they will be isolated enough to have been used for gender-based menstrual seclusion.

Débarras

When excavating the walled village in 1935, Bruyère labeled certain rooms in 10 different houses *débarras*. *Débarras* is the French word for a storage room, junk cupboard, or outhouse. In his 1939 report, Bruyère briefly describes these rooms as sparsely decorated spaces with uniform grey walls that open on to the divan rooms (Bruyère 1939, pg. 71). The artifacts found in these spaces consist of household tools, craftsman's tools, food, clothing, and rubbish (Bruyère 1939, pg. 71). Bruyère interprets them as bedrooms and workrooms used by the master of the house and his family (Bruyère 1939, pg. 71-2). Koltsida discusses these spaces briefly and sees the low daises along the walls as affirming Bruyère's interpretation of these rooms as bedrooms (Koltsida 2007, pg. 125).

Meskell identifies the *débarras* as a possible location of the "place of women" (Meskell 1998, pg. 236). To support this interpretation, she emphasizes the space's connection to staircases or cellar entrances (Meskell 1998, pg. 236-7). She does not make clear her thought process here, but I assume that she is referring to idea that women were secluded under the stairs during the Demotic period (see page 25). Meskell also emphasizes the isolation of these spaces at the back of the house far apart from the heavily decorated ritual spaces in the *lit clos* and divan rooms (Meskell 1998, pg. 236). This does not correlate with the Demotic texts where the room for menstruating women seems to have been near communal spaces within the house.

In his publication, Bruyère is not consistent in his labeling of the *débarras*. In the section discussing this room type he lists them as being everything from cubicles, stores, workshops, and storerooms to harems (Bruyère 1939, pg 72). Further, in his house by house analysis, he does not consistently label spaces fitting this description as a *débarras*. To be consistent, I have noted spaces as *débarras* only when Bruyère notes them as such in his house to house publication. In my analysis these *débarras* will be analyzed as a group as well as separated into new groups that better represent their architectural distinctions to see if either grouping allows for the intentional isolation that would allow for this space to be used for menstrual seclusion.

Cellars

The cellars found within the houses at Deir el-Medina have been largely ignored in the discussion of architecture, space use, and the "place of women" in scholarship. Yet they were present in almost all of houses and were used regularly by the site's inhabitants. The cellars are located in two places within the houses: under the couch in the divan room or attached to the kitchen. The cellars under the couch were usually 3-4m deep with a descending staircase (Bruyère 1939, pg. 65). The spaces were low and composed of one to two small rooms with cupboards and were generally built after the main construction of the house (Bruyère 1939, pg. 65). The houses constructed after the expansion of the settlement in the Ramesside period often took advantage of 18th dynasty tombs and coopted them for use as a cellar (Bruyère 1939, pg. 78). Some houses have cellars attached to the divan room and the kitchen while others only have one. The description of these cellars by Bruyère shows that they were large enough for individuals to reside in, although they were likely cramped especially in the cellars entered via the

divan room. Due to their size, these spaces will be included in my search for the "place of women" within the houses at Deir el-Medina. My study will test how isolated these spaces are from the rest of the house. However, the conclusions will not be definitive, because cellars are already isolated by nature and it is impossible to determine if they were isolated in order to facilitate menstrual seclusion without an analysis of associated finds.

Lit clos rooms, *débarras*, and the cellars present in the houses of Deir el-Medina are all possible locations for the "place of women" attested in O. OIM 13512. My architectural analysis will test whether or not each of these types of spaces were architecturally isolated enough to have been used for menstrual seclusion. The textual analysis suggests that spaces used for menstrual seclusion must have been able to restrict access to male gendered individuals and were likely located near communal parts of the house. An analysis of the architecture of the houses at Deir el-Medina will allow us to see if any of the spaces within the houses fit this description.

Space Syntax

In 1984, Bill Hillier and Julienne Hanson published their theory of space syntax in the book *The Social Logic of Space*. They argue that the true purpose of a structure resides in how the building's architecture organizes space (Hillier and Hanson 1984, pg. 1-2). Therefore, any analysis of a building requires a study of how architecture creates spatial organization. They argue that social relations shape and are shaped by this ordering of space, because the architecture creates the material preconditions for movement, encounter, and avoidance (Hillier and Hanson 1984, pg. ix). They develop space syntax as method for quantitatively analyzing and investigating this space-social relationship.

There are obstacles in the application of space syntax to archaeological contexts because it was not developed for use on ancient material. Hillier and Hanson developed space syntax with the goal of quantifying and understanding modern, urban architectural design post WWII (Hillier and Hanson 1984, pg. 3). The modern urban environment is often criticized for negative, long-term social effects and Hillier and Hanson wanted to create a quantifiable way to test and discuss the social effect of modern architecture (Hillier and Hanson 1984, pg. 2-3). In order to do this, they regularly utilize knowledge of room use in order to understand what social behavior is being controlled by the patterns of access found in the architecture. Without this knowledge of room use, it can be hard to determine which aspects of social life are being affected by the architecture. Thus, often archaeologists can say that part of the structure is more purposefully removed from public consideration but not what activities are being removed.

Regardless, space syntax is particularly adept at quantifying the privatization or accessibility of space and how the architecture enables or prevents interaction between inhabitants and between inhabitants and strangers. In an archaeological context it can be difficult to know what activity is being isolated without a good understanding of room use, but the architecture still reflects this social seclusion. Therefore, space syntax is applicable to this search for menstrual seclusion behavior because it will test whether or not spaces within the houses at Deir el-Medina were sufficiently isolated to be used for the seclusion of individuals.

Gamma Analysis

Gamma-analysis is the part of Hillier and Hanson's work specifically concerned with how spaces within a structure are arranged and related. This analytical method is centered on the creation and analysis of justified access graphs (JAGs). JAGs are created from the floorplan of a structure. On JAGs, a circle represents each cell of a building while relations of permeability (usually doorways) are represented as lines connecting the points (Hillier and Hanson 1984 pg. 149). Then, spaces of the same depth value from the exterior are aligned horizontally (Hillier and Hanson 1984 pg. 149). Once created, JAGs can be used to quantify how access and privacy are moderated by a building's architecture.

Figure 3 is an example of three different justified access graphs and the buildings from which they are made. The JAGs are drawn from the perspective of a visitor entering the house. The position of this visitor outside the house is marked with a cross inside of the circle on the JAGs. The lines connecting each circle represent the possible doorways an individual could pass through while the circles themselves represent each

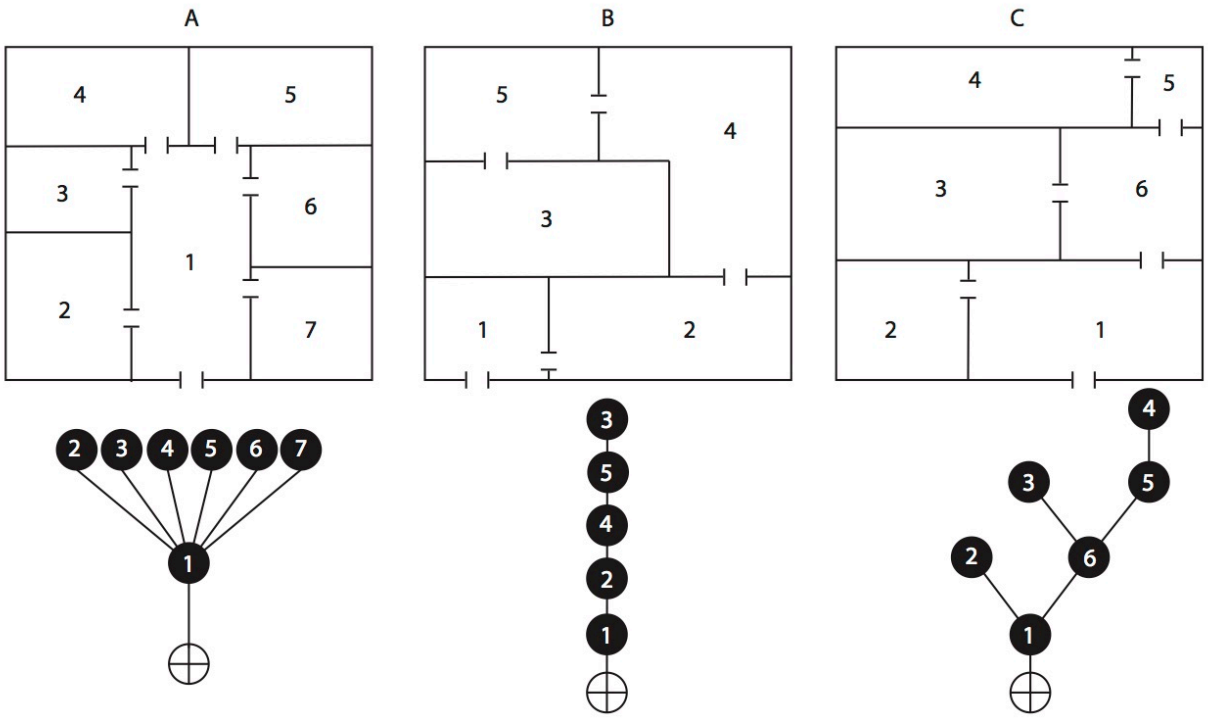

Figure 3: Example Structures and their JAGs

room of the structure. Each space is given an arbitrary number which is also present on the circle representing the room for ease of comparison between JAG and floorplan.

From these graphs alone, one can begin to interpret the levels of privacy and access within the structure. For example, building A suggests that the inhabitants valued privacy. In this structure, the inhabitant or visitor is not required to walk through many rooms on the way to their destination. Therefore, it is less likely that they will interact with another individual making their presence and activities known. The opposite is found in building B where there is little privacy. The architecture of building B requires visitors to pass through all previous rooms to gain access to their chosen destination highlighting their presence and activity to every individual within the structure. In this structure, every person in a room prior to one's destination would see one's actions and have to opportunity to hinder one's progress. Thus, whatever activity occurring in the last room, room 3, was the most regulated and isolated of all the activities in the

building. These types of observations can be quantified using justified access graphs to mathematically calculate how integrated each space is allowing for analysis and comparison in houses more complex than those in figure 3.

Calculations Using Justified Access Graphs

There are many calculations that can be done using JAGs. This study will employ three: *control value*, *mean depth*, and *relative asymmetry*. These three calculations will be used to determine the *presence-availability* of a given space. This is a measurement of the likelihood of people being present in the space and available for social encounters (Grahame 1997 pg. 150). This is an important measurement for this study because a space that was only used by menstruating women would have been used infrequently and thus, is not likely to have people present in it. Therefore, it should have a lower level of *presence-availability* than all other spaces within the house.

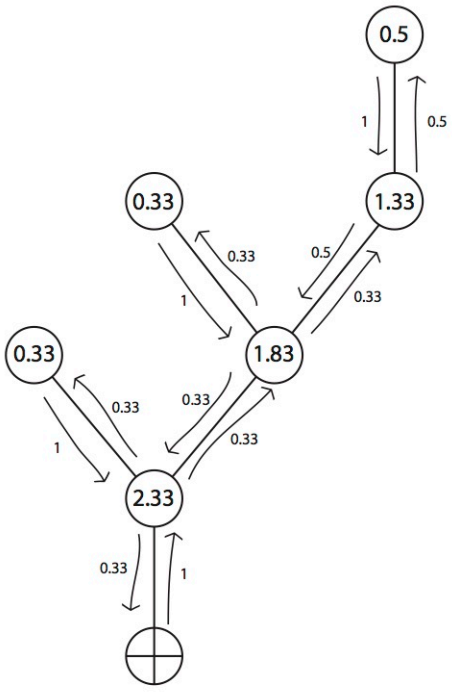

Figure 4: Example Control Value Calculations

To determine the *presence-availability* level, the *control value* (*cv*) must be calculated. The *control value* measures the degree of control a space exercises over attached spaces (Fisher 2006 pg. 125). To calculate the *control value* each space in the building is assigned a value of 1 (Fisher 2006 pg. 125). This value is then divided among each of the

spaces it is connected to (Fisher 2006 pg. 125). These numbers are then totaled to determine the space's *control value* (Fisher 2006 pg. 125). The higher the *control value*, the more control that space asserts over its neighbors (Fisher 2006 pg. 125). *Control values* are often ranked with values lesser than or equal to 1 being low, values greater than 1 and lesser than or equal to 2 being medium, and values greater than 2 being high (Letesson 2014, pg. 64). The calculations for the *control value* of the spaces in building C from figure 3 can be found on the JAG in figure 4. The *control values* show that room 1 has a high level of control over neighboring spaces, rooms 6 and 5 have medium control, and the rest of the spaces have little control.

