

Special Feature

An analysis of the problems involved in our contemporary understanding of how the Man of the shroud was nailed to the cross.

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Introduction

I have an ever-growing conviction that the bloodstain on the Shroud, seemingly from the heel area of the right foot may in fact be resultant of a nail-exit point in the sole area of the heel itself. The strongest signal for 'dirt' at the heel region on the Shroud shows that the image is in the correct position for where the foot was laid upon the cloth. As discussed in the latest Ian Wilson/Barrie Schwartz book (ref. 1), the rill of blood from the right foot area (best seen in the black and white dorsal view of the Shroud) may then be assumed to have issued from the bottom of the heel and not from the side-ankle area.

To support the view that the rill of blood emanated from the side of the ankle, as in the case of 'Jehohanan', it is necessary to propose that the blood issued first from the ankle as the body was laid upon the cloth, then the body was maneuvered into its final resting position. The image formed would then give the impression that blood issued from the underside sole area of the heel. This of course would challenge scientific findings that inform us that all bloodstains are faithfully expressive of their site of physical origin and invites counterclaims of a similar nature for all the wound sites. (I do not state that anyone has made this particular allegation but I feel the image supports an issue of blood from the heel more clearly than it does the ankle. I try to account simply for underlying reasoning attributing the said bloodflow to a point of origin in the side ankle area.)

I am personally of the belief that *all* the bloodstains are site-specific to the wounds, and because of the inspired nature of the image itself, are precisely where they should be. Just as the position of the wrist wound led Barbet to question accepted wisdom, so too, I believe, is the heel wound intended to lead us to a fuller understanding of the mechanics of Christ's crucifixion. If we look closely at the bloodstain apparently originating from the heel we might infer a circular image at its point of origin suggestive of the wound left by a nail as in the wrist wound. Further to this I maintain that the Man of the Shroud could not have been held securely to the stipes if nailed only through the bridges of the feet. Barbet and Zugibe both showed in slightly different ways that the weight of a body could not be borne by nails driven through the palms of the hands. We can safely assume that most crucifixion victims were not passively involved in their own executions and that in the rage and anguish of impending death they could tear their hands off the nails if nailed only through the palms. It is for similar reasons that I oppose the view of a single nail through the bridges of the feet and I hold such an explanation to be impractical and mechanically insufficient.

Considerable strength is available to the feet via the generative power of the buttocks, thighs and hips, greater strength being available to the legs than to the hands via the arms. Feet, nailed only through their bridge to the stipes could soon be torn off their impingement, even more so if, as is

too readily accepted by observers, that a single nail pierced both feet. Such nailing would provide added strength and leverage to the feet via an increased pivot position using the buttocks against the stipes as an 'anchor'. Barbet's findings on the feet nailing of corpses does not take into account the resistances which could be offered by a live victim. The pushing down upon the feet in order to raise the body would soon enlarge the wound area, making the tearing free of the feet much easier and more likely.

Just as an anatomical 'space' had to be found through the metacarpals to support bodyweight and prevent the tearing free of the hands, so too must a corresponding area have been required in the foot area. Most probably a nail was hammered downwards through the upper metatarsals of the foot, widening and pushing apart metatarsal bones due to its force and speed, and exiting out the bottom of the heel area into the stipes. We know these nails were between six and seven inches long, which would be clinically efficient in causing immobilisation.

Ancient Romans were both innovative and ingenious in their approach to engineering problems. If knowledgeable enough to know of a path through the metacarpals to securely fasten the arms and hands, they would surely know of a corresponding path through the metatarsals.

The evidence we have of the remains of 'Jehohanan' offers an obvious reason to consider ankle-nailing also in the case of the Man of the Shroud. Jehohanan's ankle-nailing however may not have been standard Roman crucifixion *modus operandi*.

