Opening Remarks, Workshop on Zhangjiashan Tomb 247

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Hello, and welcome to our **Workshop on Zhāngjiāshān tomb 247**. We have, I think, an exciting day ahead of us, and I'm really glad to see all of you here.

All of us in early Chinese studies have some sort of *stake* in tomb 247. Excavated in December, 1983, in Jiānglíng County, this second-century BCE tomb produced, alongside lacquer-ware, stationary, counting rods, and so on, a corpus of **eight** manuscripts on bamboo: an inventory, a calendar, a collection of laws and legal cases, a manual on medicine and exercise, a treatise on military philosophy and, *lastly*, a collection of mathematical procedures. **There is**, in a way, *nothing* exceptional about this tomb. It is neither the grandest nor richest of its age, nor, *by any means*, the only tomb is this area—as the number suggests—the tomb library is *precious*, for sure, but it is not the **largest** of its type, neither the most **eclectic**. We're here today to talk about *this one tomb*, but the stakes are by no means **limited** thereto, for *this* tomb—tomb 247—is but one of many.

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When you find a tomb library, like the one at Zhāngjiāshān, everything is jumbled together in a single mass. Independent rolls, placed together, are soaked, pressed, warped and unbound by geological forces until they've come an unrecognisable **heap** of bamboo noodles. Our job is to restore order to such libraries, and that means cleaning, **photo**graphing, and reconstructing the physical order of each manuscript, but it also means *dividing them* into modern disciplines. Once we've done this, you can take your little piece of **medicine** or **philosophy** and read it together with other little pieces, taken here and there from other tombs like this one. And you learn something new with each tomb: you learn more about how medicine worked, for example, but you also learn about **books**, and how *they* worked—about how knowledge was **embodied**, how it moved, and how it was consumed and reproduced. And all of us are waiting for the next tomb—the next tome—that it may answer the question of the day, but **maybe** the answers we're looking for are only centimetres away.

With this in mind, we've invited together scholars from different countries, different disciplines, and, more importantly, *different areas of this diagram*, to explore what might be gained from approaching the Zhāngjiāshān corpus as **a corpus.** Maybe we should draw different lines through this diagram, or maybe none at all. The manuscript corpus **too** has a context, of course, which is why we've also invited an **archaeologist** to help situate **our corpus** in the context of this particular tomb, and this tomb, in the context

of others. Not everyone could make it today, and not every discipline is represented, but I think we'll leave here with a different understanding of this tomb, and our own piece of the pie.

Now, before we get started, I'd like to say a couple words about how this workshop came about.

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So, you are here—at Paris 7. And this is how today's event is organised. More specifically, today's workshop is part of the ERC project, SAW—Mathematical Sciences in the Ancient World. Led by Karine Chemla, we are an interdisciplinary group dedicated to the history of mathematics in, *primarily*, **Mesopotamia**, **China** and **the Indian sub-continent**. The **aim** of our project is threefold : to **de-construct** the idea of monolithic « national traditions » and reveal the plurality of mathematical cultures operating within, for example, **« Chinese mathematics »** ; to **document** how the idea of « national traditions » was constructed in recent times ; and to **explore** how the history of mathematics might serve primary school education.

Now, where Project SAW intersects with Zhāngjiāshān, of course, is the ***Suàn shù shū***—the collection of mathematical procedures recovered from this tomb. We're not having a talk on the *Suàn shù shū* today, so, I'd like to summarise **in five minutes** what Karine and I have been doing, and how that manuscript brought us here.

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Codicologicaly speaking, there's **a lot of stuff** going on in the *Suàn shù shū*, whatever you're personal interest in the *contents,* I think you'll find the *object itself* fascinating. **The support** is divided into **a body** and **upper & lower margins.** *The body is the body*—the **upper margin** features **69 headings**, which correspond with paragraph-breaks in the body, which is interesting, but what is *really interesting*, is that **in the lower margin** we have 15 signatures by a Mr. Yáng, Wáng and Jìng signalling that they had **« already checked »** particular contents, ***and*** a number of dots, matching those we see in the body, that seem to mark mistakes.

So, with three **« checkers »**, there's clearly more than one hand in this manuscript, so the question is how to proceed. **We began with the headings**, because the headings often repeat the first two words of the section. **We took** the characters of the heading, and juxtaposed them with the self-same characters as they appear *under that heading,* in the body. Some were pretty much the same, but the **the majority** were quite different. The difference came down to *style*—the one with exaggerated strokes and asymmetries, and the other modest—but it also came down to *structure*—the one, for example, consistently abbreviating certain characters, or using one semantic classifier over another. So, here, it seemed pretty clear that we were dealing with different hands—not just « **body** vs. **margin** », but different hands within the body itself.

The next step was to delineate where each hand appears in the **body**. The way that we did this was, *in retrospect*, unnecessarily complicated, and I've since worked out a better method. **Anyway**, after much trial and error, I discovered that Mathias Richter's methodology—which is to focus on **simple**, **common** characters like 之—doesn't really work, because one *scripteur* may write them

a half-dozen different ways, *all on the same slip* (in fact, I learned from a colleague here that **later** calligraphy indeed stresses such variation). Instead, it turns out, that it's better to look at *complex, common* characters. In the end, we were able to divide the body into three « script groups »: **A**, **B**, and **a third group**, in which both A- and B-forms appeared together on the same slip.

