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## **FURTHER EXTRACTS FROM ERGONOMIX FILES: TIME, THE THIRD FUNDAMENTAL UNIT**

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The ergonomist is constantly concerned with time, as an absolute point of reference, as measure of duration or a divisor in the measurement of work rate and when photography is used notions of time will be incorporated into the images. The photographs may be made to go beyond the pure objective and to take on an artistic or aesthetic dimension. How do those who view this poster display react to the images, originally made in connection with various ergonomic projects but now presented out of context?

### **Introduction and context**

When an ergonomist takes a photograph a piece of scientific equipment is used as part of professional scientific activity either as a data capture device or with the intention of recording the task or experimental context. Rarely will the ergonomist seek to manipulate the image beyond ensuring that the frame contains all the information required and that the focus, illumination, exposure, etc. are acceptable.

Using chemical processes and technical expertise images may be cropped or manipulated further but it is the recent development of digital systems that permits, indeed encourages, much more. It will be interesting to see how such facilities are exploited by the ergonomist and whether, or not, an artistic dimension to their presentations and publications will be sought.

A photograph is taken for a purpose, journalistic, scientific, commercial, social record, artistic, etc. The ergonomists purposes are usually to accurately record, the layout of experiments or to capture transient information for later analysis. It will be the intention of the ergonomist to make these records neutral and without intent to mislead or deceive. At some significant moment a team photograph or other social record may also be made. Ergonomists do not, however, appear to routinely attempt to create more aesthetic or artistic photographic images. Arguably, it is the very absence of any such artistic intent in the taking of the photograph that makes it an acceptable and repeatable tool for the scientist and ergonomist.

The chemistry of a traditional photographic film or the physics of the latest electronic camera ensures that a record is made of an instant in time. Today, with simple manipulation, the instant captured by readily available equipment might easily vary from one ten-thousandth of a second (using electronic flash) up to any number of minutes from a camera held on the “B” setting. Thus to record a behaviour or action the ergonomist usually makes a choice of one of the first two strategies; a third is, however, available:

1. Open shutter, “long” exposures. A subject, fitted with LEDs (possibly flashing), undertakes an action in a darkened space in front of a camera with an open shutter and the resultant single image records dotted lines produced by the motion of the point illumination. Alternatively, “flash” illumination might be fired several times, resulting in multiple images on the same frame.

2. Conventional, but “series/multiple” exposures. Using motorised film winders many cameras can expose film at rates of many frames per minute; much faster rates can be obtained from motion picture film, video and digital electronic systems. These images are usually presented as a linear sequence in time order.

3. Multiple exposures “joined”. In which the many frames are not presented in a linear timeline format but rather jointed together for forming a single, two dimensional, image in which time meanders in a space. David Hockney (1993) calls such pictures “joiners”. “*The Scrabble Game, Jan 1 1983*” is one of the first published which shows multiple movement unlike, for example, the earlier, purely scenic, “*Grand Canyon Looking North*”.

## **Photographs - The X factors**

Any photograph will contain an aesthetic dimension, albeit unintentionally, yet the use of the image only in a scientific role suppresses this and inhibits consideration of it. However, a photograph presented out of context encourages the artistic response. This, for example, commonly occurs when pictures made to describe scientific apparatuses are reprinted later to be viewed in a historical context. For example, Sutcliffe’s photograph of a Jet Workshop in Whitby (1890), the photograph of Lord Rayleigh (1842-1919) undertaking a Chemical Experiment (undated) (Sansom, 1974) or those of Amundsen’s expeditions (Huntford, 1987) now take on aesthetic qualities and promote discussion that goes far beyond that conceived when the original records were made.

A few, generally journalistic or record images, are of events so disturbing that they resist any artistic response from most people and remain images that horrify, inform, enlighten and promote emotive responses only. The content of photo-journalistic images such as Edward Adam’s (Langford, 1986) of the summary street execution of a Viet Cong suspect or Lee Miller’s images of post liberation Dachau and Buchenwald force most viewers to respond to the content alone and to give little consideration to the composition or the manipulation of light, contrast, viewpoint point, depth of field, etc. In such images it is the content that promotes the response and this is little dulled with time. It is, however, the viewer that makes the response and they may be encouraged, by the context of publication to view the aesthetic aspects of the image and not dwell upon the content. For example the recent Victoria and Albert Museum’s presentation of the Museum of Modern Art, New York’s touring exhibition “American Photography 1890-1965” contains Arthur Felling’s (“Weegee the famous”) “*Harry*

*Maxwell Shot in car*” (Galassi, 1995). Few ergonomists, except perhaps those that concern themselves with health and safety or accidental injury issues, make images with such “strong” content.