Josephus tells us in his *Wars of the Jews* that when Jerusalem was besieged during the revolt of AD 70 scavengers captured by the Romans were crucified by many novel and vicious methods in order to frighten the occupants of the city into surrender. Josephus writes,

"they [the captives] thought it too late to make any supplications for mercy: so they were first whipped, and then tormented with all sorts of tortures before they died, and were then crucified before the walls of the city ... the soldiers out of the wrath and hatred they bore the Jews, nailed those they caught, one after one way, and another after another, to the crosses, by way of jest; when their multitude was so great, that room was wanting for the crosses, and crosses wanting for the bodies". (Josephus. *Wars*, V: XI:1.) (ref. 2)

We also learn that upon the fall of the city and the Temple Mount so many were crucified that Jerusalem ran out of available wood. Logically, the Roman soldiers would have redoubled their efforts in causing agony through a variety of crucifixion positions once the city had fallen and revenge was exacted. Was Jehohanan a scavenger, a zealot perhaps? Might he have been ankle-nailed in bitter recrimination or due to lack of material, might he have been nailed straddling a slender olive tree?

If we seriously believe the Shroud image to be that of the Lord Jesus Christ, then side-ankle nailing would have been unlikely, for it would undoubtedly smash and break bone and in so doing would contravene Messianic prophecy. Ian Wilson reminds his readers in *The Illustrated Evidence* (ref. 3) that some pathologists and other medical persons recognize an apparent puncture wound in the plantar arch of the right foot area and suspect this to be the exit site of a single nail that may have penetrated both insteps. Wilson mentions that he is unsure how ankle-

nailing squares with this finding and his dilemma is obvious. The implication is that if transverse ankle-nailing had been the method of choice used for the Man of the Shroud then not only would nailing through the bridge of the feet not be necessary, it would be impossible as there would be nothing to nail these parts of the feet to, given a sideways straddling position on the stipes.

The side-ankle nailing hypothesis therefore raises problematic issues pertaining both to Biblical prophecy and also to medical observation. Given that clinicians believe they see evidence of nailing through the bridge of the right foot, and I concur with their suspicion, what does that mean for my theory of nailing through the front ankle-metatarsal area? I consider that the alleged evidence of 'middle-foot nailing' does not seriously challenge my thesis. As someone who has extensive experience in weightlifting and who knows the available strength of the limbs throughout their range of movement, I can assure the reader that a nail, driven through the side or front upper metatarsal area, would securely fasten any crucified man's leg to an upright section of wood and prevent him from bringing leveraged strength to bear upon the impingement. This method of nailing, allied to nails through the wrist area and in the crucifixion position, would provide a secure fastening for the strongest of men. It would utterly nullify the victim's strength by rendering the pivotal force of the leg unobtainable.

This would be the most effective and devious way to neutralise bodily strength using just a few nails. Indeed, if no bones can be broken during this particular crucifixion I would state, without hesitation, that the method outlined above would be the only way to achieve a 'successful' execution, given that only the hands and the feet may be pierced. I believe this to be crucial in our attempt at discovering the actual mechanics of Jesus' crucifixion. No bones may be broken, only a few nails may be used, no ropes may be employed and we see no signs of rope-chafing on the Shroud image whilst the Gospels do not mention ropes either. How else might you secure an adult male to his cross given these imposed strictures?

The fact that pathologists believe they see a wound imprint in the concavity of the instep of the right foot image need not disprove my theory. Once the front ankle area had been nailed to the stipes the leg would have been totally pinioned. A visit to the gym and a venture onto the leg-press machine will convince the trained or untrained person that the right leg is much stronger than the left in the majority of people. With the right leg nailed to the cross, resistance would be useless. All that would remain is for the weaker left leg to be drawn towards the right and a single nail to be applied through the bridges of both feet. This however might be very tenuous given the length of the crucifixion nails, the depth of one adult foot placed atop another, the necessity of sufficient depth of nail into wood for securement, and the necessary leaving of enough exposed metal at the nail-head for later extraction. Such accumulated problems belong though to those who maintain the single nail theory as the only means of leg-fastening. Perhaps a nail was added through the bridge of the right foot only in the same fashion that a woodworker sometimes adds a nail that is not functionally necessary to the job in hand but which lends a reassuring finality.

