Requirements for Photographs to be submitted to the Kokusai Tosogu Kai and a Method of Photography to meet these Requirements Version 4

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Introduction

The purpose of this document is to discuss the necessary requirements for photographs of tosogu to be used by the Kokusai Tosogu Kai (KTK) in its formal publications and to suggest a method of meeting these requirements.

Background

What is considered to be a "proper" photograph of tosogu is very different from what those in the west would think of as the "correct" way to photograph such fittings. A western photographer's first instinct might be to copy what the advertising industry does with jewelry, with its flashy high key lighting/backgrounds, desire to print the finished product much larger than life, inventive angles of view, etc. The more classic approach to photographing tosogu is to photograph is against a plain background, with the tosogu being viewed, for the most part, from straight on, and seldom with enlargements greater than life size without a good reason (to provide better view of a mei, highlight a particular feature of workmanship or metal activity, etc.).

Requirements for Tosogu images

In accordance with these more conservative aesthetic standards, photographs taken of tosogu meant for inclusion in KTK publications should adhere to the following standards:

1. The finished photograph should have a featureless white background. This can be achieved either through lighting or "knocking out" the tosogu from the background (usually done with a digital photo editor).

2. The finished photograph should also be shadowless (a method is described later in this document)

3. To facilitate printing at the correct size, a metric scale showing mm should be visible in the photograph. This should be placed so that there is some space between the tosogu and the scale to allow the tosogu photo to be cropped to size without having to rework the photograph to remove the scales (or to at least minimize this retouch work). If close-ups or "art" photographs of the piece are submitted, the scales can be omitted.

4. There should be some method of identifying the photograph placed in the photograph that is meaningful (a "post it" note with an identification number in the picture, information edited into image file so it is visible, etc.). It is helpful to include the owner's last name and unique identification information in the submitted file names. The preferred file name would be:

   The newest "code" to be to be physically visible and used for a file name is as follows:

   (First letter of country)-(first/last initial of submitter)-(item number)_(optional description)

   So as an example a classification for this author for a front view of apiece assigned to be item number one would be:

   U-RG-01_front.jpg

5. The primary photographs of the tosogu should be taken orthogonal to the piece as is shown in Figure - 1. Additional images captured from other angles to reveal special features of the piece, etc. may be submitted.

6. The photograph should have sufficient resolution for the tosogu to be printed full size at high quality after the scale/identification information has been cropped from the photograph. This author will posit that that this resolution can be achieved with no less than a high quality 6 mega pixel digital camera or a 35mm film camera with a high quality lens – This may be conservative, but its better to have too much resolution than too little. A good guideline is to have a file large enough that it does not need to be uprezzed to print an image where the piece can be printed life size at 300-360DPI. Note that additional resolution can be obtained by orienting the camera so the long axis of a tosogu to be parallel to the diagonal across the image field. This is particularly helpful with large objects with a lot of vertical height changes which makes compositing difficult.

7. If a digital camera is used, finished photographs should be provided in JPEG format though other formats (tiff, .dng, etc.) are fine as well. If the JPEG format is used, it should be set to have no compression to minimize artifacts and color space should be set to SRGB. In the case of other formats, please be sure to document the colorspace if it is not SRGB.

8. Please do not submit physical photographs, negatives, or chromes without also including the digital file of a high quality scan of each image submitted. If the photo provider is unfamiliar with how to do this, please take the physical images to a professional photo processor and have the images drum scanned – this will usually guarantee a high quality scan of the image. See item 7 for acceptable data formats.

9. In general, flatbed scans of pieces are not acceptable due to aesthetic concerns. Images created using other types of non-camera based scanning systems will be considered on a case-by-case basis. See item 7 for acceptable data formats.

10. Minimal sharpening should be applied unless the photographer/post process person is knowledgeable in this area (oversharpening looks bad…).

11. If the photo provider has not color corrected the image, please also include an image of an x-rite colorchecker card (or at least a white balance target) shot under the same lighting so we can attempt to get the colors/intensity correct. Even if the image is color corrected, it would be helpful to have an image of a gray card shot under the same lighting to aid in getting the relative intensity correct. Please note that it might not be possible to successfully color correct photographs taken with mixed types of light sources to the submitter's satisfaction.