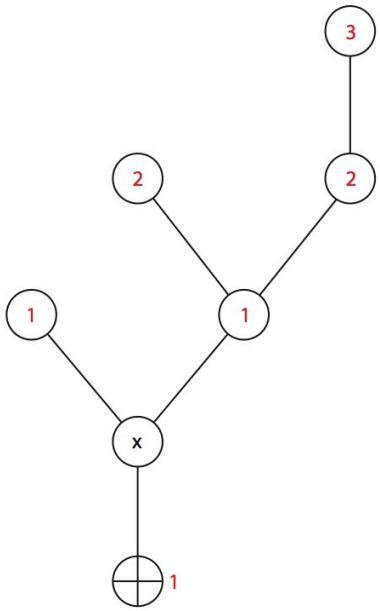

Figure 5: Sample Mean Depth Calculations from Space X

The *mean depth* of each space must also be calculated to determine the *presence-availability* of a space. The *mean depth* measures how deep a space is relative to all other spaces in the building (Fisher 2006 pg. 125). It is measured using this calculation:

$$D_i = \sum_{j=1}^{n} d_{ij}$$

$$MD_i = D_i/(n-1)$$

where D_i is the total depth value of the *i*th space, d_{ij} is the shortest path between the *i*th space and the *j*th space (the original space), and *n* is the number of spaces in the structure (Wu and Guo 2014, pg. 575). To get D_i in the above equations, a depth value is assigned to each space according to how many spaces it is away from the original space

then sum each of these depth values (Hillier and Hanson 1984, pg. 108). An example of assigning these depth values can be seen in figure 5. Table 1 shows the mean depths of each of the spaces in building C from figure 1.

Space Number	Mean Depth	Relative Asymmetry
1	1.67	0.267
2	2.5	0.6
3	2.33	0.533
4	2.83	0.733
5	2	0.4
6	1.5	0.2

Table 1: Mean Depth and Relative Asymmetry for Building C from Figure 3

The final calculation needed to gage a space's *presence-availability* is the space's *relative asymmetry* (*RA*). *Relative asymmetry* measures how accessible a space is from other spaces and how well a space is integrated into the structure (Fisher 2006 pg. 125). Here is the equation for *RA*:

$$RA = 2(MD - 1)/(n - 2)$$

where *MD* is the mean depth of the space and *n* is the number of spaces in the building (Fisher 2006 pg. 125). The equation results in a number between 0 and 1 (Fisher 2006 pg. 125). Values closer to 1 indicate lower accessibility and are more segregated from the system (Fisher 2006 pg. 125; Hillier and Hanson 1984, pg. 108-9). The *relative asymmetry* of the rooms in building C from figure 1 can be found in table 1. The *relative asymmetry* of the spaces shows that room 6 in building C is the most integrated into the structure while room 4 is the least integrated into the structure.

Now that the calculations are done, the levels of *presence-availability* can be determined for each space in sample building C. The *presence-availability* of a room is measured by comparing a room's relative accessibility with its control value as seen in table 2.

Relative Asymmetry (RA)			
Low	High		
Moderately High	High	High	**Control Value**
Low	Moderately Low	Low	**(CV)**

Table 2: Presence-availability as determined by control value and relative accessibility (Grahame 1997 and Fisher 2006)

Rooms with high control value and high accessibility mean they are most likely to be occupied by an individual. Rooms with low control value and low accessibility are least likely to be occupied. This study will determine a high *relative asymmetry* as a number ≥ 0.0 and ≤ 0.5. A low RA will be > 0.5 and ≤ 1.0. The *control value* will be ranked with values less than or equal to 1.5 as low and values greater than 1.5 as being high.

These are the calculations that will be used to determine whether or not spaces within the houses at Deir el-Medina could have been used to intentionally isolate individuals from the rest of the household.

Important Notes on the Collection of Legacy Data and Sampling

The data used in this study was collected from Bruyère's 1939 *Rapport sur les Fouilles de Deir el Medineh (1934-1935)*. In this publication, Bruyère systematically discusses each structure in Deir el-Medina. For most of the structures, Bruyère writes a brief discussion of its construction date, the date of architectural additions, the structure's named inhabitants, and the excavators that worked on the structure. He then includes a detailed discussion of each of his numbered rooms. This is usually restricted to the house's *lit clos* room, divan room, and kitchens with the occasional sentence about additional spaces like cellars and staircases. He then lists any notable finds; namely engraved, painted, or complete artifacts.

I used Bruyère's room descriptions to identify his numbered rooms on a map of the walled settlement. The rooms he numbered retain their original room and additional numbers were added sequentially for rooms he omitted as well as staircases. Staircases were included because they lead either to the roof or the cellar both of which were used space for the inhabitants of the houses and should not be excluded from this study of space syntax.

This numbering system was then used to link the house's JAGs with their associated table of calculations. Additionally, particular room types of interest were marked on the JAGs and tables with an identifying color. Figure 6 shows which colors were associated with which types of spaces. For the most part, my analysis accepted Bruyère's identification of room types in his 1939 publication. The only difference occurred in cases where Bruyère says

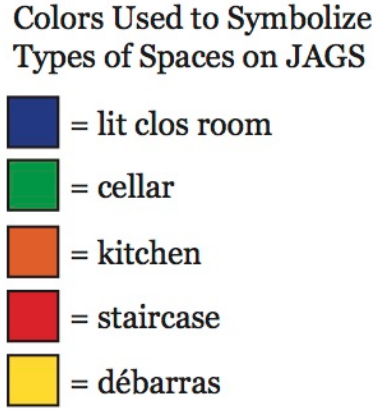

Figure 6: Color Key

there was “no trace” of a *lit clos,* but the space must have been used that way regardless. In this study, these spaces were not accepted as a *lit clos* rooms because no material remains of the *lit clos* were found. Otherwise, Bruyère’s identification of the *lits clos* rooms, cellars, kitchens, staircases, and *débarras* were maintained.

The map of Deir el-Medina that was used to create the JAGs was from Castel’s 1980 publication *Deir el-Médineh 1970*. This map was used because I was not able to find a high resolution digital copy of the map in Bruyére’s original 1939 publication and a copy of the book was not accessible for scanning. To correct for this, Castel’s map was compared against Bruyère’s original map and description of the houses and when architectural elements like doorways were not represented identically on both plans, the depiction on Bruyère’s 1939 map and his publication took precedence in the creation of the justified access graphs.

The criterion used to determine the size of the sample in this study was the presence of a kitchen. Because the study’s goal is to identify places of possible menstrual seclusion, it is necessary that the houses analyzed in this study were occupied by women. O. Berlin P. 12343 lists the house by house occupants of the structures at Deir el-Medina (McDowell 1999, pg. 51). According to this list, 7 houses were occupied by a single man (McDowell 1999, pg. 51). These houses should not be included in my sample as menstruating women did not reside there. In order to achieve a sample that consisted only of houses that women resided in, the criterion of a kitchen was employed. The kitchen was chosen as evidence of female habitation because cooking and specifically the preparation of bread was a female activity in ancient Egypt (Robins 1993, pg. 102). In models and tomb paintings, bread production was one of the few activities women are shown to be participating in (Robins 1993, pg. 102). Further, in the *Tale of the Two*

Brothers Anubis asks Bata's wife to retrieve seed from the granary (Simpson 2003, pg. 82) implying that women controlled this aspect of food production. The archaeological evidence that Bruyère used to determine if a room was a kitchen or not was the presence of ovens, mortars, and silos. Three things necessary in the backing of bread. Thus, the criterion of the presence of a kitchen is the best way to guarantee that my sample only included houses that were inhabited by females.

Chapter 3:

Results and Interpretation

Earlier the textual material was analyzed as to what material culture can serve as an indicator of menstrual seclusion in the archaeological record. The texts suggest that the spaces used for menstrual seclusion in New Kingdom Egypt were gender specific spaces located near or under the communal spaces in the house. In this section, I will compare the results of the space syntax analysis to this hypothesized space for menstrual seclusion.

Standardized Domestic Floorplan

As discussed previously, recent scholarship interprets the houses at Deir el-Medina as following a tripartite system consisting of a *lit clos*, a divan room, and a third section split in two that functions as a bedroom and a kitchen. This model floorplan fits well with the domestic architecture of the other New Kingdom workman's village at Amarna, but can it be applied to the Deir el-Medina houses? The original excavator proposes a 7-room standard consisting of the *lit clos* room, divan room, bedroom, kitchen, corridor, stairs, and cellar. My findings support Bruyère's standardization, but the relationship of these spaces to one another is variable and resists standardization. Further, reliance on a supposed standardization leaves unusual and unique rooms understudied.

The areas of Deir el-Medina where the houses best match the tripartite system is in the central (C) and southern (SE and SW) sections. Here we see the typical patterning of one to two rooms in a row with a split into two rooms at the back of the houses (figure 7). The houses in C follow the expected pattern almost exactly with the presence of a *lit clos* room followed by a divan room and ending with a kitchen and bedroom.

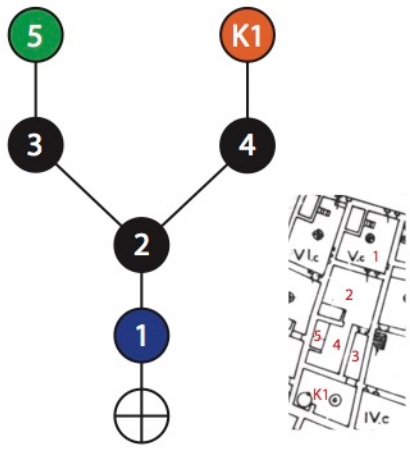

Figure 7: JAG of house C V

A majority of the houses in the older sections of the village, sections NE and NW, and a majority of the houses in this study do have the typical entrance into the *lit clos* room followed by a divan room, but the rest of the house is highly variable. In these sections of the village, the houses often contain more rooms than their neighbors in

sections C and SE. The majority of the houses consisted of 7 to 8 total spaces (figure 8). These 7 to 8 rooms do correlate with the 7-room plan identified by Bruyère. Thus, Bruyère's standardization is more representative of the architecture at Deir el-Medina than the tripartite plan.

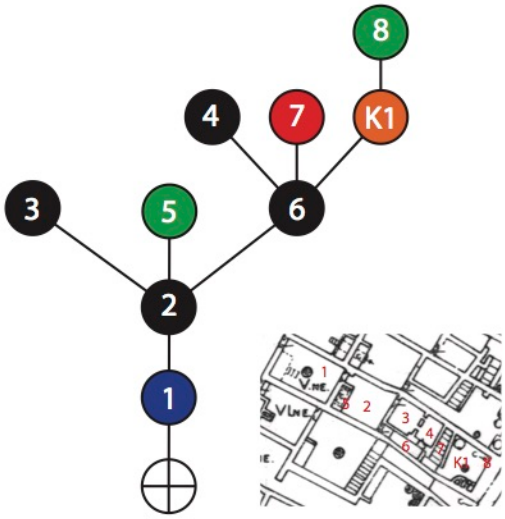

Figure 8: JAG of house NE V

There are two explanations for the disparity in the domestic architecture between the NW and NE houses and the C, SW and SE house: initial building style and inhabitant alteration. Both of these interpretations stem from the fact that the houses in the NW and the NE were built in the 18th dynasty while the houses in the C and SE were first constructed in the 19th dynasty (table 3). A stylistic difference could have been imposed when the houses were first built by the Egyptian government; the 19th dynasty houses could have been built following the tripartite system and the older houses were not. If this is true, the houses of the workman's village at Amarna, built in the middle of the 18th dynasty, would mark the change in architectural style. Most of the houses built at Deir el-Medina in the 18th dynasty were built prior to Akhenaten's reign and the 19th dynasty structures were after. Thus, the basic difference in architecture could be due to construction period.