The bloodstain on the left foot, seemingly also beginning at the heel, might too be indicative of upper metatarsal nailing. A reason we might not see a post-mortem bloodflow from this heel is that the left foot would appear to have been supported by the front right foot and thus did not carry the same amount of weight directly onto the mortuary couch. The fact that both feet invert

towards one another may not be evidence of single nailing but indicative of the feet having been pulled towards each other in order to accentuate the depression easily located in the side front ankle as the area to be nailed.

As a competitive weightlifter and as a person with a keen interest in all things relating to physical sports and the human frame, I have often looked at the full body image on the Shroud and been struck by the impression I was looking at a strongly built Man who had just finished an intense workout. The chest and calves in particular look just as they would had they undergone strict repetitions with weights brought to bear upon them. With particular regard to the swollen calves, which are strikingly reminiscent of 'pumped up' weight trained calves, the only exercise that can directly work the calf muscles is one which we call a 'standing calf raise'. In this exercise the person places a weight on his/her shoulders and standing up on their toes, with the knees bent slightly forward, moves up and down with the stress concentrated almost totally on the calves, engorging them with blood and pumping them up. The analogy with a crucifixion victim is obvious.

On a personal note, I have just returned to barbell squatting after months of absence and during the compilation of this article. Not yet back to my best lifts in this particular exercise I am presently squatting between 250 - 350 lbs for repetitions. As the bar is not cushioned the back gets 'beaten up' on return to this exercise until the skin toughens up again. Upon finishing my latest squatting workout my back sustained two bruised areas just like we see on the Shroud. Because I have not yet got my squatting discipline back, the bar moves up and down through the reps and the weight gets centred more on my left side instead of being equally distributed and motionless across the shoulders. Such distribution and steadiness can only be learned through experience and gritted teeth. The vast majority of people, unaccustomed to bearing weight in this fashion, will tend to support the weight by constant shifting from one shoulder to the other. As the burden grows more intolerable due to the muscles and the overall physical system weakening, the strongest side of the subject's body will literally shoulder the load for the longest duration. Because right-handed people invariably tend to shift a shoulder-borne weight across to their left side upon commencing such a lift it is no surprise that the back left of the shoulder undergoes immediate and pronounced abrasion.

It is only when the subject learns to support the burden by a careful balance across both shoulders that such abrasion lessens and is uniformly spread over the entire shoulder region. The heavy bruising on the left trapezoidal and upper back area of the Shroud Man speaks volumes to an experienced squatter who can support Professor Cameron's (ref. 4) observations confidently although not without some qualification. Such apparent bruising has definitely been worsened by ongoing contact with the lower surface edge of the patibulum as the victim pushed against it in the struggle for respiration. This lends support for the stipes as having been an *in situ* tree and the patibulum nailed on to such a tree and maybe later knocked off with a heavy hammer.

If the cross was one-piece only then we would expect a mortise joint leaving stipes and patibulum flush with one another at their intersection. Such a cross necessarily would have been carried by dragging it over one shoulder due to its size and therefore could not have produced the wounds we see on the upper back. The photograph below shows the author's back one day after a

squatting session. Pathologists have too easily assumed the heavy bruising and contusions on the Shroud Man's back to have been caused simply by carrying the heavy patibulum.

Note the bruising caused by multiple repetitions with weight varying between 154 lbs-330 lbs. As can be seen the skin is unbroken despite the amount of weight used unlike the Shroud Man's back which presumably bore less weight for a lesser duration.