Now, it just so happened that this **third group—**the hybrid— was concentrated in the same section—« Shǎo guǎng ». Upon inspection, we immediately realised that hands A & B were *alternating*, and that they were *alternating* between **question** and **answer**. Indeed, the one place where **yellow—**Hand A—does **not** answer the sample problem written by **purple—**Hand B—purple leaves a long blank before answering his own problem. the blank is *so long*, in fact, that the answer runs on into the next slip, and *this slip*, one notes, is longer than all the others by two centimetres, so it looks like it's been inserted for this purpose, as if to say « hey, you forgot to answer this one ».

Now, as to the **« checkers »**, one notes that the same signature— Mr. Wáng, in this case—appears with both Hand A and Hand B, so we can eliminate the possibility that A & B are **checking** or **signing** one another's work. What's going on between the **checkers** and A & B is even more complicated, as there's evidence of a back-and-forth there as well, but I won't get into that today.

The point is, we have **five people** in this manuscript, and this isn't the sort of interaction that we would expect from a « funerary workshop », from which Anthony Barbieri-Low and Robin Yates, for example, argue that the Zhangjiashan corpus originated, where one guy takes over after another's tired, and no one cares about the quality of what's written. **No**: what we see here is a complex back-and-forth, and one in which quality *clearly* matters. What sort of interaction is this? Well, we can't know for sure, but Karine and I suspect that it's a pedagogical exercise and that Purple is the teacher.

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This, of course, leads to the question of whether or not these individuals wrote any of the **other manuscripts** in the Zhangjiashan corpus. This seems like something **we all** might want to know, so, for my own **personal** contribution to the question of **corpus**, I performed handwriting analysis of the **whole thing**, the results of which I've sent the speakers on DropBox. This, in short, is what I did.

There are, first of all, **different scripts** present in second-century manuscripts. Chen Songchang, for example, has divided the Mawangdui corpus into three : « ancient clerical », « Han clerical » and « seal clerical », and just about everyone uses his typology to talk about other tombs. Chen Songchang is a **calligrapher**, so this comes easy to him, but the difference is harder for me to **intuit**, so what **I did** was gather sample characters from each manuscript in each script, to see if I could **quantify** the difference. From this, I was able to determine **precise, quantitative criteria** for identifying his three scripts: proportions, angles, composition, etc.—all of which was **universal** to a multi-manuscript sample, and also **unique** to that sample.

Now, the script is not the *scripteur*, of course, because we know that scribes were trained to write in different scripts, so we have to distinguish between features belonging to the **script** and features belonging to the **individual**. **To do this**, I identified features that

are **recurrent** and **unique** to **one particular manuscript** out four or six in the same script, **and**, features that occur idiosyncratically **in multiple scripts**. So, for example, some manuscripts use a very square *yuè*, no matter the script, the orthography for *wéi* is sometimes *very* individual, and you also have features of one script that occur consistently in another.

So, that's **Mawangdui**. Assuming that Chen Songchang is right about the **three scripts**, this gives us a control group for identifying **scripts** and **individual hands** in other second-century corpora.

Using our criteria from Mawangdui, I divided the Zhangjiashan corpus **slip-by-slip**. **In green**, you have « seal clerical » ; **in blue**, « ancient clerical », and you don't really have « Han clerical », except in the way that one of the *Zou yan shu* hands writes *wéi*. Ah, yes, I almost forgot to mention, it turns out that the *Suan shu shu* is not the only manuscript with multiple hands, as the *Ernian lüling* and *Zou yan shu* both break down into two distinct constellations of character-forms! Now, after sorting out issues of **script contamination** and **personal idiosyncrasy**, which you can read about in my report, **this** is what I've come up with:

- *Zou yan shu* **A** is completely unique: particularly in the way that it writes 其 with an X.

- *Ernian lüling* **B** is also completely unique: in the way it gives 其 « really big ears » and in the way it writes 爲.

- *Suan shu shu* **B** and *Zou yan shu* **B** are in different scripts, but I think that we can identify them with the same *scripteur,* because they express identical idiosyncrasies, e.g. a boxy 月 and the fact that the weird way that *Suan shu shu* B writes 爲 appears occasionally in *Zou yan shu* B.

- I think we can also identify the *Gai lu* and *Mai shu* as the same hand, though they **too** are written in different scripts, because of the same sort of **shared idiosyncrasies**.

I didn't have much luck with the rest, unfortunately, in part because the last two don't give us much to work with, but I've made a breakthrough with the calendar last week and I'll talk about that in my paper.

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So, this is *my idea* for how we might be able to approach the Zhangjiashan corpus as **a whole,** or at least **divide it** along different lines. Whether or not this **works**, and we can discuss that as the day goes on, the idea of today is to try something different and to look **a few centimetres beyond** where we normally look. It took **five people** to write the *Suan shu shu*, **five critical minds** going back-and-forth, teaching, learning, checking and correcting; and **today**, ... well, we have **five people too**!

At that, I'll turn the floor over to one of the other organisers, if anyone has anything to add.