There has been some controversy surrounding how many images to submit for each piece. While the member is permitted to submit any number of photos up to the maximum asked for by the editor, and the KTK's editor reserves the right not to use any images submitted, it would be helpful to submit sufficient images to adequately document the piece. A "front" view is needed in all cases. A back side (or other) image(s) would be recommended if there is significant work or details that would add to the reader's appreciation of the piece.

For example, unless there is some significant feature (mei or some other feature), imaging both sides of a piece like say a kyo-sukashi tsuba would be nice but not necessary to the viewer's appreciation of the piece. On the other hand, imaging both sides of say, a Tanaka school tsuba would greatly enhance the reader's appreciation of the piece and would be recommended.

The submitter is, of course, free to include additional images that they feel would also provide aesthetic or educational value, for example close-ups of mei, the back sides of menuki to highlight construction techniques for kantei purposes, oblique images to show tekkotsu, etc.

Requirements for Armor images

The requirements for armor images are similar to those for tosogu images, the main differences being that the primary image does not have to be orthogonal to the front or side of the piece, and you do not need to include a scale in the image. In addition, item 6 regarding image size should be disregarded, though the submitted image should at least be large enough to print on an A4 sized page at 300-360 DPI.

Requirements for sword images

Items 4-5 and 7-11 listed in the Tosogu requirements also apply to sword images to be submitted. However, there are several specific differences in image requirements:

1. Sword should be submitted with the piece on the usual black background rather than being "knocked out".

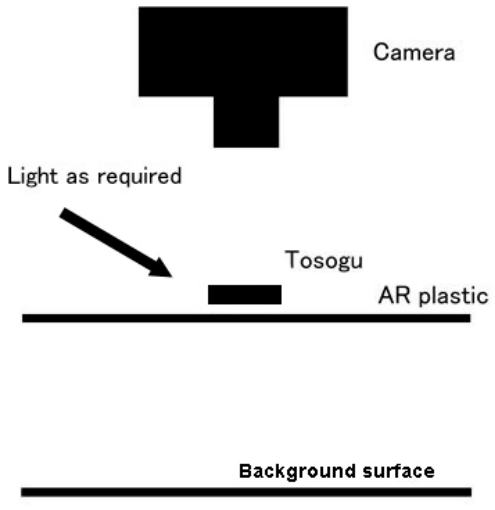
2. It is not necessary to include a scale in the image, though it might be a good idea.

3. The required resolution is tricky. Due to their high contrast, sword images require much higher resolution than other types of items, with even the casual observer being able to see the difference between sword images printed at 300 and 360 DPI. As the images are often split and can be run vertically on the page or be run as 2 page spreads, a suggested minimum image size would be to set the image so that the item itself can be printed 45cm (~17.7 inches) at 360 DPI (the item itself would have ~6400 pixels sampled across its length). In addition, in the case of a very long piece, it would also be good to get an image of the nakago/mei that can be printed life size at 360 PPI, and it would be helpful to include a scale in this image. Note that an image this size is only for publication. This size of image WILL NOT provide the eye-popping close-up view of the piece along its entire length. Because of this, additional close-up images to supplement an image of the suggested minimum size described above might be considered.

Proposed Tosogu setup

To meet the requirements for imaging tosogu, the author has used the following setup with success:

Figure – 1 Camera setup:



In this setup, the Tosogu is placed on a piece of anti–reflective (AR) plastic (commonly used for picture framing and available at craft and plastic supply stores), with the "matte' side being the one the tosogu rests on. This plastic is then suspended above a white background. The author uses clear plastic boxes of identical size supporting each corner of the plastic sheet for support of this plastic sheet.

NOTE: **Do NOT use glass for this purpose**. It is much harder than the tosogu and can EASILY cause scratching or other damage by dragging the tosogu across the surface, dropping the tosogu on the surface, etc. Note also that while the plastic is MUCH softer, care should still be taken when placing the tosogu on this surface, as soft metal pieces can still be damaged by dropping them on the plastic surface, dragging them across the plastic surface, etc.

Irregularly shaped tosogu can be held "parallel" by a number of methods (chunks of foam, felt, "museum wax" or fun tack, etc.). This allows the piece to be supported securely. For tosogu without any lacquered surfaces, the author has had good luck with using museum wax or fun tack covered with a layer of plastic wrap (Glad™ ClingWrap or equivalent). Use a probe to pre-shape the fun tack to hold the tosogu. For lacquered or sensitive surfaces, the author uses a piece of microfiber cloth or sometimes felt between the plastic wrap and the tosogu itself. There is also a type of rice paper that is used to wrap koshirae that might be useful for this application as well.

