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How Does Crowding Affect Signatures?

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ABSTRACT: Document examiners often encounter signatures presenting an unusual appearance. One factor that alters the appearance of signatures is crowding. In this paper crowded signatures are examined to determine exactly what changes take place when a writer is forced to write his name in a space much smaller than that he would normally use. Several persons were asked to write normally spaced signatures that were then measured. Each subject was then asked to write his or her signature in spaces reduced laterally by one third and one half and then in spaces similarly reduced laterally as well as by one half vertically.

KEY WORDS: questioned documents, handwriting, signatures

Document examiners have all encountered signature problems that defy resolution or at least cause one to consider, if briefly, selling insurance for a living. These are cases wherein a questioned signature is not a typical one of the purported writer, and yet there is no clear evidence of forgery. The examiner must decide whether it is in fact a forgery, a "look-alike" writer, or a genuine signature rendered atypical in appearance by some unusual circumstance. This paper will explore one circumstance that can and often does affect the appearance of signatures: crowding. Obviously some changes must occur in an individual's signature as he compresses it into an area one fourth of that he normally uses. Just what are these changes? What differences can an examiner explain away as "due to crowding"? This paper will compare some crowded and normal signatures.

Samples

Eleven volunteers supplied signature samples for study. All are in clerical or middle-management positions that require them to write regularly in their work. They are mature writers in their mid-twenties to mid-fifties and most have some training or education beyond high school.

In selecting volunteers, thought was given to the lengths of their names, so that an assortment from long to short was obtained. The volunteers were asked to provide five sample signatures on a sheet of paper. Faint baselines were drawn, but ample space was provided. Each writer was seated at a desk, provided a ball-point pen, and asked to approximate his normal signature size. The five sample signatures were then measured both horizontally and vertically in increments of 2 mm ($1/12$ in.) by using a typewriter test plate. The average of the sizes of these five signatures was used as the base size for each individual's signature. The total size of the signature was considered, including *i* dots and upper and lower loop letters.

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Forms for each writer were then drawn up and each of the writers was asked to provide three signatures in each of the following categories:

- (1) lateral space reduced by one third, no vertical restrictions;
- (2) lateral space reduced by one half, no vertical restrictions;
- (3) lateral space reduced by one third, vertical space by one half; and
- (4) lateral and vertical space reduced by one half each.

Observations

Basically, two methods were employed by the sample group to adapt their signatures to the spaces provided. The first method consisted of reducing space between words and let-

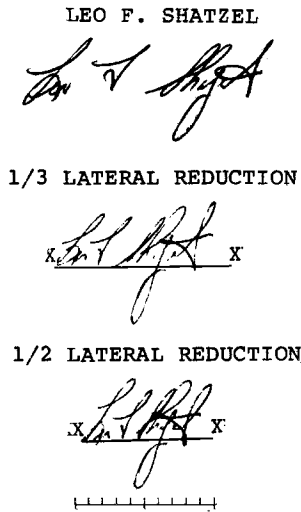


FIG. 1—An example of a signature that shows little variation in the height of the letters when the writing area is reduced laterally but not vertically.

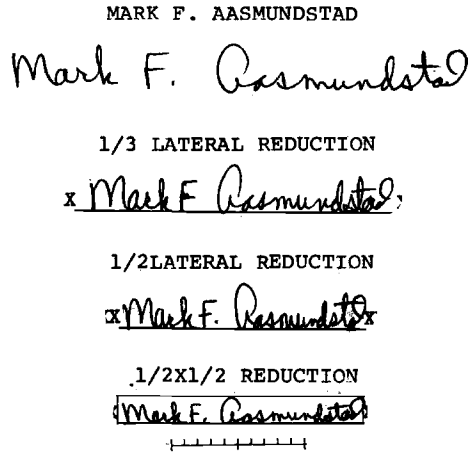


FIG. 2—Although lateral and vertical reductions in the writing area cause reductions in the absolute space of the signatures, relative distances remain constant.

ters, coupled with some narrowing of letters. This method was used only where no vertical restriction was imposed. Little, if any, reduction in height of letters was noted. In fact, two individuals slightly increased letter heights (Fig. 1). This retention of height with lateral compression produced an angular appearance.

It is important to note that while absolute space was reduced, relative amounts were quite consistent. A good illustration is the Mark F. Aasmundstad signature. This individual placed his middle initial much closer to the first name than to the surname. Even when the lateral space was reduced by one half, this relationship held true (Fig. 2).

Seven of eleven subjects chose the lateral compression method for the one third reduction and of these, five continued to use it in the one half reduction.