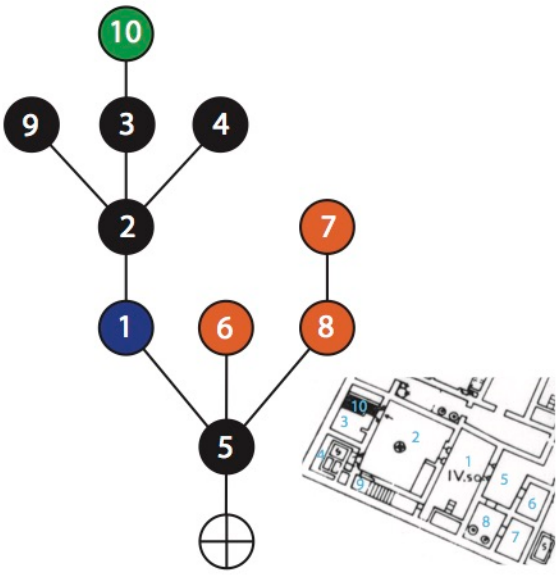

Figure 9: JAG of house SW IV

House Number	Bruyère's Date of Construction
NE I	18th
NE II	18th
NE III	18th
NE IV	18th
NE V	18th
NE VII	18th
NE VIII	18th
NE IX	18th
NE X	18th
NE XI	18th
NE XII	18th
NE XIII	18th
NE XIV	18th
NW IX	18th
NW X	18th
NW XI	18th
NW XII	18th
NW XIII	18th
NW XIV	18th
NW XV	18th
NW XVI	18th
C V	19th
C VI	19th
C VII	19th
SE II	19th
SE IV	19th
SW V	19th
SW VI	19th

Table 3: Date of Construction of the Sampled Houses

However, alteration of the architecture by the house's inhabitants is equally responsible for the architectural differences. Some of the houses in the central and southern sections do not follow the tripartite plan see SW IV for example (figure 9). The same is true with the northern sections and Bruyère's standardization. While the majority of the houses contain at least one of each of the 7 rooms included in Bruyère's standard floorplan, the location of each of these spaces within the house is highly variable and there are often additional rooms. Further, in his publication, Bruyère often notes that the houses were altered and added to over time reflecting the needs of the inhabitants. This variation undermines the use of a standardized floorplan at all when analyzing the houses.

By relying on a standardized model of architectural structure as scholars do when discussing the domestic architecture of Deir el-Medina, scholars are ignoring their ability to use the architecture to analyze and understand the agency and choice displayed by the inhabitants of Deir el-Medina. The houses of Deir el-Medina are especially equipped for this type of analysis because the structures were originally built

by the Egyptian government. Thus, any additions or changes to the house directly showcase what the inhabitants thought was necessary or wanted in their houses. Understanding how these additional spaces could have been used and why they were wanted by the inhabitants of Deir el-Medina will provide valuable insight into daily life and the desires of Egyptian domestic life.

Débarras

Meskell suggested that the rooms called *débarras* by Bruyère might have been the site of menstrual seclusion within the household (Meskell 1998). The distinction of a débarras in Bruyère's publication is not maintained throughout his analysis. The rooms he labels as *débarras* have distinctly different architectural elements; some have entrances to the cellar, others are hallways. The space syntax analysis showcases this dissimilarity. The space syntax calculations for all the *débarras* are presented in table 4. All of the spaces shared a moderately low level of presence availability, but this level is represented by most of the rooms in the houses regardless of use. However, the calculations are quite variable in their CV, MD, and RA, and level of presence-availability (table 4). Thus, the syntax reflects the differences seen architecturally; confirming that the *débarras* should not be considered as a valid architectural grouping.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE III	3	0.25	2.89	0.472	low	high	moderately low
NE III	7	2	2.22	0.306	high	high	high
NE VIII	10	0.5	3.33	0.424	low	high	moderately low
NE IX	3	1.33	2.14	0.38	low	high	moderately low
NE X	3	1.33	2.38	0.394	low	high	moderately low
NE XIII	3	0.33	2.86	0.62	low	low	low
C VI	4	1.33	1.8	0.4	low	high	moderately low
NW XIV	3	1.33	2.14	0.38	low	high	moderately low
SW V	4	1.25	2.73	0.346	low	high	moderately low
SW V	5	1.25	2.73	0.346	low	high	moderately low

Table 4: Space Syntax Calculations for the *Débarras*

The eight *débarras* in my study should be broken into three different architectural categorizations: hallways (C VI, NE III room 7), rooms that are attached to stairs (NE VIII), and rooms attached to the divan room that can either be isolated (NE III room 3, NE XIII) or semi-isolated (NE X, NE IX, NW XIV, SW V room 4 and 5). Each of these groups will now be analyzed for their possible use as menstrual seclusion space.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE III	7	2	2.22	0.306	high	high	high
C VI	4	1.33	1.8	0.4	low	high	moderately low

Table 5: Space Syntax Calculations for Hallway *Débarras*

The *débarras* that function as hallways should not be considered spaces of possible menstrual seclusion due to their high integration into the house. The calculations of room 7 in NE III has a high level of presence-availability showing that it is likely that this room is regularly occupied (table 5). Room 4 in C VI's level of presence-availability is moderately low, but this is due to the low number of rooms in this structure more than its integration into the space (table 5). Further, as hallways, these spaces regulate contact between parts of the house making them unconducive to gender-specific isolation. Both room 4 in C VI and room 7 in NE III function as the only passage between the divan room and the kitchen in the house, two areas that often have high levels of presence availability. Thus, these spaces were not used for menstrual seclusion.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE VIII	10	0.5	3.33	0.424	low	high	moderately low

Table 6: Space Syntax Calculations of *Débarras* attached to Stairwells

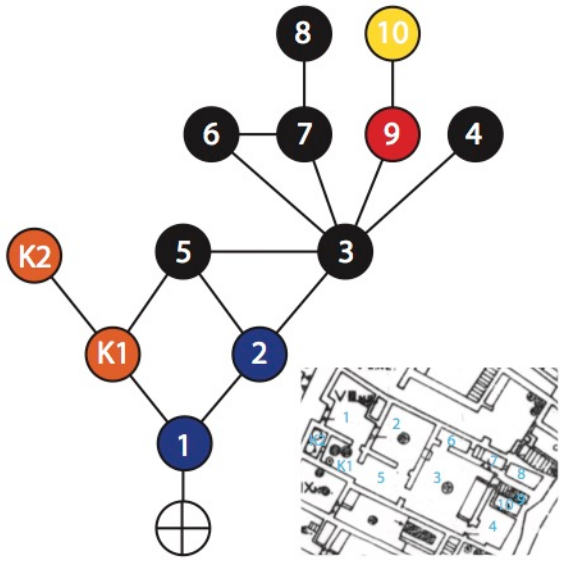

Figure 10: JAG of house NE VIII

There is one instance of a *débarras* that is a small room attached to the stairwell of house NE VIII (figure 10 room 10). NE VIII is the largest house analyzed in this study consisting of 12 rooms. This house is also unique due to its circular sets of rooms (figure 10: rooms 1, 2, 5, K1 and 5, 2, 3, and 3, 6, 7). None of the spaces in this house had a low level of presence-availability and the *débarras* was in the middle when its CV and RA is compared to those of the other rooms (see appendix house NE VIII). Bruyère describes this *débarras* as a raised level east of the staircase with rough stone walls that was used for storage (Bruyère 1939, pg. 253). The exact dimensions of this space are not recorded, but on the map, the space appears large enough for an individual to fit within (figure 10). This *débarras* is located on a stairwell which resembles what is suggested in the literature. This space is not underneath the stairs as the demotic word *ḥrḥr.t* suggests, but room 10 is the most similar space to the demotic description in my sample. Thus, it is easily possible that this space was used for menstrual seclusion either opportunistically or regularly due to its high levels of isolation and similarity to the textually based description of seclusion space.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE III	3	0.25	2.89	0.472	low	high	moderately low
NE XIII	3	0.33	2.86	0.62	low	low	low

Table 7: Space Syntax Calculations of Isolated *Débarras*

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE IX	3	1.33	2.14	0.38	low	high	moderately low
NE X	3	1.33	2.38	0.394	low	high	moderately low
NW XIV	3	1.33	2.14	0.38	low	high	moderately low
SW V	4	1.25	2.73	0.346	low	high	moderately low
SW V	5	1.25	2.73	0.346	low	high	moderately low

Table 8: Space Syntax Calculations of Semi-Isolated *Débarras*

The last grouping of *débarras* are the isolated and semi-isolated. Isolated means the rooms have a single opening usually onto the divan room. Semi-isolated means that the rooms have an entrance onto the divan room, but also contain an entrance to the cellar. The main difference in the calculations for this group of *débarras* is that they have a lower control value than the hallway *débarras*. Therefore, they are more segregated from the house. Architecturally these *débarras* can also be identified as the 'bedroom' space due to their opening onto the divan rooms. There are comparable spaces within the other houses that were not labeled as *débarras* by Bruyère. Those labeled as *débarras* are not significantly different architecturally or in calculations from other spaces labeled as bedrooms. Therefore, all of these 'bedroom' spaces will be combined and discussed as a whole in the next section.

This analysis shows that it is unlikely that the *débarras* identified by Bruyère were consistently used for menstrual seclusion as Meskell suggests (Meskell 1998, pg. 236). First of all, Bruyère's categorization of *débarras* is not reliable. The grouping consists of architecturally different spaces that should not be analyzed together as an architectural type. The isolate and semi-isolated *débarras* have more in common with other unlabeled spaces then they do with other *débarras*. Only the *débarras* in house

NE VIII is sufficiently isolated from the rest of the house to have been regularly used for menstrual seclusion. Further, its location within the household is consistent with the hypothesis gathered from the textual data. However, as a whole, the *débarras* were not spaces purposefully used to isolate menstruating women.

The 'Bedrooms'

The spaces under discussion in this section are typically labeled as 'bedrooms' in the literature. However, they likely had a multifunctional use. Bruyère describes them as storerooms or workshop rooms under the direct control and supervision of the man of the house due to their opening on the divan room (Bruyère 1939, pg. 72). Bruyère reports that these rooms did not have doors further supporting his reason for conceptualizing them as connected to and controlled by the divan room (Bruyère 1939, pg. 71). He also says that it would be irresponsible not to think that they didn't also serve as bedrooms because without this function, there would not be enough room within the house for the family to rest (Bruyère 1939, pg. 71). Scholarship has accepted his final interpretation and this room is typically labeled a 'bedroom' disregarding its multifunctional use (Koltsida 2007, pg. 124-5).

This type of room is characterized by its single opening onto the divan room or, when it does have two openings, the other is to the cellar. The majority of the houses analyzed in this study contain a room fitting this description. The space syntax calculations for all of these rooms can be found below in table 7.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE III	3	0.25	2.89	0.472	low	high	moderately low
NE XIII	3	0.33	2.86	0.62	low	low	low
NE VIII	4	0.167	2.58	0.287	low	high	moderately low
NE VIII	6	0.167	2.58	0.287	low	high	moderately low
NW XVI	3	0.25	2.17	0.468	low	high	moderately low
NW XV	4	0.25	2.5	0.429	low	high	moderately low
NE XI	4	0.33	2.71	0.57	low	low	low

NE V	3	0.25	2.56	0.39	low	high	moderately low
NE IV	3	0.25	2.5	0.429	low	high	moderately low
C VI	3	0.33	2.2	0.6	low	low	low
NE IX	3	1.33	2.14	0.38	low	high	moderately low
NE X	3	1.33	2.38	0.394	low	high	moderately low
NW XIV	3	1.33	2.14	0.38	low	high	moderately low
C VII	3	1.33	2	0.4	low	high	moderately low
C V	3	1.33	2	0.4	low	high	moderately low
SW V	4	1.25	2.73	0.346	low	high	moderately low
SW V	5	1.25	2.73	0.346	low	high	moderately low

Table 9: Space Syntax Calculations for Isolated (white) and Semi-Isolated (shaded) *Débarras*

The calculations show that the 'bedrooms' regularly have a low to moderately low level of presence availability suggesting that they could function as a space for isolation. However, when the spaces are analyzed in relation to their houses, this designation is no longer distinctive. Due to the small size of the houses at Deir el-Medina, the majority of rooms within any house have a moderately low level of presence-availability. Thus, the bedrooms' moderately low level of presence-availability is not substantially lower than any other space within the houses. Only the 'bedroom' in NE XI has distinctly lower results than the other rooms in the house. These misleading calculations are due to the effect of using space syntax on small houses. When there are few rooms, it is more difficult for the calculations to differentiate levels of presence-availability because the calculation breaks the RA and CV only into high and low grouping. Thus, the syntax shows that the 'bedrooms' were not particularly more isolated than any other space within the household implying that they were not used for menstrual seclusion.

Additionally, the artifacts found within the 'bedrooms' and the space's connection to the divan room do not suggest that it could have been used for menstrual seclusion.

The divan room is typically conceptualized as a male space due to its couches, inscribed columns, and false doors (Meskell 1998, pg. 229-33; Bruyère 1939, pg. 65-71). Bruyère argues that this male dominion spread into the 'bedroom' (Bruyère 1939, pg. 71-2). This is supported by the 'bedroom's' associated finds. Bruyère reports that these rooms contained everything: household tools, craftsmen's tools, food supplies, clothing, and byproducts of craft production (Bruyère 1939, pg.71). These finds suggest a large variety of uses for this room from storage to craft production to sleeping. This multiuse of the 'bedroom' as well as its connection to the divan room and the male sphere of influence makes it unlikely that this space would have been sufficiently separated from the regular functioning of the household to have been used, even opportunistically, for menstrual seclusion.