I feel this to be extremely unlikely as the bruising that is apparent in the photo is of much lesser degree than that on the Shroud. This is worthy of reflection as the weight that produced the bruising above was probably much greater than the patibulum that produced the damage to the Shroud Man's back. For those who are interested in this point the workout that caused the author's bruising was a full squat routine of a total 100 repetitions utilising weights of between 150 – 350 lbs. The routine was performed with a knurled 20 kg Olympic weightlifting bar on a bare back for approximately 45 minutes. I can only conclude that the heavy abrasion on the Shroud Man's back was aggravated by continuing lowering and raising against the lower patibulum. The weight of the patibulum is most unlikely to have caused such damage which is well in excess to the bruising as shown. The Shroud bears witness to a multitude of physical clues that encourage close attention. The right arm however looks much too long.

This returns me to my earlier suspicion that the Shroud might actually witness the physical fulfilment of not only one Messianic prophecy, but two, that might have evaded wider significance.

"I am poured out like water, and all my bones are out of joint: my heart is like wax; it is melted in the midst of my bowels. " Psalm 22:14

The probable dislocation of a shoulder could convincingly explain the 'out of sync' appearance of the right arm on the Shroud image. More than that however such dislocation might lead us further into a deeper understanding of the image. I venture to suggest that if Jesus were crucified with nails through the thenar furrow in the manner theorized by Fred Zugibe, that it is unlikely dislocation of the shoulder would have occurred. This is because there would have been no localised strain on the right shoulder of sufficient power to force such dislocation which requires considerable stress. In the traditional representation of the crucifixion, breathing would have been extremely arduous but still mechanically possible due to bodyweight having an equal downward pull on both shoulders.

We need to find a method of nailing which would, in probability, result in a dislocated shoulder but also hasten death to the surprise of the executioners and to Pilate. We know Jesus' execution to have been an unusually vicious one. I propose that as in the later case of the zealots of AD 70 that Jesus' crucifixion did not follow standard procedure and that the Roman soldiers exercised personal flourishes to mark an untypical victim. In order to bring maximum force upon the shoulders I imagined myself in the crucifixion position and rotated my wrists outwards and up so that the palms would be facing an imaginary patibulum. If I was hanging by my arms with my feet only partially supporting my bodyweight the pressure upon the shoulders would be unbearably intense. This might well result in a hastened death as the ability to breathe would be grossly compromised, more so than in the traditional crucifixion position. Such a position also

pulls in the diaphragm/epigastrium sharply and distends the belly like we see on the Shroud whilst at the same time forcing the lungs into available maximum inhalation and thereby enlarging the chest. Any weightlifter or bodybuilder will confirm that the hardest part of the chest to train and cause to enlarge and 'fill out' are the upper pectorals. The evidence of the swollen upper chest of the Man of the Shroud directly suggests this area to have been under great strain. It is very difficult to see how the upper chest area of the Man of the Shroud became so swollen if he was nailed according to traditional representation as such nailing would have mainly enlarged the lower pectoral region. Yet the highly accentuated upper pectorals can be seen to have undergone direct stress.

If my assumption of reverse wrist nailing is correct it could explain the appearance of the chest as the upper pectorals would be consequently enlarged by such a position. With the greatest of respect to Isobel Piczek her reconstruction of the frontal image of the Shroud Man appears to both recognise and neglect the enlarged upper pectoral area. In plate 10b of Ian Wilson's *The Blood and the Shroud* her drawing shows a quite thick and enlarged middle and upper left pectoral muscle whilst its right counterpart is quite flat by comparison. I wonder was Ms Piczek intuitively aware that there was indeed something of interest to be investigated in the upper body area? This position would place a terrible constriction upon such an area and constantly the pressure upon the shoulders would grow and pull hard upon the arm sockets. If even one of the shoulders dislocates then the ability to raise oneself up to breathe is greatly reduced and death will inevitably be hastened.