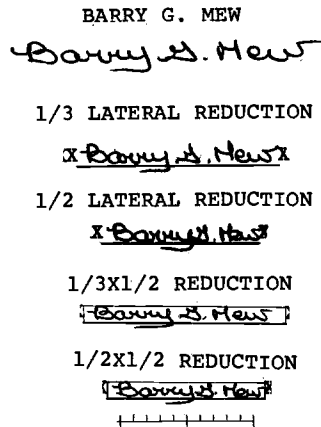


FIG. 3—An example of overall size reduction in signatures.

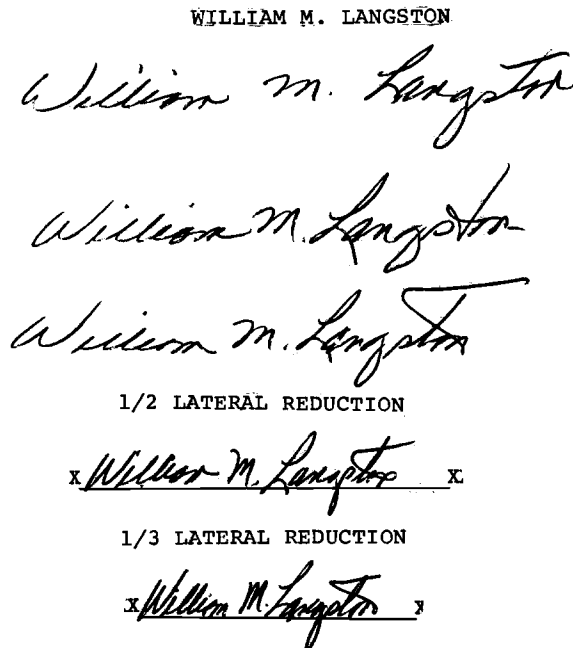


FIG. 4—Some writers will use a variation of their normal signatures in reduced-space signatures.

The second method employed was overall size reduction. Letters were smaller, spaces were smaller, and the whole effect was of miniaturized signatures (Fig. 3).

One individual saved room by selecting a certain variation of his normal signature that reduced the length of the terminal stroke. The normal signatures show three variations of the termination and *t* crossing. All of the crowded signatures reflect a variation that appears only once in the five normal signatures (Fig. 4).

Not surprisingly, the miniaturization method was the one used almost exclusively when the vertical space was reduced by one half. These signatures were so much like the uncrowded ones that it would be very difficult to pick them out if all were made the same size photographically (Fig. 5). In many instances the signatures with the vertical restriction looked more like the individual's normal signatures than those with only a lateral restriction (Fig. 6).

Finally, a most remarkable feature about this group of crowded signatures was their fluency. Although the writers complained that they were experiencing difficulty in cramping their signatures into the spaces provided, the crowded signatures showed little, if any, labored pen movement. In fact, the crowded samples closely approximated their normal counterparts in speed, rhythm, and fluency.

Conclusions

Crowding alone apparently has little effect on the appearance of an individual's signature. The subconscious pattern that fluent writers have of their signatures can be adapted

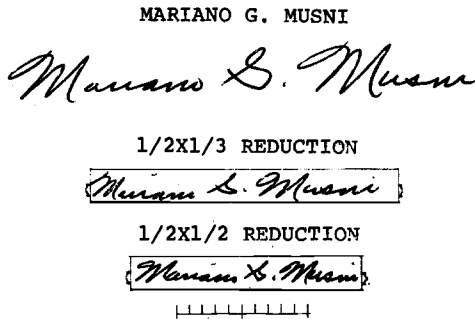


FIG. 5—Miniaturized signatures are much like uncrowded ones.

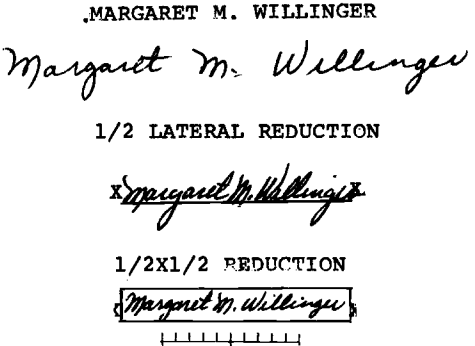


FIG. 6—Signatures with vertical restriction resemble normal signatures more closely than do signatures with only lateral restriction.

to smaller spaces without fundamental alteration. Barring other circumstances, the document examiner should use caution in explaining away differences as "due to crowding." Although a crowded signature may present a somewhat more angular appearance, little change in relative size and spacing of letters or skill should be noted.

Summary

A study of crowded signatures revealed two methods of size reduction. When only a lateral reduction was imposed, some subjects resorted to lateral crowding of letters but little or no height adjustment. Others chose an overall miniaturization. All subjects chose the latter method when a vertical restriction was imposed as well. In fine detail, the crowded signatures differed from normally spaced ones very little. Even fluency was hardly affected.

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