Related Unmarked Spaces

There are two additional rooms (room 6 in NW XV and room 4 in NE V) that are architecturally similar to the bedrooms in that they contain only one opening but are different because they are not connected to the divan room. Because these spaces are separated from the divan room, these spaces are less likely to be subject to the male influence that affects the 'bedrooms.' Each of these rooms will be considered separately as to their ability to be used for menstrual seclusion.

Room 4 of house NE V is located behind the 'bedroom' of the house, next to the stairs, and opening on to the corridor (figure 11). Bruyère reports that this room had walls of gray plaster and contained traces of a bed-mastaba or *dressoir* (Bruyère 1939, pg. 250). He does not explicitly state a use for this space based on the finds, but he would likely have included it in his *débarras*/'bedroom' room type. Especially because he does not record sleeping artifacts in his discussion of room 3 (Bruyère 1939, pg. 250) which is typed here as a 'bedroom' due to its opening onto the divan room. Therefore, this space likely served as the sleeping space of the household, but this does not suggest or oppose the use of this space for seclusion.

Similarly, the space syntax does not suggest a purposeful architectural isolation of room 4. Room 4 has a moderately low level of presence-availability as do the majority of the rooms in the house. Further, the CV, MD, and RA are identical to the 'bedroom': room 3 showing that neither space is more isolated architecturally (table 10). Therefore,

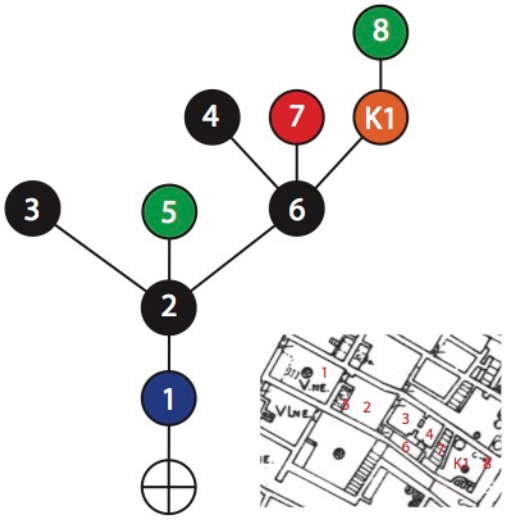

Figure 11: JAG of house NE V

architecturally, room 4 is not substantially more isolated from the rest of the house than other spaces suggesting that this space was not specifically meant for menstrual seclusion.

Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.33	0.333	low	high	moderately low
2		2.75	1.67	0.168	high	high	high
3		0.25	2.56	0.39	low	high	moderately low
4		0.25	2.56	0.39	low	high	moderately low
5	cellar	0.25	2.56	0.39	low	high	moderately low
6		2.75	1.67	0.168	high	high	high
7	staircase	0.25	2.56	0.39	low	high	moderately low
8	cellar	0.5	3.22	0.555	low	low	low
K1	kitchen	1.25	2.33	0.333	low	high	moderately low

Table 10: Space Syntax Calculations of House NE V

While it is unlikely that room 4 was meant for menstrual seclusion, the uniqueness of this space makes it worthy of further investigation. In many of the other houses in this sample, the space occupied by room 3 and 4 in NE V is combined into a single 'bedroom' (see room 3 in NE III, NE IV, NE IX, NE X, NE XI, and NE XIII in the appendix). What activities did the inhabitants of NE V desire to separate that other individuals were happy to leave united?

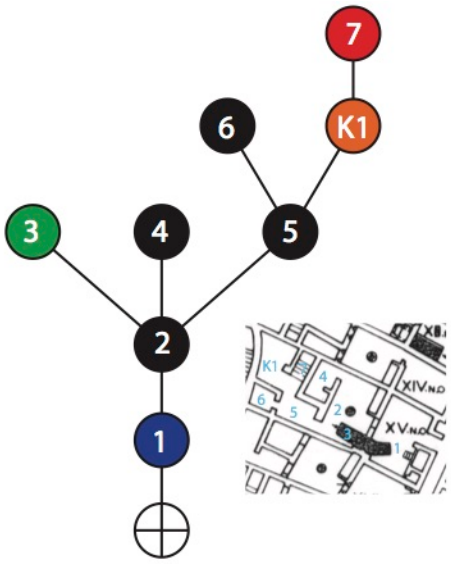

Figure 12: JAG of house NW XV

Further, the location of the doorway to room 4 makes the behavior that occurs in this space much more private than those that occurred in room 3. One would not be able to see into room 4 unless the door was open,

and they were standing directly outside the door in the hallway. Meanwhile, room 3 could be seen from room 2, room 1, and the street providing all the doors were open. Therefore, architecturally room 4 lends itself to be used for seclusion better than any other space in NE V. However, the finds suggest that this space was, at most, used opportunistically for seclusion and had a different regular function suggested by the bed-mastaba/*dressoir* and its integration into the household structure.

The second similar space to the 'bedroom' is room 6 in house NW XV. Bruyère's description of this space simply states that it was a small white room adjacent to the kitchen (Bruyère 1939, pg. 291). Therefore, no conclusion about the use of room 6 can be determined based on Bruyère's publication.

Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.25	0.357	low	high	moderately low
2		2.85	1.63	0.18	high	high	high
3	cellar	0.25	2.5	0.429	low	high	moderately low
4		0.25	2.5	0.429	low	high	moderately low
5		1.75	1.75	0.214	high	high	high
6		0.33	2.63	0.466	low	high	moderately low
7	staircase	0.5	3.25	0.643	low	low	low
K1	kitchen	1.33	2.38	0.394	low	high	moderately low

Table 11: Space Syntax Calculations of House NW XV

Again, the space syntax does not suggest that room 6 was more purposefully isolated than other space within the house. The presence-availability of room 6 is moderately low which is the status of the majority of the house. The room's CV and RA are comparable to those of rooms 3, 4, and 7. Again, the space syntax calculations for room 6 are not distinctly different than the values of the 'bedroom' (room 4) of the same

house. Thus, the architecture does not suggest that this space was constructed and used specifically for the isolation of individuals.

Finally, the location of room 6 within the structure does not lend itself to seclusion-like behavior. The location of the doorway in room 6 means that the activities occurring in this room would be visible by individuals in rooms 5 and 2. Further, the room is spatially associated with the kitchen and there are examples of other houses at Deir el-Medina where similar spaces contain cooking equipment (see NE III K1 and K2, NE IV K1, NE VIII K1 and K2, NE X K1, NW IX K1 and K2, NW X K1 and K2, and NW XII K1 and K2 in the appendix). Thus, it seems most likely that room 6 in NW XV was associated with the kitchen and used for some aspect of food preparation and not a space meant for menstrual seclusion.

Hence, room 6 in NW XV and room 4 in NE V are similar to the 'bedrooms' in that they could have been used for menstrual seclusion opportunistically, but this was not their main function. Therefore, they are not examples of the menstrual seclusion spaces discussed in the literature.

Cellars

The cellars present at Deir el-Medina could have been used for menstrual seclusion because they were large enough for individuals to enter and occasionally consisted of multiple rooms. Further, cellars are present in the large majority of the houses (20 out of 28) in this sample and should be incorporated into scholarly understanding of the household architecture at Deir el-Medina. However, the conclusions discussed here are not definitive, because it is not possible to determine if these spaces are isolated due to their function as a cellar or because they were used for menstrual seclusion.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE I	8	0.25	2.9	0.422	low	high	moderately low
NE III	4	0.25	2.89	0.472	low	high	moderately low
NE IV	6	0.5	3.25	0.643	low	low	low
NE IV	7	0.25	2.5	0.429	low	high	moderately low
NE V	5	0.25	2.56	0.39	low	high	moderately low
NE V	8	0.5	3.22	0.555	low	low	low
NE VII	5	0.5	2.57	0.523	low	low	low
NE IX	4	0.5	3	0.667	low	low	low
NE X	4	0.5	3.25	0.643	low	low	low
NE X	7	0.5	3.38	0.68	low	low	low
NE XI	6	0.33	3	0.667	low	low	low
NE XII	5	0.33	2.83	0.732	low	low	low
SE II	6	0.5	2.25	0.833	low	low	low
C V	5	0.5	2.83	0.732	low	low	low
C VII	5	0.5	2.83	0.732	low	low	low
NW X	6	0.33	2.75	0.5	low	high	moderately low
NW XII	3	0.25	2.43	0.477	low	high	moderately low
NW XIV	6	0.5	3	0.667	low	low	low
NW XV	3	0.25	2.5	0.429	low	high	moderately low
NW XVI	5	0.25	2.17	0.468	low	high	moderately low

SW V	9	0.25	2.91	0.382	low	high	moderately low
SW V	11	0.25	3.64	0.528	low	low	low
SW VI	10	0.5	3.7	0.6	low	low	low

Table 12: Space Syntax Calculations for Cellars

The space syntax of the cellars shows that they are regularly substantially isolated from the rest of the household. 12 of the 20 cellars in my sample have a low level of presence-availability showing that they are were isolated from the rest of the house (table 12). Further, the cellars that are marked as moderately low are given this designation because of their RA values but these values are regularly less than 0.1 away from number that would result in the rooms gaining a presence-availability of low (RA for NE I, NE III, NE IV, NW X, NW XII, NW XV, and NW XVI in table 12). Thereby, the space syntax shows that the architecture of the cellars would have lent itself well to the seclusion of individuals.

While this category of space had the most consistent result of a low level of presence-availability of my sampled room types, it is not possible to determine if this is due to its function as a space for menstrual seclusion or its use as a cellar. The demotic word for menstrual seclusion space is *ḥrḥr.t* which directly translates as "under the under part". If this word is being used descriptively and being underneath was an important part of Egyptian menstrual seclusion practice, then it is likely that these cellars were used for menstrual seclusion. This is supported by the low levels or presence-availability for the cellars. Further work needs to be done on the cellars' finds in order to confirm this usage, but it is clear that this space could easily have been used at least opportunistically for menstrual seclusion by the inhabitants of Deir el-Medina since the cellar is almost always the most isolated space within the house.

The *Lit Clos* Room

The scholarship suggests that the *lits clos* were an important part of domestic ritual behavior focused on fertility rituals that involved both men and women (Weiss 2009, Meskell 1998, Koltsida 2007). While the *lits clos* were likely integrated into the system of behavior surrounding female growth, it is improbable that they were used for menstrual seclusion practice due to their location within the household.

House	Room Number	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
NE I	2	1.58	1.9	0.2	high	high	high
NE II	1	0.33	2.4	0.7	low	low	low
NE III	1	1.25	2.67	0.417	low	high	moderately low
NE IV	1	1.25	2.25	0.357	low	high	moderately low
NE V	1	1.25	2.33	0.333	low	high	moderately low
NE VIII	1	1.66	2.42	0.258	high	high	high
NE VIII	2	0.827	2	0.182	low	high	moderately low
NE X	1	1.33	2.38	0.394	low	high	moderately low
NE XI	1	1.33	2.43	0.477	low	high	moderately low
NE XII	1	1.5	2.5	0.6	low	low	low
NE XIII	1	1.33	2.57	0.523	low	low	low
SE IV	2	0.25	1.75	0.5	low	high	moderately low
C V	1	1.33	2	0.4	low	high	moderately low
C VI	1	1.33	1.8	0.4	low	high	moderately low
C VII	1	1.33	2	0.4	low	high	moderately low
NW XII	1	1.25	2.14	0.38	low	high	moderately low
NW XV	1	1.25	2.25	0.357	low	high	moderately low
SW V	1	1.33	2.73	0.346	low	high	moderately low
SW VI	1	0.5	2	0.222	low	low	moderately low

Table 13: Space Syntax Calculations for all Rooms with a *Lit Clos*

The syntax analysis supports this interpretation of the *lit clos* room. Two of the rooms have a presence-availability of high, 14 of the rooms are moderately low, and only three of the rooms have a low level of presence-availability (table 13). In the majority of cases, the space syntax shows that the *lit clos* room was not intentionally isolated from the rest of the house any more than other spaces within the household.

Further, even the rooms that do have a low level of presence-availability still could not have been gender isolated as the literature suggests menstrual seclusion spaces were. All but one of the *lit clos* rooms contained two doors: one to the street and one to the interior of the house. Thus, while the rooms could have been loosely integrated into the house, as the space syntax suggests, they could not have been used for seclusion or isolation because they served as the only passageway between the street and the rest of the house.