It is virtually always the case in right-handed persons that the right side of their body is the strongest, it is to be expected that a right handed person, nailed also by the right foot, would eventually have to concentrate their strongest body side against the nails in the terrible ongoing struggle to maintain respiration. The accompanying stress would soon be gathered upon the right shoulder and it is no coincidence this is the suspected dislocated joint observable on the Shroud. In this scenario I see no real conflict with Zugibe's position as to the passage of the nails through the wrists. The nails might however have been driven in through the front of the wrist and exited through the thenar groove into the wood. This could certainly explain why the bloodstain on the wrist is not smudged and smeared as it undoubtedly would have been had the back of the wrist been in contact with the patibulum as expressed in traditional representation. The bloodstain on the wrist we are told, is really from a blood clot, it must surely be impossible for a nailed wrist to have been pressed against the patibulum, and no doubt ground against it in agony, then to have left us the undistorted image of bloodstain we plainly see. The most simple answer is usually the right one, the outer wrist did not have immediate abrasive contact with the cross.

I believe the theories I have developed encourage serious consideration as between them they offer possible explanations for some questions still outstanding in the study of Christ's crucifixion and the Shroud. Perhaps someone with expert anatomical knowledge might comment on the likelihood, or otherwise, of the above scenario. The literature on the Shroud informs us that, prior to Barbet, a passage through the metacarpals was not thought possible. I do not think it reasonable to assume that because no obvious space can be seen between the upper metatarsals that it might be safely accepted that a crucifixion victim could be securely fastened to his cross nailed simply through the bridges of the feet.

It is my hope that this article might provoke a consideration that the upper metatarsal region may indeed be the site to which we should turn our attention in our search for the actual method used in the foot nailing of the Man of the Shroud. The position of the bloodstain on the wrist and medical confirmation of an available space through the metacarpals have combined to convince most observers that such wrist nailing was 'how it happened' and further push into the realms of impossibility the forgery hypothesis. This however might be only half of the intended revelation regarding the nailing of the Man of the Shroud which may not be complete until the suspicion of a corresponding area through the metatarsals is also investigated. I firmly believe that the Shroud still has many secrets and surprises in store for us. My heartfelt thanks and admiration goes out to all Shroud researchers who have done so much to bring to popular attention the tremendous and vital information they have uncovered concerning this most unique of objects.

Conclusions

1. Reverse nailing through the wrist with the nails exiting out through the thenar furrow may account for the undisturbed bloodstain on the Shroud's left wrist area. It is impossible to see how this stain would have remained undistorted if the wrist was in contact with the patibulum. If the nails were administered through the thenar furrow it is highly unlikely, in both wrists, that the nails would have found the small 'Z' (Zugibe's?) space necessary for their exit passage. If however the wrists were turned towards the executioner he could have easily located the space he knew to be necessary for penetration.

2. The reverse wrist nailing I have described would place an intolerable amount of stress upon the joints of the arms, especially the shoulders. This may well account for the dislocated shoulder many people claim to see on the Shroud. If respiration upon the cross is maintained by constant shifts of body posture it is mechanically certain that the victim will eventually be forced to concentrate his strongest body side upon his cause of restriction and torment. As most persons are right-side dominated it is reasonable to infer the Man of the Shroud's right shoulder to have dislocated due to the continuous rising and lowering focused upon his right side. If respiration upon the cross is indeed dependant upon such posture shifts then death would inevitably be hastened by the serious reduction in mobility caused by shoulder dislocation.

3. A single nail through the bridges of the feet would be absolutely useless as a device with which to secure an adult male's feet to the stipes. It is counter-intuitive and mechanically unconvincing to believe that such means might be effective in achieving this aim. Even in the weakened state caused by crucifixion we may be confident that sufficient strength would still be available, at least in the early stages, to the legs to wrench feet nailed only through flesh off their impingement. Zugibe, however, in a recent article states with unabashed certainty, "*if volunteers in good physical condition were unable to push or pull up to straighten themselves with their soles flush to the cross upright, or with one foot on top of the other, how could an injured, exhausted person - particularly one in severe pain and with nails through the hands and feet - have the strength to straighten himself from the sagging position? This completely repudiates the theory of straightening and sagging as proposed by Barbet*". (ref. 5)