The ergonomist will routinely consider how they will present the results of their work. However, we rarely consider the aesthetic possibilities of our work and images yet these can be the gateway to productive responses from the client and even, the general public. Time series of people at work, photographs of laboratory equipment, etc. can all be used to bring ergonomics to a wider audience and to encourage appropriate debate as to the benefits that may be obtained from its application.

The technology is reliable and easily controllable and thus the “snaps” that ergonomists use will be suitable for showing in exhibitions. The images, once taken away from the original scientific context can entice a response from the viewer. To make future aesthetic use of the photographic possibilities of our projects requires a little creative planning before the shutter is pressed or the experiment dismantled. At its simplest the camera must be moved to cover the whole field of view so that Hockney type “joiners” can be made later. These multiple images can trigger open responses from the client that results in creative, less formal discussion. Thus they can promote the type of environment from which higher level systemic solutions may emerge. In this role such a “joiner” can be used to establish the context in which a Checkland Soft Systems Approach can flourish (Scholes and Checkland, 1990)

Hockney’s photographic “joiners” can be seen as just recent examples of the multiple image produced, in paint for many years. Pieter Bruegel (c1525-1569), for example, produced a wide range of such images now much used for Christmas Cards, Jigsaws, etc. His pictures are often full of the detail that interests ergonomists, for example, in the *“Peasant Wedding Feast”* (c1566) the use of an old door and poles by two members of the catering staff to distribute food raises many questions, not least whether or not it will shortly overbalance when the next plate is removed! However, unlike Hockney most of these “narrative” or “illustrative” artists control perspective, although not always rigorously.

Stanley Spencer has painted work that can be said to fall between the scenes painted by Bruegel and the photographic “joiners” of Hockney. Newton (1947) describes Stanley Spencer as an “illustrator” who unlike a true “narrative” painter requires text to support and guide the viewer. Newton suggests that the nearest counterpart to Stanley Spencer is Bruegel but then goes on to dismiss the former as “photographic painting”.

“Spencer’s purely photographic painting, then can be left out of account in this essay. It needs no explanation.... I have included just as much of it... as is necessary to show its quality. To those who admire keenness of eye coupled with skill of hand it is admirable. To me it has a dry unlovable harshness which begins to set my teeth on edge once the admiration has worn off. And yet, without that skill and keenness of eye not one of his imaginative illustrations could have been painted....” (Newton, 1947)

Stanley Spencer produced paintings which celebrate people at work throughout his career; from the early *“Apple Gathers”* (1912-13) and *“Swan Upping at Cookham”* (1915-19), to *“Workmen in the House”* and *“The Builders”* (both 1935) and *“The Sausage Shop”* (1951).

However, it is Stanley Spencer’s “Port Glasgow”/“Shipbuilding on the Clyde” series and the associated pictures (1940-1950) (Patrizio and Little, 1994) that most

clearly demonstrate the joining of many small images to form the whole with multipoint perspective. These illustrations were produced from a vast number of individual sketches, made on rolls of toilet paper, from direct observations of those working on the building of Merchant ships on the Clyde during the Second World War. To the ergonomist the wealth of detail is of immense interest and shows the power of debate possible from viewing composite images. (It is also interesting to consider the response to these “illustrations” from the Art Historian. Newton dismisses them as photographic yet they contain technical errors, and in the definitive catalogue (Bell, 1992) several are incorrectly titled, eg “Riverters” as “Riggers”, “Plumbers” becomes “*Bending the Keel Plate*”. Illustrating, perhaps, that the focus is on the artistic elements of the painting and not the content. It is; probably, the reverse for the ergonomist who views the task then the aesthetic!)

Now that many of the technical details of capturing images have been solved and the ability to manipulate images is becoming much easier we can make increasing use of the images in our presentations. Typically, a photograph made as part of a project will contain all the appropriate information and, perhaps with additional text, clearly show some aspect of our work. It is also increasingly possible for use to build upon the work of artists and produce “joiners”. These multiple images encourage an aesthetic response from the viewer that can yield interpretations and responses that might not be obtainable in other ways. With a little planning they may be made in most situations using easily available equipment and materials.

## Conclusion

Few ergonomists will be able to produce the most powerful artistic and aesthetic images but we can all give the same attention to the visual presentation of our work as we would do to the rigorous writing of the report or journal article. Should we show “time-line” series of images, multi exposure photographs or disregard the time and assemble composite “joiners” from our “snaps”? All can be produced, with relative ease, from equipment available to us all. The presentation of photographs encourages a much wider range of responses than commonly found among our clients and can promote a wide range of discussion of the circumstances of the project. This can be emergent property of our work and should be exploited as an important step towards the development of systemic and Meta-ergonomic solutions.

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