The only house where the *lit clos* room is not the first room upon entry is NE II. In this house, instead of a *lit clos* room, there is a corridor connecting the exterior of the house, the *lit clos* room, and the rest of the house (figure 13). In this house, individuals did not have to pass through the *lit clos* room in order to access the rest of the house. Bruyère reports that this was not the original structure of the house and that the corridor was added to the structure in the 20th dynasty (Bruyère 1939, pg. 243). Hence, NE II's uniqueness is not indicative of the *lit clos* as a type and a regular desire to separate this space. Instead the uniqueness of this space

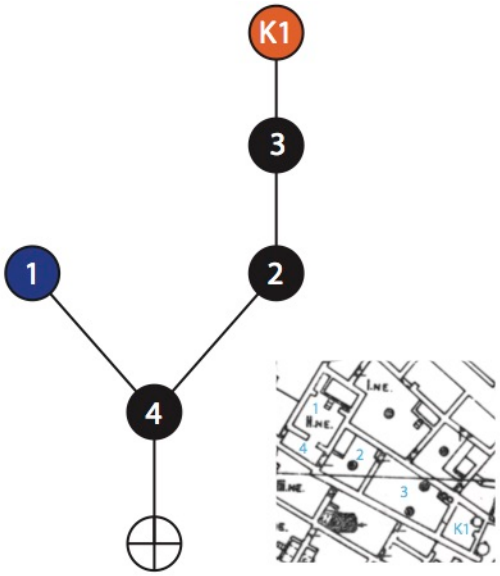

Figure 13: JAG of house NE II

reflects a personal choice by the building's inhabitants to separate these spaces. Thus, while this space is distinctly less integrated that the other *lit clos* rooms it does not suggest that this type as a whole was regularly used for menstrual seclusion.

My analysis supports the idea that while the *lit clos* itself may have been integrated into the system of female behavior surrounding fertility and women's reproductive health, it was not used for menstrual seclusion. The *lit clos* rooms are not sufficiently segregated architecturally and regularly functioned as the sole passageway between the street and the rest of the house. Therefore, these spaces could not have been used for menstrual seclusion.

Twice-Removed Rooms

Four of the houses in my sample contain a space that I have described as twice-removed. Most of the houses at Deir el-Medina contain rooms that are connected to the main linear pathway through the house. Thus, most of the floorplans resemble a main line with single rooms branching off. The houses under consideration here have branches consisting of two rooms growing off the main path of the house and neither of these rooms were identified as kitchens, cellars, or staircases (see rooms 7 and 8 on figure 14 and rooms 4 and 5 on figure 15). Only two of the houses in my sample contained this type of room NE VIII and NE I.

The first example of a twice-removed room is room 8 in house NE VIII. This room is connected by room 7 to the divan room (figure 14). Bruyère reports that the house was built in the 18th dynasty and underwent many modifications up until the 20th dynasty making it one of the widest houses in the village (Bruyère 1939, pg. 251-2). He does not specify what aspects of the house are modifications, but due to the unique attestation of this architectural choice, it is likely that rooms 7 and 8 were added after the initial construction period. Unfortunately, room 8 as well as the room preceding it (room 7) were not described by Bruyère in his publication so the room's function as defined by its finds is unknown.

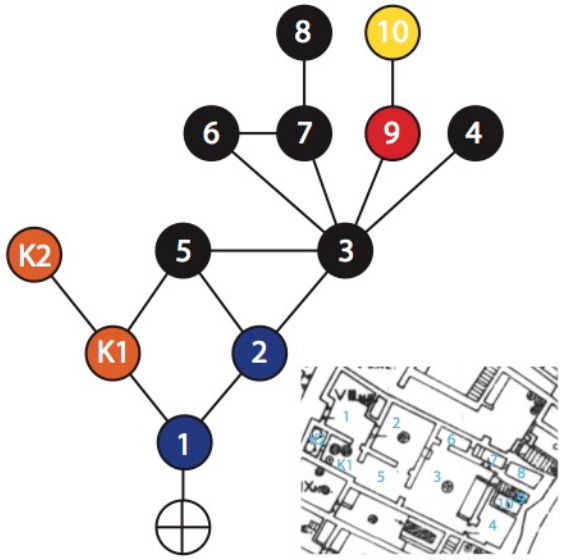

Figure 14: JAG of house NE VIII

The space syntax calculations show that the twice-removed room is not distinctly more removed from the rest of the spaces in the house. Room 8 has a presence-availability

level of moderately low which is common among all of the rooms in the house (table 14). However, no space in the house receives a presence-availability level of low (table 14). However, room 8 has one of the lowest RA calculations (table 14). Only room 10 and K2 come in lower (table 14). Thus, while room 8 is not uniquely segregated, it is one of the least accessible spaces within the house suggesting that it could have been used for seclusion.

Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.66	2.42	0.258	high	high	high
2	lit clos	0.827	2	0.182	low	high	moderately low
3		2.99	1.67	0.122	high	high	high
4		0.167	2.58	0.287	low	high	moderately low
5		0.827	2	0.182	low	high	moderately low
6		0.497	2.42	0.258	low	high	moderately low
7		1.167	2.33	0.242	low	high	moderately low
8		0.33	3.25	0.409	low	high	moderately low
9	staircase	1.167	2.42	0.258	low	high	moderately low
10	débarras	0.5	3.33	0.424	low	high	moderately low
K1	kitchen	1.66	2.42	0.258	high	high	high
K2	kitchen	0.33	3.33	0.424	low	high	moderately low

Table 14: Space Syntax Calculations of House NE VIII

The distinctive removal of room 8 by the inclusion of room 7 is more suggestive of its use for seclusion. Among the other houses at Deir el-Medina where this form of separation is seen the room twice removed is a cellar, staircase, or a kitchen. Why were the inhabitants of NE VIII and NE I interested in separating a room in a similar way? I hypothesize that it was to use this space for menstrual seclusion.

The second example of a twice removed room is room 5 in house NE I. Room 5 is separated from the first room of the house by room 4 (figure 15). Similar to the rooms in

NE VIII, Bruyère does not record rooms 4 and 5 individually so the rooms' finds and functions are unknown. Bruyère does report that the house was remodeled in the 19th dynasty and the rooms to the north were added (Bruyère, 1939, pg. 241). It is not specified in the text, but it is likely that the rooms to the north that were added were rooms 4, 5, 6, and 7. Again, the inhabitants of Deir el-Medina have altered their house in order to add this twice-removed space.

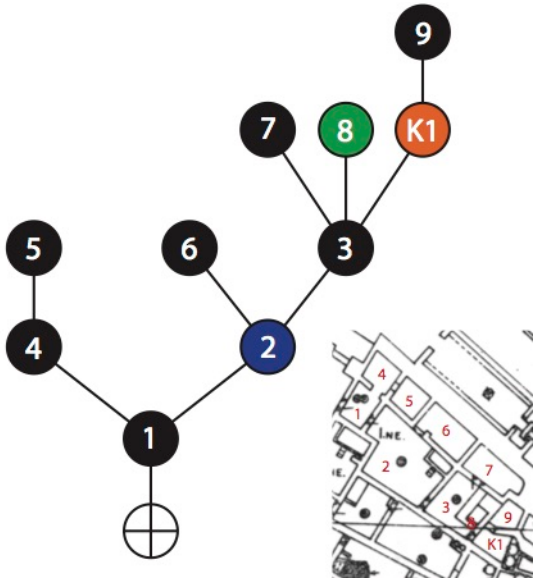

Figure 15: JAG of house NE I

Unlike room 8 in house NE VIII, the space syntax of the twice-removed space in NE I does suggest that it was distinctly isolated from the rest of the household. Room 6 has a presence-availability of low which suggests that people were not regularly present in this room (table 13). The only other space in the house to receive a low level is room 9 (table 13). However, room 5 has a higher RA value, 0.622 to 0.578, showing that it is slightly more segregated from the rest of the house (table 13). Thus, the space syntax shows that room 5 is architecturally capable of effectively isolating an individual from the rest of the household.

Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.83	2.2	0.267	high	high	high
2	lit clos	1.58	1.9	0.2	high	high	high
3		2.83	2	0.222	high	high	high
4		1.33	2.9	0.422	low	high	moderately low
5		0.5	3.8	0.622	low	low	low
6		0.33	2.8	0.4	low	high	moderately low
7		0.25	2.9	0.422	low	high	moderately low

8	cellar	0.25	2.9	0.422	low	high	moderately low
9		0.5	3.6	0.578	low	low	low
K1	kitchen	1.25	2.7	0.378	low	high	moderately low

Table 13: Space Syntax Calculations of House NE I

Additionally, its location within the household suggests that it could have been used for menstrual seclusion because it fits the hypothesized location of such a space. Unlike room 8 in NE VIII which is located at the back of the house, room 5 in NE I is located near the entrance and the likely communal spaces of the house. This is comparable to the descriptions of a *ḥrḫr.t* found in the demotic literature. Room 5 is the best fit for our textual hypothesis of menstrual seclusion behavior.

If this twice-removed space was the space used for menstrual seclusion by the inhabitants of Deir el-Medina, then the rest of the spaces considered must not have been sufficient for this use. In my discussion of other spaces at Deir el-Medina, I have shown that many spaces could have been used opportunistically for seclusion but that could not have been their sole function. If the inhabitants of Deir el-Medina were adding these twice removed spaces for use as menstrual seclusion spaces, then that implies that the other places within the house that could have been used opportunistically were not made for this function. Further, the addition of twice-removed spaces solidifies the interpretation that the *lit clos* was not used for menstrual seclusion. Both NE I and NE VIII have *lit clos* in other rooms of the house. If this was sufficient space for seclusion the twice-removed spaces would not have been necessary. Thus, the addition of these spaces in the houses at Deir el-Medina suggests that the other types of rooms in the house were no longer a sufficient alternative once it was possible to add these twice removed spaces for menstrual seclusion.

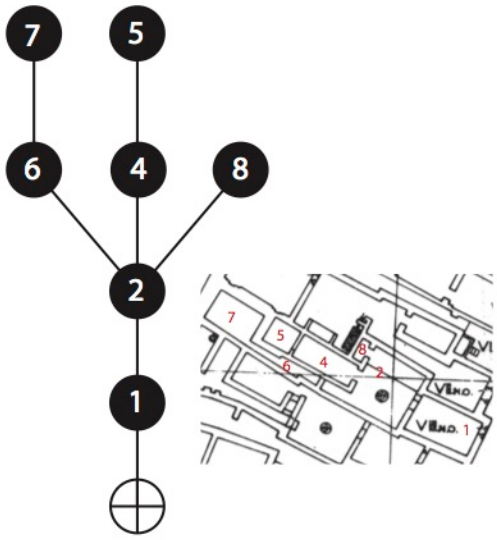

Figure 16: JAG of house NW VIII

Houses NE I and NE VIII are the largest houses in my sample containing 10 and 12 rooms respectively. This is 2 to 5 more rooms than the majority of the houses which contained 7 or 8 rooms. Further, Bruyère reports that these houses were often enlarged encroaching on the houses next door. This suggests that the inhabitants of NE I and NE VIII were either wealthier and could afford to expand or had resided in the village longer than others and could amass space over time. Regardless, my analysis suggests that inclusion of a menstrual seclusion space within the household is a product of having enough space for it. If this is true, the other large houses at Deir el-Medina that were not included in my sample should contain a twice-removed space as well.

The only other house outside of my original sample that contains a twice-removed room is NW VIII. However, this house is not abnormally large containing a regular 8 rooms (figures 16). The twice-removed room in NW VIII is room 5 (figure 16). In his publication, Bruyère only discusses rooms 1 and 2 and states that the rest of the rooms in the house are cubicles, storage rooms, or kitchens (Bruyère 1939, pg. 283). The kitchen is not marked on the map (figure 16) but is likely room 7 given that this location within other houses contained cooking equipment thus room 7 was not a twice-removed space. NW VIII was not included in my sample due to this uncertainty. Regardless, the presence of a twice-removed room in NW VIII shows that amount of space within the household does not correlate with the inclusion of this type of space. Thus, the reason

for the inclusion of a menstrual seclusion space within the household is not likely to be related to wealth or longevity of habitation within the settlement.

My analysis has shown that there are plenty of places within the houses at Deir el-Medina that could have been used for the isolation of individuals. Scholars have argued that the houses at Deir-el Medina were too small for menstrual seclusion to occur, but my analysis shows that both cellars and 'bedrooms' could have been used opportunistically for seclusion by inhabitants. Opportunistic use is not represented in the textual material, but this type of use reflects the realities of space constraints within the small village. Further, the inclusion of twice-removed rooms within two of the houses at Deir el-Medina does suggest the existence of spaces that could have been used solely for menstrual seclusion. The inclusion of these spaces within the house does not appear to be a factor of wealth or longevity in habitation due to the appearance of another twice-removed room in house NW VIII. Other factors such as identity, ethnicity, or communal living could be the reason for this space only occurring in three of the houses, but those factors are not testable through my investigation into the architecture. Nevertheless, this analysis shows that it was possible for women to have been secluded during their menstrual period within the domestic spaces at Deir el-Medina.