Does it really? I very much doubt it. We forget sometimes how desperate men can do desperate things in desperate situations. There are several recorded cases of farmers who having been

trapped and caught terribly in agricultural equipment, cut off limbs with pocket knives, then in disorientation, blood-loss and pain crawled long distances to get help. We should not let the contagious horror of any given traumatic situation lead us to project the induced numbness of our spectator position onto those actually involved and deny them reserves of strength and reaction made possible only by terrible circumstances.

4. The calves of the Man of the Shroud undeniably show evidence of having been severely stressed and consequently 'pumped up'. If there was no 'straightening' and 'sagging' upon the cross, as Zugibe terms it, this would not be so. Zugibe's sometimes abrupt dismissal of Barbet's findings do little to aid the presentation of his own hypotheses regarding the death of Jesus and crucifixion in general. His carefully limited and controlled 'laboratory crucifixions' cannot be taken seriously as faithful models of how the real thing must have been. Zugibe is perhaps hoist by his own petard with this respect at the end of the introduction to his paper 'Pierre Barbet revisited' where he quotes "*Conjectures and theories not backed up by realistic experiments have always left me cold*". Zugibe can hardly claim his own experiments to be realistic given such carefully contrived laboratory set-ups. Even less realistic and much less scientific is his appeal, in the same paper, to the wounds of certain stigmatics as contributory evidence towards his theory of nailing through the thenar furrow. The Discovery Channel on Sky television recently ran a programme on stigmata featuring, amongst others, one woman who bled from the wrists *and* from the upper metatarsal areas of the feet. Such appeals however are worthless given the psychological genesis and disparity of stigmatic wounds which could be used to 'prove' any and all of the nailing theories. Zugibe concludes his paper by baldly stating "*the cause of death in crucifixion is a consequence of shock*". Doubtless this was true in many cases but the reference above to farmers caught in machinery shows that shock need not always be the cause of death in highly violent and traumatic situations.

Pertinent to this particular assertion by Zugibe, is John 19:30

When Jesus therefore had received the vinegar, he said, It is finished: and he bowed his head, and gave up the ghost.

These are not words from a mind numbed and befuddled with shock but the words of someone in possession of His mental faculties, who gave His life voluntarily and surrendered up that life at a point of His own choosing, crucifixion being only the pre-ordained vehicle of that surrender.

5. The question presented itself to me as to how the bloodstains could be in registration with the wound sites given that the body was taken down from the cross and wrapped in Joseph of Arimathea's "clean linen sheet". On this point I was awhile stumped as it is obvious that a bloodied corpse, wrapped in linen and transported to the tomb, would have marked the linen in an abundance of places. Those parts of the linen which were to bear the specific wound marks of the crucifixion would in all probability have become blood-smearred and we would not have the clear images that we see. I conjectured that since Joseph's tomb was in the same place as the crucifixion that Christ's body may have been carried by Joseph and perhaps Nicodemus (no overt disciple claims this honorific task for himself or his immediate friends) and not placed in the Shroud until actually set upon the stone cut 'couch' in the tomb. This would make sense as we see post-mortem bloodflows from the chest and from the heel area onto the cloth. If the Shroud

was laid upon relatively flat rock and the body placed upon it, we might expect the weight of the body to expel blood and any remaining pulmonary fluid through pressure upon the chest wound area. The weight of the leg which is taken by the right heel might also have resulted in such 'leakage' of post-mortem blood. I believe the image itself lends some support to this theory as the impression seems to show (to me at least) a body which was set down upon a surface which raised that body's head, putting weight upon the chest, and knees slightly raised putting weight mainly upon the right heel. Any remaining fluids in these areas might have been agitated by the body being carried to the tomb and released upon the body being set down to support its own weight.