As depth of field is an issue on larger pieces, it is usually best to have larger items (such as koshirae) arranged so that they are being photographed perpendicular to the camera lens's axis. Methods similar to those listed above can be used to facilitate this. The author has had good luck using composite blocks of felt to support koshirae for photography.

NOTE: none of these suggestions may be acceptable for your piece – please take the amount of care necessary to prevent damage to the tosogu. We will accept no responsibility for damage done to tosogu using the beforementioned support techniques.

The camera is held perpendicular to the surface of the AR plastic, and lighting/reflectors/gobos are used as required/desired for lighting. The background can either be illuminated by "excess" light from the lighting sources used to illuminate the tosogu or by a dedicated lighting source. An option for this secondary lighting is to take the photographs of the tosogu suspended over a "soft box", though great care must be exercised when doing this to prevent glare.

Please be careful about light sources used. They should all be of the same type and be fairly closely matched in terms of color temperature. If continuous lights are used, do not use dimmers on some of the lights, as the color temperature varies greatly. Color temperature errors are difficult to correct. If it is necessary to shoot with mixed lighting (using tungsten lights in a room lit by daylight for example), acceptable results can usually be obtained by making the desired lighting source much brighter (blocking windows combined with using high intensity lights for example).

The camera has to be far enough away from the tosogu that the scales/reference information can be seen in the photograph. The camera's aperture should be set so that all the visible areas of the tosogu are in focus.

The plastic must be mounted high enough above white sweep's surface that shadows are not cast onto it by the tosogu. Often the background must be illuminated by a separate light to achieve this.

The camera can be held above this by the use of a copy stand, tripod, etc. The only real requirements are that the mounting be rigid enough to prevent movement of the camera or fittings during the time the picture is taken and that the camera focal plane is parallel to the plane where the tosogu is placed. To that end, it is strongly recommended that either the shutter lockup/remote release be used on an SLR, and that the timer be used on digital cameras w/o a shutter. Motion is less critical if flash is used. A method of getting the planarity "close enough" is to use a Level on the plane the tosogu is placed on, and a level that attaches to the camera's hot shoe (it is more difficult to achieve the required coplanarity if the camera does not have a hot shoe, but it can be done).

If the tosogu is very reflective, usually the camera's reflection can be hidden by using a black camera at a significant distance, camouflage (cutting a hole in flat black paper and taking the photograph through the hole works), and making sure everything that the camera can "see" in the tosogu's reflection is going to not be visible (done a number of different ways – distance, black (or necessary color) cards, necessary colors projected on surfaces, lighting power differential, etc.).

For lighting of the tosogu itself, what this author has found most useful is one or more lights "skimmed" across the tosogu to increase contrast, with white/black cards used as necessary. Note that the author has also found that photographs of tosogu made from shakudo look far better when modern innovations such as light tents are NOT used) with white/silver cards used to highlight gold/silver features as necessary. The light sources should be larger than the tosogu being photographed to soften the shadows (use soft boxes, plumber's lights w/ large reflectors, photography umbrellas, etc.). The author also strongly recommends not using the "in camera" flash (turn it off via controls, or block it).

To minimize "grain", the author recommends setting a digital camera to the lowest ISO available or using slower film (ISO of 160 or less) if a film camera is being used for the photos. Often consumer grade digital cameras can not produce photographs that can be used without software grain removal.

If a film camera is being used, please be sure to get the appropriate film and or filters for the lighting being used.

A photograph of a "typical" tosogu photo setup is shown in Figure – 2.

Figure – 2: Photograph of typical setup

There are a number of things in this photograph that should be noted.

First, note the distance between the background and the AR plastic. While this distance is acceptable for a digital SLR/film SLR, the distance must be increased when using a consumer digital camera to prevent the texture of the graycard from being recorded (or the photograph must be "fixed" in photoshop). This is because the effective depth of field is larger on these cameras due to the geometry of the lens/sensor (please google "circle of confusion" for more information). The camera's aperture should be adjusted until all visible surfaces of interest on the tosogu are in sharp focus. This can often be quite a difficult compromise, as all lenses start suffering from diffraction effects as the aperture is made smaller.