Conclusions

Menstrual seclusion behavior is attested in the textual record of New Kingdom Egypt, but how this behavior was practiced and implemented in domestic contexts is not well understood. In order to understand these behaviors better, scholarly attention needs to shift from the texts to the archaeology. Toward this end, I analyzed the architecture of the houses at Deir el-Medina for evidence of locations within the house that could have been used for menstrual seclusion. My analysis found that many rooms could have been used opportunistically for this purpose. Further, twice-removed rooms within the larger houses were architecturally removed to an extent that other spaces were not. This suggests that these spaces may have been used exclusively for menstrual seclusion. This analysis does not confirm that menstrual seclusion took place in these rooms, but it does confirm the possibility of such use.

My analysis of the textual information surrounding menstruation found that it likely occurred within a larger system of behaviors that celebrated many different life transitions for women. The events that the Egyptians chose to celebrate provide insight into the female socialization process. Taking these behaviors as a whole I found that the Egyptians privileged fertility and the production of offspring over social connecting events like marriage. Further investigation into the ways that transitional events such as menstruation, menarche, and childbirth were conceptualized by the Egyptians would aid in our understanding of these interrelated behaviors and inform future searches for this behavior archaeologically.

The archaeological analysis presented in this paper could be added to in future studies through the use of two other aspects of space syntax: viewshed analysis and

movement patterns. An analysis of viewsheds would allow us to see how the placement of doorways or features would limit the visibility of activities within certain rooms additionally isolating them. Analyzing the movement patterns of individuals within the house would allow us to see the main lines of movement within the house and which spaces are purposefully removed from these channels of activity. Both of these analyses require plotting the architecture of Deir el-Medina in GIS. Gathering this type of locational data for the structures at Deir el-Medina should be a focus in future scholarship so that these analyses can be done.

Nevertheless, my analysis found that that there were always spaces within the houses that could have been used opportunistically for seclusion as well as three twice-removed spaces that were intentionally segregated from the rest of the houses. The reason for the rare appearance of this twice-removed space is unknown. It does not appear to have been a function of additional space or wealth since it is found in both small and large houses. Perhaps, menstrual seclusion practice was communal and not practiced within every house. Instead, the women would gather at specific houses. Alternatively, it could have been practiced only by a select group of the village's inhabitants. Or, perhaps the practice took place outside the walled village. These possibilities should be tested by future research.

One way that future research can tackle these questions is to analyze the architecture and associated material finds of other domestic sites. The workman's village at Amarna is a good comparative site because the population of the city is made up of similar if not the same individuals who lived at Deir el-Medina. Analysis of the architecture here will add to the discussion of the effect of tenants' agency on the inclusion of isolated spaces within the houses because Amarna was not inhabited long

enough to have alterations. Additionally, it will aid in understanding the temporal changes in domestic architecture because it dates to the 18th dynasty, a time period that is obscured by later construction at Deir el-Medina. It would also be valuable to analyze the domestic structures within the main city at Amarna for purposefully isolated spaces. These houses were home to scribes and clerks that were part of a different social class than the artisans at Deir el-Medina and in the workman's village at Amarna. An analysis of their domestic structures would provide insight into how this practice was or was not implemented across social classes. Finally, because Amarna was excavated more recently and with a better attention to context than Deir el-Medina, an analysis of the workman's village and the main city at Amarna could contain an analysis of the material record alongside an architectural analysis. This would allow for a better understanding of what activities were being secluded by the architecture.

This analysis of the architecture of Deir el-Medina shows that there were plenty of possibilities for seclusion with the space and hints at possible spaces of menstrual seclusion. These possibilities can be further investigated in future research using the same methodology of space syntax combined with an analysis of associated material culture. This project shows that archaeological methods of inquiry can be implemented into the discussion of menstrual seclusion practices in ancient Egypt and provide valuable insights into menstrual seclusion behavior.

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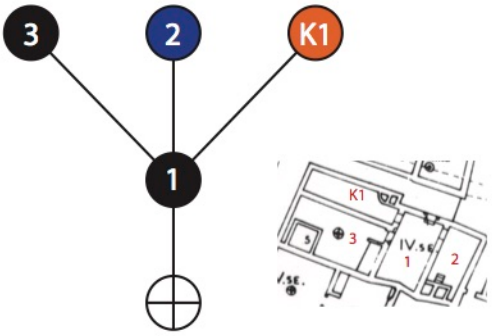
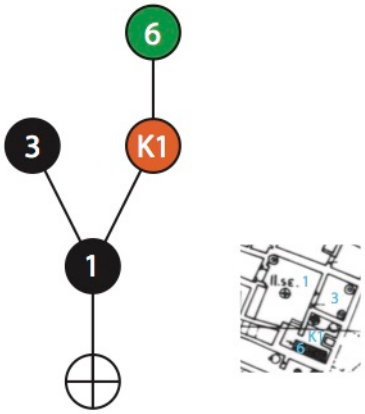
Appendix

SE IV



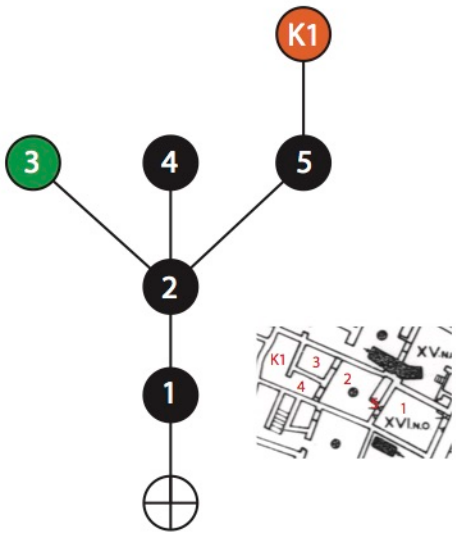
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		2	1	0	high	high	high
2	lit clos	0.25	1.75	0.5	low	high	moderately low
3		0.25	1.75	0.5	low	high	moderately low
K1	kitchen	0.25	1.75	0.5	low	high	moderately low

SE II



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		2.5	1.25	0.167	high	high	high
3		0.33	2	0.667	low	low	low
6	cellar	0.5	2.25	0.833	low	low	low
K1	kitchen	1.33	1.75	0.5	low	high	moderately low

NW XVI



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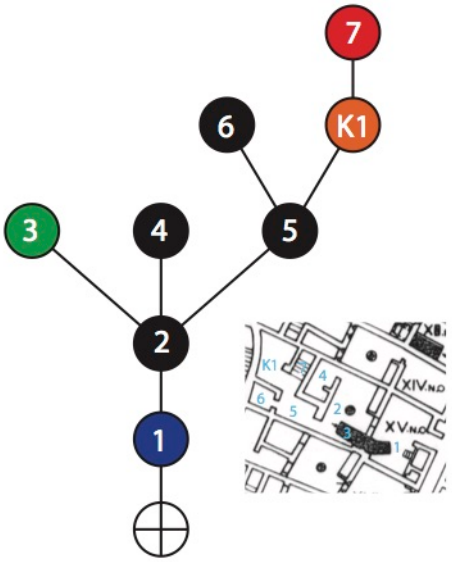
1		1.25	1.83	0.332	low	high	moderately low
2		3	1.33	0.132	high	high	high
3		0.25	2.17	0.468	low	high	moderately low
4		1.25	1.83	0.332	low	high	moderately low
5	cellar	0.25	2.17	0.468	low	high	moderately low
K1	kitchen	0.5	2.67	0.668	low	low	low

NW XV



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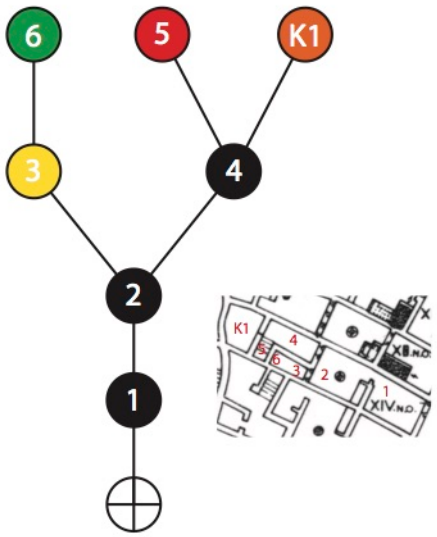
1	lit clos	1.25	2.25	0.357	low	high	moderately low
2		2.85	1.63	0.18	high	high	high
3	cellar	0.25	2.5	0.429	low	high	moderately low
4		0.25	2.5	0.429	low	high	moderately low
5		1.75	1.75	0.214	high	high	high
6		0.33	2.63	0.466	low	high	moderately low
7	staircase	0.5	3.25	0.643	low	low	low
K1	kitchen	1.33	2.38	0.394	low	high	moderately low

NW XIV



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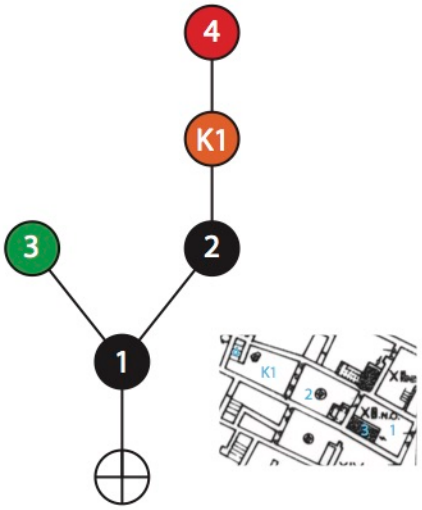
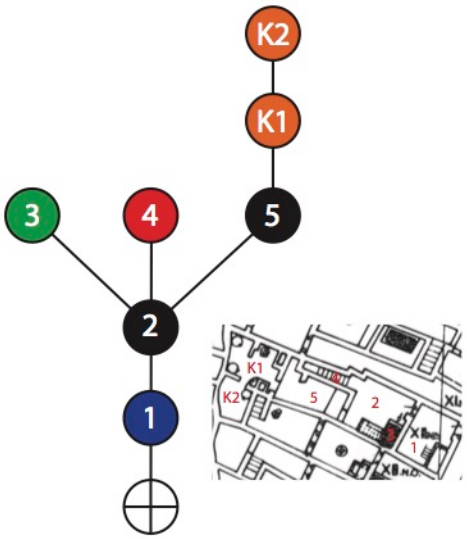
1		1.33	2.14	0.38	low	high	moderately low
2		1.33	1.57	0.19	low	high	moderately low
3	débarras	1.33	2.14	0.38	low	high	moderately low
4		2.33	1.86	0.287	high	high	high
5	staircase	0.33	2.71	0.57	low	low	low
6	cellar	0.5	3	0.667	low	low	low
K1	kitchen	0.33	2.71	0.57	low	low	low

NW XIII



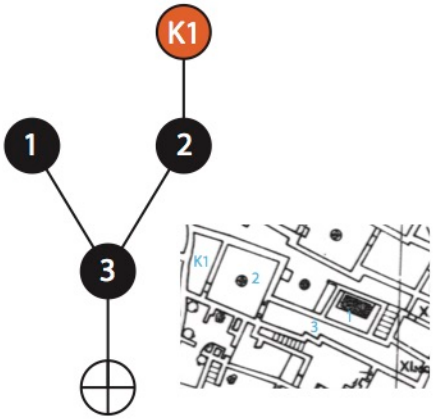
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		2.5	1.6	0.3	high	high	high
2		0.83	1.6	0.3	low	high	moderately low
3	cellar	0.33	2.4	0.7	low	low	low
4	staircase	0.5	2.8	0.9	low	low	low
K1	kitchen	1.5	2	0.5	low	high	moderately low