6. The easiest way for two men to carry another man a short distance is for one of them to place his own arms under the arms and around the upper chest of the man being carried, the other places his hands under the back of the carried man's knees and supports the weight of the lower body. This, to my mind, would have ensured that the bloodstains on the forehead, side-chest, wrist, feet, and back of the head area, all in immediate danger of potential smearing through carriage of the body would have remained undisturbed and able to be reproduced in the manner we see on the Shroud. Medieval artists such as Clovio have portrayed Jesus as being wrapped in a Shroud at the foot of the cross. (ref. 6) This is speculation based upon the limited information contained in the Gospels of the sequence of events from Christ's death upon the cross to his interment in Joseph's tomb. St. John's Gospel furnishes us with the most details concerning Christ's burial and whilst the balance of the available Gospel evidence might just lean towards Jesus being wrapped in His Shroud prior to interment, any final decision on this point must be largely subjectively determined. It might be that as in some other First Century rock tombs there may have been insufficient room for two men to have performed the necessary funerary duties, especially having to contend with a fourteen foot length of linen, and these might have been carried out in close proximity to the actual tomb, maybe even at its entrance. To my purpose all I require is a reasonably flat hard surface upon which the body was laid before or during interment. The question of how the bloodstains remained in registration with the wounds and did not stain off-image areas of the cloth due to the transport of the body is a serious one. It is a question which I have not yet seen addressed in Shroud-study although I admit to not having anything like a comprehensive knowledge of the available information.

7. In considering my hypothesis that a crucifixion victim might tear his hands or feet off the nails I also had to consider the possibility that small blocks of wood might have been used as 'spacers' to prevent such an action. I concluded that if my theory of reverse wrist nailing is correct then the observable undistorted bloodstain on the left wrist would have smudged against the spacer and not left us the image we plainly see. Whether or not the wrists were nailed in the position suggested by Zugibe or as in my alternative of reverse nailing, it is unlikely that spacers were used as both positions would have distorted the bloodstain on the left wrist. The evidence of the wrist image would seem to be a strong indicator that spacers were not used. If I am correct in my assumptions of the method of nailing then spacers would be unnecessary as the victim would be totally secured and bodily strength completely neutralized. If however the traditional theory of nailing through the wrists is maintained then its supporters must account for how the combined strength of the shoulders, pectoral muscles and forearms, using the buttocks and upper back as powerful levers, was countered in order to prevent tearing free of the arms secured only by nails administered via a passage through the metacarpals of the wrists. We are far too influenced by an

easy acceptance of the traditional representation of crucifixion as being mechanically adequate and subsequently are blinded as to the leverage power available to the adult human male. My suspicion, if not my certainty, that a crucifixion victim nailed according to traditional representation could wrench himself free of his impingements recognizes that such response would involve intense momentary pain yet the basic premise is far from untenable. If the victim was nailed though with the outer sides of his wrists facing away from the patibulum the strength of his shoulders and pectoral region would be severely compromised. It would appear that we automatically accept the general representation of crucifixion as being the way such execution was performed due to artistic depictions of Christ's death on the cross. We naturally cringe automatically when imagining what nails through feet and hands must have felt like and this precludes us from thinking about the mechanical implications of such nailing. This is reinforced by our interest in, and knowledge of other crucifixions, being virtually nil. We are thus conditioned into unconsciously accepting the traditional nailing theory as being fact and the possibility of that theory being insufficient thereby rarely suggests itself to us.