Metering of the photograph can also be quite an issue. Most cameras default to some sort of averaging of the light intensities in the photograph to arrive at the appropriate shutter speed and/or aperture and/or flash intensity to capture a correctly exposed photograph. With this kind of metering system, the camera will try to get the average intensity in the photograph to be the same as an 18% gray (middle of the exposure range). The usual result when shooting a tosogu against a white background will be an underexposed photograph. The amount of underexposure will vary according to the percentage of the photo is a white background, but about 2 F-stops of underexposure will be typical. You can either record the camera settings, switch to manual, and increase the exposure by the appropriate amount, or force the camera's metering system to come to the correct exposure by telling it to increase the exposure (or increase the flash's light output) by the appropriate amount. If flash is used, it is actually usually easier to use the camera/flash in manual mode.

Less expensive consumer digital camera sometimes will not have all the adjustments necessary to take a correctly exposed photograph against a white background – in these cases correct exposure can usually be obtained by using an 18% gray background (photographic graycard), as is shown in figure – 1. Note that this will require that the image be "knocked" out of the background and a white background substituted, which is quite time consuming to do if a professional looking result is to be obtained.

Second, note the level attached to the camera hotshoe. Placing a small bubble level on the back of a camera w/o a hotshoe (they usually have the LCD reasonably parallel with the image plane in most consumer

digital cameras) is an alternate workaround for cameras w/o hotshoes. Note that the surface the tosogu goes on should be fairly level as well. This is done to maximize the depth of field and minimize rework necessary on the photo.

Third, note the lighting. They are actually not in the optimal place for lighting a lot of pieces, though the angle above the AR plastic is fairly "typical" (the lighting usually needs to be adjusted to show each piece in its best light (no pun intended)). In addition, it should be noted also that the light coming from the door at the upper left of the photograph should have been "blocked" to minimize color temperature/intensity changes (though usually this effect is minimal if most of the light is coming from controlled lights or flash is used). If you are currently not calibrating your monitor, please try to verify that your exposure is not off. A good starting point is to take an image with a gray card placed where the tosogu would ordinarily be and verifying that the average intensity is at least 128 or so on images meant to accurately portray the tosogu.

Getting the colors right is critical. The color correction can be handled by creating a custom profile in the camera (which involves taking an image of a white card, white balance target, shooting through some kind of diffuser from the subject's location, etc., telling the camera to create a profile from this, and setting the camera to use this profile. A more accurate method is to use a profiling system for the camera itself. At the very least, an image of a colorchecker or white balance target should be included to aid the editor with color correction of the image.

Please note the earlier comments about lighting types. It is very difficult to "fix" mismatched lighting in a photo editor.

And finally, there are some helpful items shown – a sandbag used to damp vibrations on the copy stand's column, and the dust blower and antistatic "tiger rag" used for dust control.

Please note that the photograph of this setup is included to show a setup for taking a tosogu photograph only. The resulting photograph will show the tosogu against a gray background, which is not acceptable for submission without the tosogu being knocked out of the background and placed on a white background.

A typical setup as viewed through the camera is shown in figure – 3:

Figure – 3: Typical photo of tosogu:

In this particular photo, there are halogen lights placed to shine light at a low angle of incidence from the upper left and upper right, with a “white card” reflector at the bottom to provide additional highlighting. A “black card” gobo can be seen in the upper right hand corner of the photo that was used in this particular situation to control a highlight on the rim of the tsuba.

Again, note that the resulting photograph is against a gray background, which would need to be removed prior to submission.

After removing the tosogu from this background and sizing to print at life-size 300DPI, the resulting image is shown in figure 3a. Note that the colors appear saturated because this photograph is shown after color adjustment so it would print correctly in a commercial situation.

Figure - 3a: resulting edited tosogu photograph

Doing the clipping to produce the image shown in figure 3a is extremely time consuming. This is mostly due to the difficulty in separating the tosogu from its background so it looks correct. A better solution, if possible, is to photograph the tosogu so that a white (or nearly white) background it obtained in the first place.

A “one light” photographic setup to do this is shown in figure – 4. Note that it is often helpful to have the light further away from the piece than is shown in this image.

