Juggling and the Subjective Records of Physical Skills

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So many things are a matter of perspective, whether at work or at play. On our behalf, this master juggler discusses the connection between what we can learn and what we can see, and what we think we know. A problem in philosophy.

Juggling can be used to illustrate an important issue for advocates of historical recreation, which is that faithful adherence to historical chronicles does not guarantee accurate recreation of physical skills. Historical sources have consistently misperceived these skills, resulting in unsuspected errors in our modern understanding of physical activities in the past. We are accustomed to considering biases in sources due to religious, political, or cultural beliefs. It is also readily recognized that chronicles may, for various reasons, be motivated to exaggerate or denigrate the physical activities they have seen. My point is that chronicles of physical activities may suffer from other biases for different and subtle reasons, relating partly to culture and partly to human nature.

No direct objective records of physical skills, like fighting or dancing, exist for times before the invention of cameras. The knowledge we have of how such physical activities were performed historically is derived from subjective sources such as drawings and written accounts, from surviving artifacts, and from the physical condition and physique of corpses. From surviving shoes we may conclude that medieval Europeans probably did not tap dance. From hunched backs and worn bones in graves we infer how laborers toiled, and from both subjective accounts and archeological finds concerning stirrups, Lynn White, Jr. deduces the history of warfare in Western Europe.

Ancient and Medieval juggling is interesting in this respect, because it left almost no objective traces. Specialized juggling equipment is a modern phenomenon, while the impact of juggling on the body is either too general (strengthened wrists) or too subtle (quicker reflexes) for inferences to be drawn on the basis of human remains. Knowledge of early juggling history relies exclusively on subjective accounts, tempered only by our knowledge of what is physically possible, and by the consistency of accounts among observers.

It is not my intention here to provide a history of juggling. For those who want such a history, I recommend Karl-Heinz Aiheiten’s 4,000 Years of Juggling, published by Michel Poignant, PLV. Instead, I want to use juggling to illustrate a problem associated with subjective accounts.

Consider a hypothetical Professor Jones who has never seen jugglers, either live, recorded, or photographed, and is trying to figure out exactly what it is that jugglers do. Suppose that Prof. Jones has only modern drawings and writings about jugglers at his disposal. By relying exclusively on subjective accounts, Jones will encounter two problems: 1. Difficulty of interpreting and understanding accurate texts and pictures, and 2. Coping with inaccuracies in the accounts.

Accurate text or verbal descriptions of physical skills like juggling are often almost incomprehensible, as anyone who has tried to learn knots or yo-yo tricks from a book knows. The use of jargon further increases confusion for the uninitiated. For example, a great deal of knowledge of 16th-century dance is lost because terms in Arbeau’s Orchesography are ill defined or undefined. For juggling, as in dance, accurate pictures are somewhat more enlightening, but hardly comparable to an actual performance.

The bigger problem with relying on subjective accounts of juggling is not the interpretation of inadequate, accurate information, but in coping with inaccuracy. For example, regardless of how a ball is thrown, it must fly in a parabola. Yet, as Professor Claude Shannon pointed out to me, in virtually every modern book that teaches juggling, the drawings of flight paths are not parabolas. The curves are usually either asymmetrical, or consist of straight lines with semicircular tops. This may be nitpicking, but it shows the errors that even experts striving for accuracy (or at least clarity) can make.

When inaccuracies in an account are simply mistakes on the part of one particular source, the problem is not too serious. By comparing the flawed account to those of other sources, Jones will at least be alerted to the fact that an error exists (I am assuming that Jones has access to more than one primary source). But what happens when, for some reason, many sources independently make the same mistake?

The most serious problem for Jones will not be the isolated mistakes of knowledgable sources. Rather, the trouble will be that most representations of juggling (both drawings and text descriptions) are made by untrained observers, who, for a variety of reasons, produce similar yet grossly inaccurate accounts.

I have asked people, including jugglers, to describe to me my own juggling demonstrations. The accounts are often dramatically wrong, not just in the description of individual tricks, but even in such basics as the number and type of objects juggled. Why are the descriptions so incorrect? More importantly (for Prof. Jones), why should they often tend to err in the same way?

One reason is that observers may not recognize the difficulty of reporting juggling accurately. In the present, as in the past, most available art and written text is produced by professional artists and writers. Experts in the art of watching esoteric skills like juggling are rare, and such experts are usually not artists or writers. They are fellow practitioners of the skill. Jugglers recognize this fact, and so to profit from their skill they perform in ways that do not require juggling appreciation classes to be appealing. The very fact that juggling may be difficult to accurately report, appreciate, or observe is thereby obscured, and this shows in the poor quality of artist's and writer's renditions of juggling.

A good juggler's routine may include dozens or hundreds of intricately different patterns and movements, yet a spectator might only be able to vaguely report that the juggler threw the objects low and quickly. An implication is that the most memorable (and, as a result, the most popular) juggling
moves are often not the ones most difficult to do, but rather the ones that are easiest to recognize and describe, as in, "she ate an apple while juggling," or "he juggled bowling balls." Similarly, most spectators will confuse fast or high juggling with difficult juggling, or will assume a trick is difficult if the juggler misses it on the first try.