8. As an experiment to assess the generative power available to the wrists via the arms and shoulders I attached a short cord to weightlifters discs then to my wrists and lay with my back upon a ten-inch high bench. I was able to raise a weight of 40 kg off the floor with each arm. I knew this adopted position to be inferior to a raised crucifixion-type position in respect to the amount of force generated as the raised position would have enabled me to bring my chest muscles more strongly to bear upon the weight and that I would also have been able to utilise my buttocks and upper back more fully had I been in the crucifixion position. Even with my arms extended at an angle of between fifty five and sixty five degrees the amount of weight lifted illustrates the degree of generative force available in this position and this must be taken into consideration when assessing the possibility of tearing one's arms free of wrist nailing. When I tried to lift this same amount of weight in a reverse wrist position I absolutely could not even begin to move it. I hasten to add that I am by no means an exceptional weightlifter and that my findings would hold true for any man given a reasonable adjustment of bodily strength and weights used. It would take a person more qualified than I to ascertain just what pressure would be needed in order to extricate wrists and arms so nailed from their obstruction. Experiential intuition leads me however to believe such extrication more than just possible. The fact that I had tied my wrists to the discs, leaving just a few inches between wrists and discs already compromised the amount of available generative power. This, combined with a lying-down position on one's back instead of in the crucifixion position, means that the force that could be mustered upon the cross and brought to bear upon the wrists would be powerful indeed. Again, if the wrists are nailed with the palms facing towards the patibulum it is unquestionable that attempted self-extrication of the victim's arms would be impossible.

9. My suspicion of a nail through the metatarsal region which exited out the right heel shows how the prophecy of Genesis 3:15 might be understood. This method of nailing alone renders the pivotal strength of the legs unobtainable and lends evidence to the right side of the body being the area under maximum strain and the side most likely to suffer shoulder dislocation. The bloody right foot image shows the sole of that foot to have been `awash' with blood yet only lends an inference of bloodstains left by the toes. This is surprising as such volume of blood flowing downwards, according to gravity, would also have saturated and gathered around the toes and we should expect to see them more fully represented than is obvious. Might it be that as

nails driven through the metacarpals of the wrist 'jerked' the median nerve resulting in the nonappearance of the thumbs, nails driven through the side front ankle damaged foot tendons causing the toes to lift upwards and hence out of immediately observable registration? It is to be imagined that the pain alone from this type of nailing might have caused an acute upward flexion of the toes and that a return to their normal resting position may have been rendered impossible.

10. It may well be raised in objection to my reverse wrist nailing theory that the accompanying bloodstain, following the law of gravity, would run towards the thumb side of the hand. This assumption however presupposes Jesus to have been nailed directly to the cross whilst in an upright position. If Jesus was thrown to, or made to lie flat on the ground with his arms outstretched above his head and raised up onto the patibulum, the bloodflow which would begin to issue immediately upon penetration by the nail could easily have gone in the direction of the little finger. Upon attachment of Jesus to the stipes a change of direction in the bloodflow would have occurred.

11. The right foot has a pronounced directional tilt towards the left side of the body. Could this have been because the Roman soldier/s who carried out the nailing pulled the right foot towards the left in order to ensure penetration of the nail through the side upper metatarsal region and through the bottom heel area? We are informed by pathologists that rigor mortis begins extremely quickly in cases where death has been preceded by prolonged violence. We know that Jesus was dead upon the cross for some time before permission was obtained from Pontius Pilate to remove the body. In rigor mortis the right foot would have 'set' in the inverted position we see on the Shroud. This militates strongly against the traditional representation of the foot as having been nailed straight and flat to the cross as because of rigor mortis this is how the right foot would then appear on the Shroud image.

12. Our understanding of the nailing of victims of crucifixion must recognise two very fundamental factors; the strength of the adult male and the mechanical sufficiency of such nailing. In considering theories on this subject we must keep ever before us the fact that we are endeavouring to understand how real-life victims were immobilised and their strength anticipated and effectively countered.

References

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3. op. cit. Ref. 1 above.
4. Wilson, I., *The Evidence of the Shroud*, O'Mara books, London. 1986. p.22.
5. See issue no. 53 of the British Society for the Turin Shroud newsletter, pp.22-29.
6. Wilson, I., *The Turin Shroud*. Doubleday. 1978. opposite p.50.

All Scripture quotes are taken from the King James Version of the Holy Bible.