Figure – 4: “one light” flash photographic setup

In this setup, an off-camera flash shoe is being utilized so that the camera’s TTL metering system can be used to set the exposure for the photograph. If you try this setup yourself using the camera’s metering system/ttl flash control, remember that the camera’s light meter will be “fooled” by the large white background, so some corrections will be necessary, and that the corrections will vary by each piece. The high intensity headlamp taped to the flash is used as a jerry rigged modeling light to allow the photographer to set up the lighting modifiers for the photograph.

Obviously, a constant intensity light or a studio flash system/source lighting modifier can be substituted for the camera flash arrangement shown at the photographer’s discretion. And as mentioned earlier, using the camera/flash in manual mode will yield more consistent results.

The use of a single light source is often advantageous because it is easier to get a consistent light “color” across the entire tosogu.

A piece of white paper is being used for the background. As can be seen, the anti reflective plastic is being held above the background using transparent plastic boxes of identical size.

A resulting photograph from this setup shot using the camera’s metering system with the flash used in ttl mode and without lighting modifications specific for this piece is shown in figure – 5.

Figure – 5: resulting photograph

Note the background as photographed isn't white. This is not acceptable for submission can either be corrected in a photo editing tool, or fixed up front by lighting changes (a second flash to illuminate the background, etc.,).

A corrected version is shown in figure – 5a:

Figure - 5a: corrected photograph

U Foo
G. Gaucys

Please note that image – 5 is shown reduced in size considerably.

There are a number of other ways to achieve this same "floating" appearance. It can be accomplished by the use of a light table/softbox underneath the tosogu, sticks with museum wax or fun tack to hold the tosogu above the background, hanging the tosogu vertically and taking its picture against a background, etc. All of these methods have strengths and weaknesses that it is beyond the scope of this paper to discuss.

As fittings often have unique lighting requirements, it is also sometimes helpful to include an image of a photographic gray card to aid in matching intensities during editing.

Figure – 6 shows a typical image the author submits. Note that the image includes documentation about the image visible in the final image itself, a scale, and a section of gray card shot with the item to aid in matching its intensity to other images. The image was color corrected using an X-rite Passport colorchecker imaged under the same lighting used for the tosogu. A camera profile was created from the colorchecker image using software provided with the X-rite Passport color checker. This profile was then applied to the tosogu image when it was post-processed.

Figure - 6a shows the piece removed from the submitted image and resized down to be 1:1 when printed at 300 dpi.

Please note that the lighting for this piece was considerably more complex than has been described in this document. The author has found that a wide variety of lighting setups are needed and they are highly dependent on the piece itself. Figure – 6 is considerably size reduced from the actual image submitted.

Figure – 6: actual image submitted for the 2010 KTK Exhibition catalog.

Figure – 6a: tosogu resized to print 1:1 at 300 DPI

Proposed Sword Imaging setup:

Everybody who is any good at doing this has their own preferred setups/methods which they are loathe to share the exact details of for various reasons. It takes a lot of skill/effort to produce a top-notch sword image, and similar to tosogu they often require lighting tweaks on a per-piece basis to make them look their best.

That said, a similar method to the one shown in Figure – 1 can be used for imaging swords. Also as noted, NEVER use glass as the substrate to image on – a heavy sheet of clear plastic works fine and reduces the chance of damaging the sword, either by being dropped onto or slid across the surface.

Reflection control is critical – the sword's surface is basically a mirror you will see everything in it. A typical sword imaging setup is shown in Figure – 7:

Figure – 7: Typical sword imaging setup

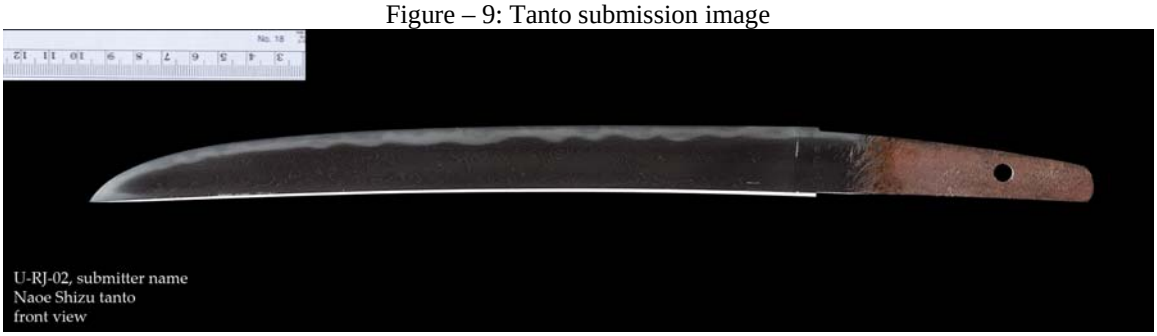
As can be seen a lot of effort has been put into reflection control.