NW XII



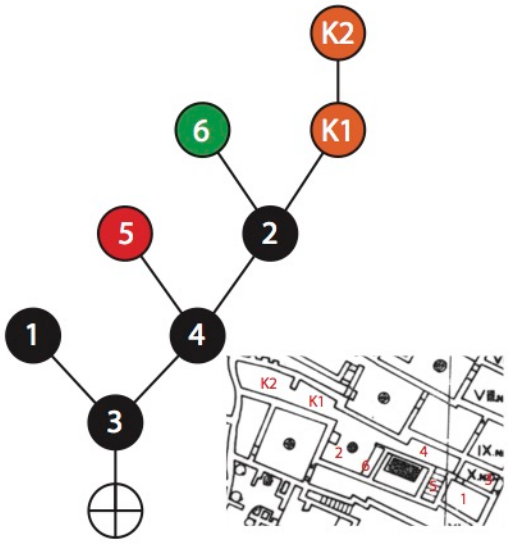
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.14	0.38	low	high	moderately low
2		3	1.57	0.19	high	high	high
3	cellar	0.25	2.43	0.477	low	high	moderately low
4	staircase	0.25	2.43	0.477	low	high	moderately low
5		0.75	1.86	0.287	low	high	moderately low
K1	kitchen	1.5	2.43	0.477	low	high	moderately low
K2	kitchen	0.5	3.29	0.763	low	low	low

NW XI



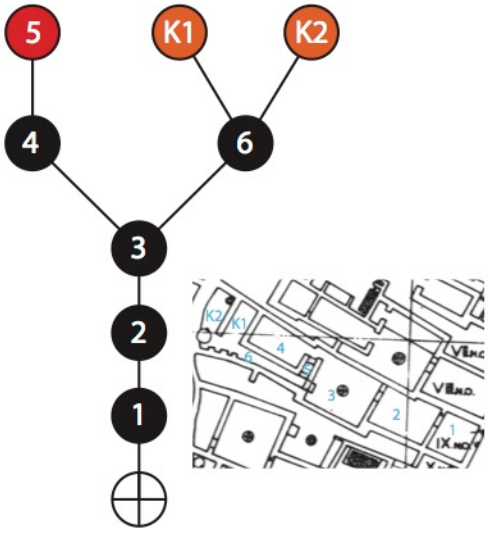
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		0.33	2	0.667	low	low	low
2		1.33	1.5	0.333	low	high	moderately low
3		2.5	1.25	0.167	high	high	high
K1	kitchen	0.5	2.25	0.833	low	low	low

NW X



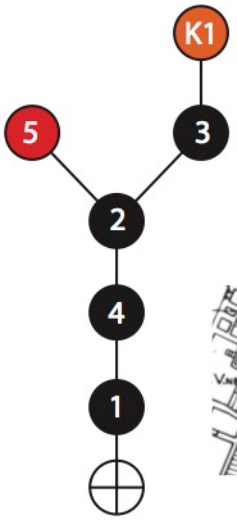
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		0.33	3	0.571	low	low	low
2		1.83	1.88	0.251	high	high	high
3		2.33	2.13	0.323	high	high	high
4		1.66	1.75	0.214	high	high	high
5	staircase	0.33	2.63	0.466	low	high	moderately low
6	cellar	0.33	2.75	0.5	low	high	moderately low
K1	kitchen	1.33	2.5	0.429	low	high	moderately low
K2	kitchen	0.5	3.38	0.68	low	low	low

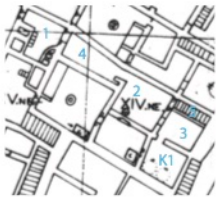
NW IX



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.5	2.75	0.5	low	high	moderately low
2		0.83	2.13	0.323	low	high	moderately low
3		1.33	1.75	0.214	low	high	moderately low
4		1.33	2.38	0.394	low	high	moderately low
5	staircase	0.5	3.25	0.643	low	low	low
6		2.33	2.13	0.323	high	high	high
K1	kitchen	0.33	3	0.571	low	low	low
K2	kitchen	0.33	3	0.571	low	low	low

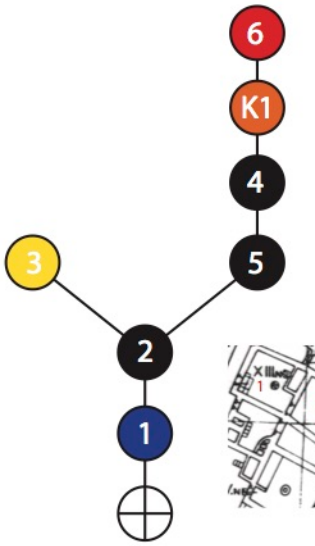
NE XIV

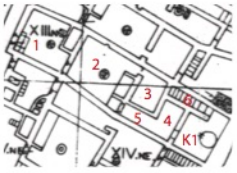




Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.5	2.33	0.532	low	low	low
2		2	1.67	0.268	high	high	high
3		1.33	2.17	0.468	low	high	moderately low
4		0.83	1.83	0.332	low	high	moderately low
5	staircase	0.33	2.5	0.6	low	low	low
K1	kitchen	0.5	3	0.8	low	low	low

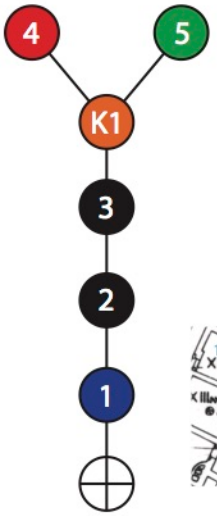
NE XIII





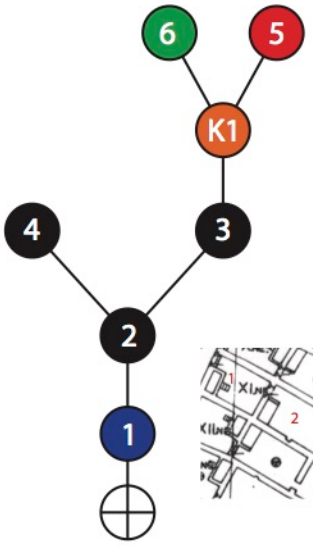
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2.57	0.523	low	low	low
2		2	2	0.333	high	high	high
3	débarras	0.33	2.86	0.62	low	low	low
4		1	2.29	0.43	low	high	moderately high
5		0.83	2	0.333	low	high	moderately high
6	staircase	0.5	3.71	0.903	low	low	low
K1	kitchen	1.5	2.86	0.62	low	low	low

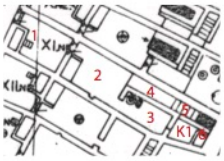
NE XII



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.5	2.5	0.6	low	low	low
2		1	2	0.4	low	high	moderately low
3		0.83	1.83	0.332	low	high	moderately low
4	staircase	0.33	2.83	0.732	low	low	low
5	cellar	0.33	2.83	0.732	low	low	low
K1	kitchen	2.5	2	0.4	high	high	high

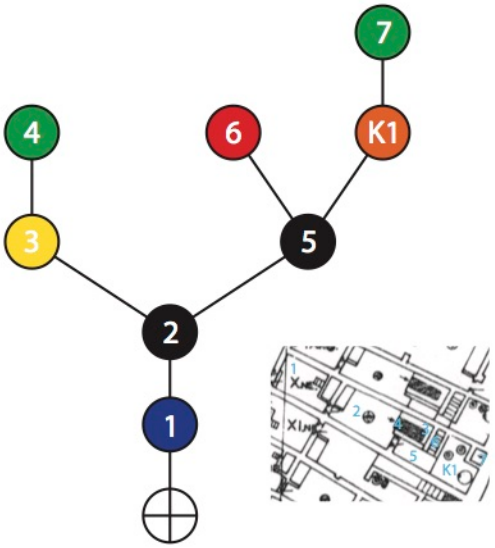
NE XI





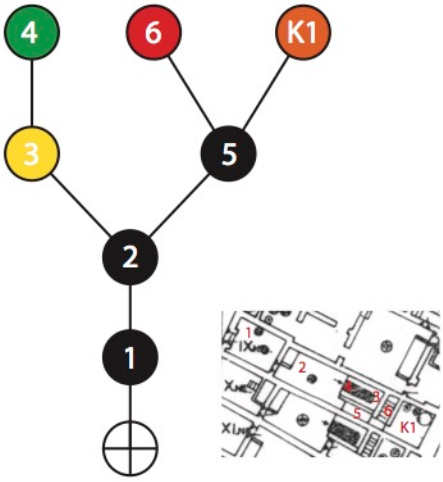
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2.43	0.477	low	high	moderately low
2		2	1.86	0.287	high	high	high
3		0.66	1.86	0.287	low	high	moderately low
4		0.33	2.71	0.57	low	low	low
5	staircase	0.33	3	0.667	low	low	low
6	cellar	0.33	3	0.667	low	low	low
K1	kitchen	2.5	2.14	0.38	high	high	high

NE X



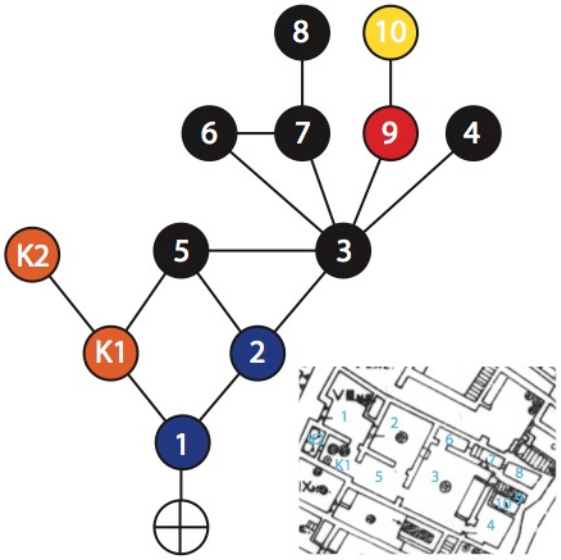
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2.38	0.394	low	high	moderately low
2		1.33	1.75	0.214	low	high	moderately low
3	débarras	1.33	2.38	0.394	low	high	moderately low
4	cellar	0.5	3.25	0.643	low	low	low
5		1.83	1.88	0.251	high	high	high
6	staircase	0.33	2.75	0.5	low	high	moderately low
7	cellar	0.5	3.38	0.68	low	low	low
K1	kitchen	1.33	2.5	0.429	low	high	moderately low

NE IX



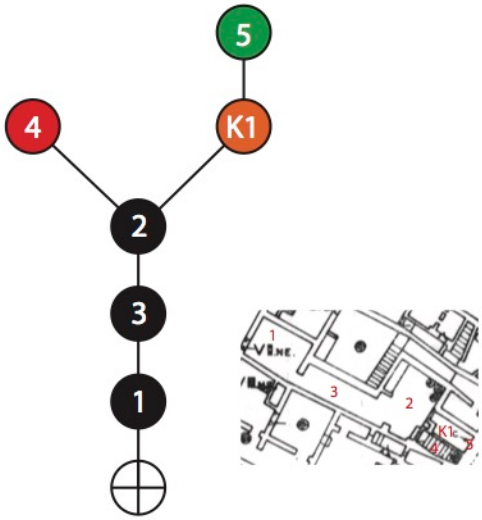
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.33	2.14	0.38	low	high	moderately low
2		1.33	1.57	0.19	low	high	moderately low
3	débarras	1.33	2.14	0.38	low	high	moderately low
4	cellar	0.5	3	0.667	low	low	low
5		2.33	1.86	0.287	high	high	high
6	staircase	0.33	2.71	0.57	low	low	low
K1	kitchen	0.33	2.71	0.57	low	low	low

NE VIII



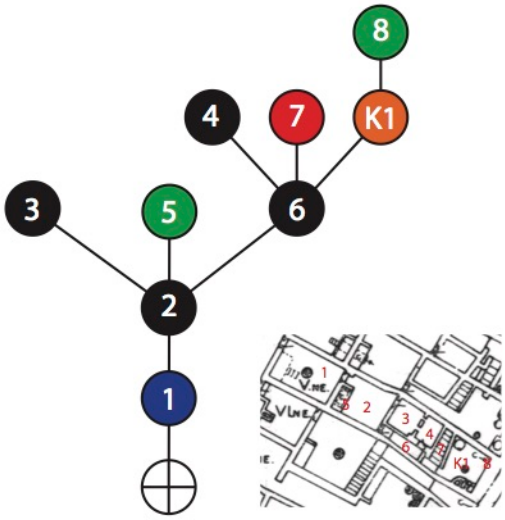
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.66	2.42	0.258	high	high	high
2	lit clos	0.827	2	0.182	low	high	moderately low
3		3.66	1.67	0.122	high	high	high
4		0.167	2.58	0.287	low	high	moderately low
5		0.827	2	0.182	low	high	moderately low
6		0.167	2.58	0.287	low	high	moderately low
7		1.167	2.42	0.258	low	high	moderately low
8		0.5	3.33	0.424	low	high	moderately low
9	staircase	1.167	2.42	0.258	low	high	moderately low
10	débarras	0.5	3.33	0.424	low	high	moderately low
K1	kitchen	1.66	2.42	0.258	high	high	high
K2	kitchen	0.33	3.33	0.424	low	high	moderately low