The inability (or lack of desire) of observers to depict juggling accurately is most obvious in artist's renditions. Some artists draw juggling as simply a cloud of objects waver over the juggler's head. The most common modern depiction of juggling consists of a clown with his arms outstretched, staring straight ahead and grinning stupidly, while a low semicircle of many balls arches over his head from one hand to the other. This image, like most modern images of jugglers, is most often found in publications for children, but flourishes everywhere.

This archetype juggling pattern, characterized by a circular arc, a large number of objects close together at low height, and no object actually in or touching either hand, may be so firmly entrenched in modern minds that it overrides any memory an artist might have of actual juggling. Our poor Professor Jones, confronted with the modern preponderance and consistency of this image, would surely conclude that 20th century juggling consists primarily of performing this archetype picture somehow. Imagine that Jones, attempting a diligent study of juggling in this time period, tries to recreate this commonest of juggling patterns.

If he is astute, it will be clear to Jones that the balls are in fact not thrown in an arc from one hand to the other, both because it is physically impossible to individually throw a large number of balls that low and have them all be in the air at the same time, and because they would travel in a parabolic arc, not a semicircle. Besides, there is no evidence from this image that the balls are either thrown from or caught in the hands. After some experimentation, Jones might, with good reason, conclude that the way to juggle is place balls at regular intervals along outstretched arms, stand looking straight ahead, bend slightly at the knees and jump up. Done correctly, the balls will fly straight up off the arms, appearing in a semicircular arc overhead.

From having seen real juggling, we know that this "jump" juggle bears little resemblance to the real thing. The modern stereotypical juggling illustration is in fact intended to represent throwing the balls in a single arc from one hand to the other, in a pattern that is known to jugglers as a "shower".

Unfortunately, even if Professor Jones managed to accurately deduce this shower pattern from the conventional depiction, he would still have a highly inaccurate impression of modern juggling. Most juggling, including the easiest of all juggling patterns (the 3-ball cascade), does not consist of throwing all the balls in a single arc from one hand to the other. In fact, the shower is a relatively rare and difficult trick, and becomes more so as the number of objects juggled increases. Moreover, one of the main attributes of a pure juggling routine (as opposed to, say, a comedian's act that uses juggling tricks as a subject for dozens of jokes) is the variety of manipulations that are involved, a fact that is completely obscured by the perpetual sameness of the clown image. It is as if the making of wine were perceived as nothing more than stamping on grapes (another modern archetypal image), or if ballet was universally depicted as one ballerina en pointe.

The travails of Professor Jones illustrate the point that faithful adherence to historical, subjective chronicles does not guarantee accurate recreation of historical skills. Our interpretations of how things were done in the past may be more spectacularly erroneous than we imagine, because of the universal biases, reliance on stereotypes, and lack of specialized knowledge of artists and other unavoidably subjective chroniclers. Art, even representational art, suggests life, but cannot be relied on to imitate it with any precision.

Modern reaaders all understand at least vaguely what the stereotypical juggling clown picture represents, but our understanding derives from personal experience and common knowledge, not from information contained in the picture itself. An undefined word in a medieval cookbook clearly indicates a gap in understanding for a modern reader, but an implicit medieval assumption may be invisible to us.

I believe that this problem shows the importance, not the futility, of attempting to recreate historical activities, and of doing so in whole historical environments. It is only by immersing ourselves in such contexts, however crudely or inaccurately recreated, that we may discover for ourselves the unwritten assumptions of other times.

Postscript: I believe that the juggling stereotype described above is a modern invention. The few text descriptions of medieval juggling I have seen are often fanciful and improbable, but many medieval illustrations are more accurate (or at least more consistent with our notion of what actually constitutes juggling) than their modern counterparts. Historical drawings often consist of a reasonable number of objects, sensibly arranged in space, without markings to indicate erroneous movements. Although the hands are often still empty, these artists probably worked from reality more than artists depicting juggling today do. Perhaps juggling was held in higher esteem in the past, and was therefore recognized as a sight worth remembering accurately.

Also, I should point out that the silly "jump" juggling described above is not easy. Starting with balls balanced along one's arms is already difficult. I can do a good job of it with four balls (one in each hand and each slightly bent elbow crook, straightening the arms while jumping), but find more than four to be quite difficult. Still, I doubt that this trick will gain in popularity. It provides a photograph that will please cartoonists, but has no other redeeming entertainment value.

Finally, I'd like to relate an anecdote. A year after writing the first draft of this paper, a juggling acquaintance of mine was hired by a publisher who wanted to illustrate the beginning of a chemistry textbook chapter with a picture of a juggler. Two hours of juggling and endless rolls of film failed to produce a single photo that the publisher cared for. Finally, my friend put two balls in each hand and threw all four balls simultaneously. This "jump" juggle produced the only picture that the publisher liked, and will probably appear in the textbook.