Figure – 8 shows the image of a tanto produced using this setup. Note that the full size image shown in is considerably larger than the one recommended for publication in order for the piece to be viewed "close up" along its entire length. The image in the right half shows a slightly size-reduced crop of a section of the tanto from mune to ha sized to print at 360 DPI. In the original image the length tanto measures approximately 18700 pixels along its length. Note also that this is only one "interpretation" of this piece – it can also be shot a number of different ways (to emphasize the hamon, etc.) as well, depending on the tastes of the submitter.

Figure – 8: tanto images

Figure – 9 shows a suggested submission image for the front side of this tanto. Note the scale (optional) and submission information visible in the image itself

Figure – 9: Tanto submission image



Suggested Armor imaging setup

As what might be desired to show with armor can be considerably my varied than with tosogu/swords, we currently don't have a canonical recommendation at this time for this, though "happy snap" grade of images (pictures illuminated by built in camera flash, etc) is strongly discouraged.

A sample submission image is shown in Figure – 10.

As can be seen, the image has a knocked out background, and submission information in the image itself.

Figure – 10: Sample armor submission image

U-RG-02, submitter_name
kaga kabuto
Front oblique view

Conclusion:

In conclusion, the requirements for what constitutes an acceptable photograph have been presented and a method for achieving the photograph has been described.

Acknowledgements:

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Bibliography:

Macro Photography:

Constant, Alan R. Close Up Photography. Boston. Focal Press, 2000

Lighting:

Hunter, Fil and Fuqua, Paul. Light Science & Magic
An Introduction to Photographic Lighting. Boston. Focal Press, 1997

Color management:

Frasier, Bruce, Murphy, Chris, and Bunting, Fred. Real World Color management, Second Edition. Berkeley, California. Peachpit press, 2005

Resolution:

Williams, John B. Image Clarity
High Resolution Photography. Boston. Focal Press, 1990

Photography stuff in general:

Freeman, Michael. Image
Designing effective pictures. New York. Amphoto, 1988

Shaw, John. John Shaw's Nature Photography Field Guide. New York. Amphoto, 2000

Tosogu books for study:

Masayuki, Sasano. Sasano
Japanese Sword Guards Masterpieces from the Sasano Collection. Japan. Daisuke Saito,Mega Co. Ltd., 1994

Izzard, Sebastian, Editor. One Hundred Masterpieces from the collection of Dr. Walter A. Compton. New York. Christie, Manson & Woods International, 1992

Tokyo National Museum. Uchigatana-Goshirae. Tokyo. Tokyo National Museum, 1987

Fukushi, Shigeo. Tosogu Gokecho Meihin Shusei. Location/printing company not yet translated, 2001

Ogawa, Morihiro. Japanese Swords and Sword Furniture in the Museum of Fine Arts Boston. Boston. Museum of Fine Arts, Boston Massachusetts, 1987

Nakamura, Nick, Editor. Kokusai Tosogu Kai, 2005 International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2005

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 2nd International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2006

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 3rd International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2007

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 4th International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2008

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 5th International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2009

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 6th International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2010

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 7th International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2011

Nakamura, Nick, Editor. Kokusai Tosogu Kai, the 8th International Convention & Exhibition. Tokyo. Kokusai tosogu Kai, 2012

George, Richard, Editor: Kokusai Tosogu Kai, 2005 International Convention and Exhibition Supplement. Richard K. George photography for the Kokusai Tosogu Kai using Lulu.com, 2007

Heckmann, Günther. Tsuba. Nurtingen: Nihon-Art, 1995.

Web Links:

Color management:

http://en.wikipedia.org/wiki/Color_management
http://www.cambridgeincolour.com/tutorials/color-management1.htm

Other more esoteric issues (human eye resolution, etc.)

http://www.clarkvision.com/imagedetail/eye-resolution.html
http://photo.net/learn/drange/