NE VII



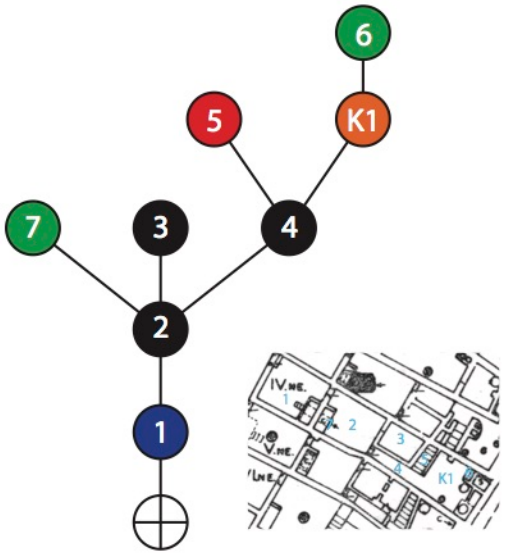
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.5	2	0.333	low	high	moderately low
2		2	1.43	0.143	high	high	high
3		0.83	1.57	0.19	low	high	moderately low
4	staircase	0.33	2.14	0.38	low	high	moderately low
5	cellar	0.5	2.57	0.523	low	low	low
K1	kitchen	1.33	1.86	0.287	low	high	moderately low

NE V



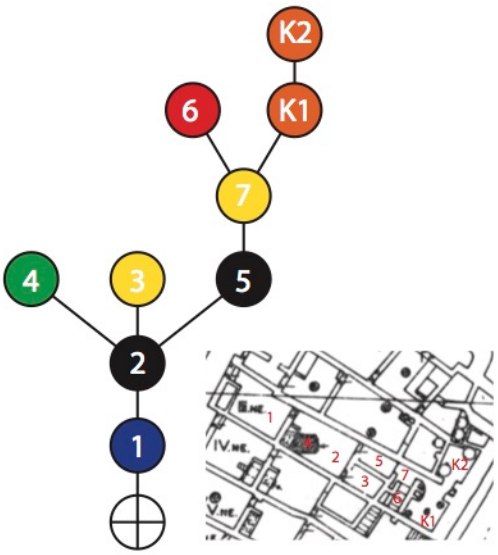
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.33	0.333	low	high	moderately low
2		2.75	1.67	0.168	high	high	high
3		0.25	2.56	0.39	low	high	moderately low
4		0.25	2.56	0.39	low	high	moderately low
5	cellar	0.25	2.56	0.39	low	high	moderately low
6		2.75	1.67	0.168	high	high	high
7	staircase	0.25	2.56	0.39	low	high	moderately low
8	cellar	0.5	3.22	0.555	low	low	low
K1	kitchen	1.25	2.33	0.333	low	high	moderately low

NE IV



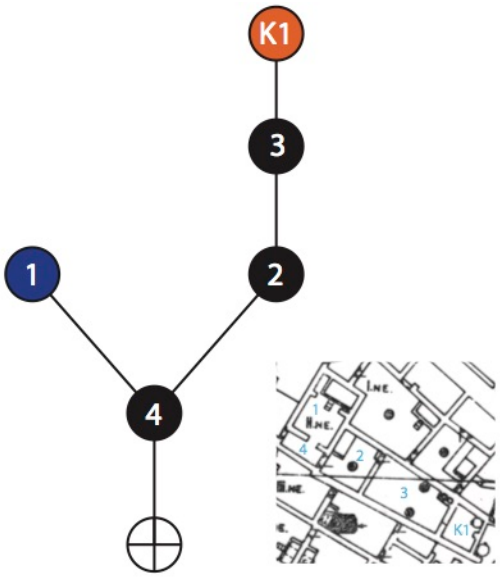
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.25	0.357	low	high	moderately low
2		2.83	1.63	0.179	high	high	high
3		0.25	2.5	0.429	low	high	moderately low
4		1.75	1.75	0.214	high	high	high
5	staircase	0.33	2.63	0.464	low	high	moderately low
6	cellar	0.5	3.25	0.643	low	low	low
7	cellar	0.25	2.5	0.429	low	high	moderately low
K1	kitchen	1.33	2.38	0.393	low	high	moderately low

NE III



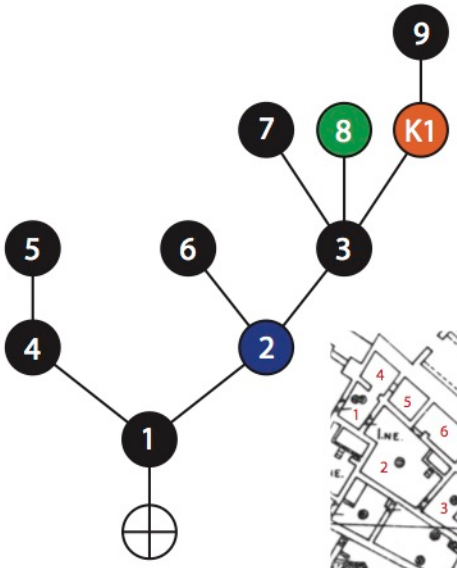
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.25	2.67	0.417	low	high	moderately low
2		3	2	0.25	high	high	high
3	débarras	0.25	2.89	0.472	low	high	moderately low
4	cellar	0.25	2.89	0.472	low	high	moderately low
5		0.58	2	0.25	low	high	moderately low
6	staircase	0.33	3.11	0.528	low	low	low
7	débarras	2	2.22	0.306	high	high	high
K1	kitchen	1.33	2.89	0.472	low	high	moderately low
K2	kitchen	0.5	3.78	0.694	low	low	low

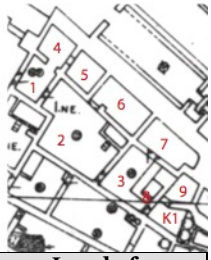
NE II



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	0.33	2.4	0.7	low	low	low
2		0.83	1.6	0.3	low	high	moderately low
3		1.5	2	0.5	low	high	moderately low
4		2.5	2.6	0.3	high	high	high
K1	kitchen	0.5	2.8	0.9	low	low	low

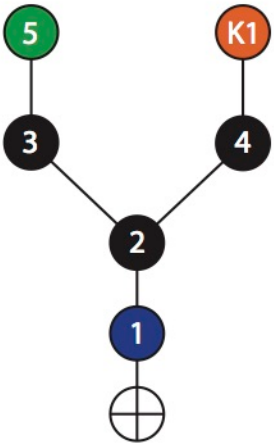
NE I





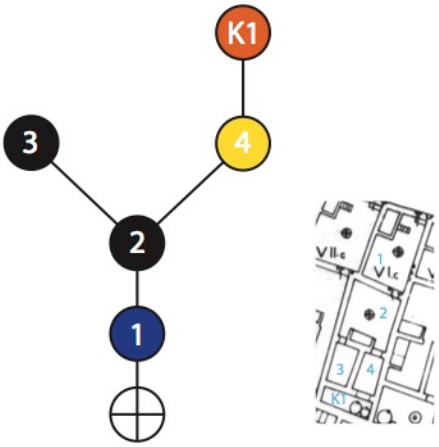
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1		1.83	2.2	0.267	high	high	high
2	lit clos	1.58	1.9	0.2	high	high	high
3		2.83	2	0.222	high	high	high
4		1.33	2.9	0.422	low	high	moderately low
5		0.5	3.8	0.622	low	low	low
6		0.33	2.8	0.4	low	high	moderately low
7		0.25	2.9	0.422	low	high	moderately low
8	cellar	0.25	2.9	0.422	low	high	moderately low
9		0.5	3.6	0.578	low	low	low
K1	kitchen	1.25	2.7	0.378	low	high	moderately low

C VII



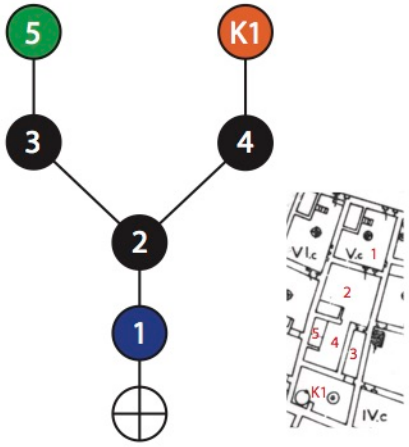
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2	0.4	low	high	moderately low
2		1.5	1.5	0.2	low	high	moderately low
3		1.33	2	0.4	low	high	moderately low
4		1.33	2	0.4	low	high	moderately low
5	cellar	0.5	2.83	0.732	low	low	low
K1	kitchen	0.5	2.83	0.732	low	low	low

C VI



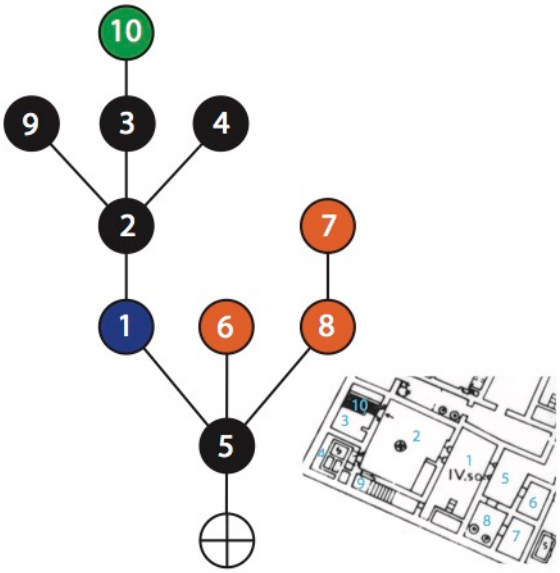
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	1.8	0.4	low	high	moderately low
2		2	1.4	0.2	high	high	high
3		0.33	2.2	0.6	low	low	low
4	débarras	1.33	1.8	0.4	low	high	moderately low
K1	kitchen	0.5	2.6	0.8	low	low	low

C V



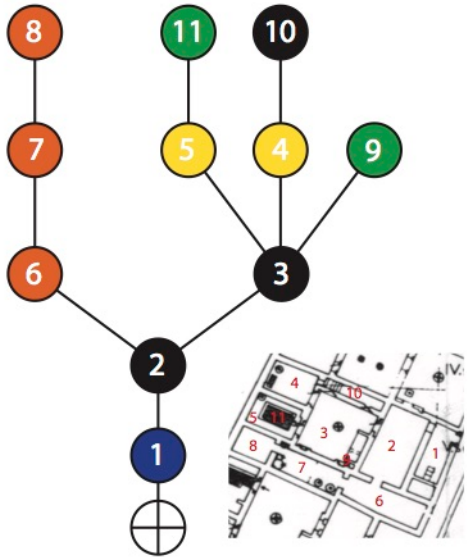
Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2	0.4	low	high	moderately low
2		1.5	1.5	0.2	low	high	moderately low
3		1.33	2	0.4	low	high	moderately low
4		1.33	2	0.4	low	high	moderately low
5	cellar	0.5	2.83	0.732	low	low	low
K1	kitchen	0.5	2.83	0.732	low	low	low

SW VI



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	0.5	2	0.222	low	high	moderately low
2		3	2.1	0.244	high	high	high
3		1.25	2.8	0.4	low	high	moderately low
4		0.25	3	0.444	low	high	moderately low
5		3	2.1	0.244	high	high	high
6	kitchen	0.25	3	0.444	low	high	moderately low
7	kitchen	0.5	3.7	0.6	low	low	low
8	kitchen	1.25	2.8	0.4	low	high	moderately low
9		0.25	3	0.444	low	high	moderately low
10	cellar	0.5	3.7	0.6	low	low	low

SW V



Room Number	Type of Room	Control Value	Mean Depth	Relative Asymmetry	High/Low CV	High/Low RA	Level of Presence-Availability
1	lit clos	1.33	2.73	0.346	low	high	moderately low
2		1.25	2	0.2	low	high	moderately low
3		2.33	2	0.2	high	high	high
4	débarras	1.25	2.73	0.346	low	high	moderately low
5	débarras	1.25	2.73	0.346	low	high	moderately low
6	kitchen	0.83	2.55	0.31	low	high	moderately low
7	kitchen	1.5	3.27	0.454	low	high	moderately low
8	kitchen	0.5	4.18	0.636	low	low	low
9	cellar	0.25	2.91	0.382	low	high	moderately low
10	cellar	0.5	3.64	0.528	low	low	low
11	cellar	0.5	3.64	0.528	low	low	low

Room Numbers for Houses Sampled in this Analysis on Castel's 1970 Map of the Walled Village