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Connecting in Multiple Non-linear Ways

Aesthetic Awareness on the Fireground

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# Connecting in Multiple Non-linear Ways: Aesthetic Awareness on the Fireground

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*Abstract: Western societies are increasingly designed and negotiated with the expectation that participants will intuitively negotiate new and uncertain terrain without “standard operating guidelines,” but rather feelingful impressions and expectancies. For example, websites are evaluated on their “intuitive” design—meaning the degree to which the first-time viewer can move around the site without having to read a help menu or follow instructions. This is the age of the networked society. The ideas of the positivist understanding of rationality, logic, objectivity, and emotionless deduction have been superseded in academic theoretical discussions, but this is not as immediately evident in the time-pressured arena in which the emergency services operate. Firefighting has predominantly been defined in terms of technical and pragmatic procedures, policies, and guidelines. There is very little written on firefighting with respect to training aesthetic judgment and recognising its importance in the decision making process. Through an exploration of one incident, the “Clothing Factory Fire,” I connect the work of an artist to the work of decision making in time pressured emergencies, using the connecting thread of the non-verbal appraisal of a scene. The implication is that, for artists and emergency service practitioners alike, there is not enough time to make verbal judgments. Emergency service practitioners see in “black and white” and act immediately, paradoxically relying on an aesthetic framework which reflects that of an artist.*

*Keywords: Aesthetic Awareness, Intuition, Decision Making*

## Setting the Scene

Contemporary Western societies are becoming increasingly dominated by the necessity to understand and perceive intuitively. For example, the word “intuition” has been claimed by Information Technology (IT) where websites are evaluated on their “intuitive” design—meaning the degree to which the first-time viewer can move around the website without having to read a help menu or follow instructions. That is, people are relying on previous experience to negotiate new and unfamiliar websites. My research explores the intuitive, non-verbal connections used to make time-pressured decisions by Incident Controllers on the fireground, and in this paper I relate one incident which I have called the Clothing Factory Fire. Urban fire services typically respond to structural fires, industrial fires and incidents, motor vehicle accidents, chemical spills, and hazardous materials incidents. Firefighters are required to be multi-skilled in areas as broad as hydraulics, electricity, structural design of buildings, weather, fuel types, and fire behaviour.

Developments in the field of fire science and firefighting technology and practice have escalated on an unprecedented scale. There have been dramatic changes in culture (Cooper 1995), the number and types of fires to be fought, and an expansion of duties associated with firefighters to incorporate search and rescue, motor vehicle accidents and terrorist response, hazardous materials and biological warfare, and the education of the public. The days of simply holding a hose and extinguishing a fire have vanished. Today’s firefighter can expect to be tertiary educated and promotion to the higher ranks is now merit-based and usually requires a postgraduate degree in Business, Public Administration, or Emergency Management.

There have been major technological improvements in the design of appliances with respect to their ability to withstand heat, roll over protection, and the use of diesel leading to less fuel vapourisation in responding appliances. There have also been advances in the training and education of firefighters. In Australia there are issues with national compliance and public service training packages, and the ensuing juggle to match competencies; there is also tension

between the old ways of training and education and the willingness to embrace the newer technologies, many of which are IT based and no longer “hands-on.”

### **Non-linear, Intuitive Connections**

I argue that firefighting is not a disinterested, dispassionate activity; rather it is suffused with emotion, and is therefore an aesthetic experience, and the “two” areas, cognition and aesthetics, are mutually linked and actually cannot be separated. The understanding that one can exist without the other, or that one can study only a part without considering the whole, is an example of the deductive nature of the positivist approach to enquiry.

In the opening of his book *The Arts and the Creation of the Mind* (2002, xi), Eisner states his aim as “to dispel the idea that the arts are somehow intellectually undemanding, emotive rather than reflective operations done with the hand somehow unattached to the head.” Considering firefighting as an artistic practice necessarily implies that the practice of firefighting has aesthetic qualities and features. What are the implications of this in terms of decision making on the fireground? For a start, the way we think and talk about the context of firefighting can be “reconceived”—at the moment it contains a technical rationality that moderates and tempers our understanding of risk and our consequent decisions.

Lipshitz et al. (2001, 387) define “true experts” as “persons with demonstrably superior performance in specific domains.” Just how that experience is demonstrated is the subject of continuing debate. Distinguishing an expert as someone who recognises something as unexpected or out of the ordinary has been well documented in the field of critical care in nursing (for example, Katims 1993, LeVasseur 1999, Wainwright 2000, Bonner 2001).

In terms of decision making on the fireground, I argue that expert practice involves the ability to reflect on one’s actions, learn from them and alter response as a result. The accumulation of experience, by itself, is not of much value. The catalyst is reflecting on the actions and decisions made, and modifying responses when next in a similar situation. According to Clarke (1986, 3): “Intuitive knowledge can only be obtained through reflection on the performance of the action every time it is carried out, in order to build up a theory of predicted responses.” At times intuition does not manifest as conscious recognition. Rather, it may come as a surprise and is challenged in our minds in various ways, and labelled the “ah ha” moment by Eisner and Powell (2002) who conducted research into the “Art of Science” through an investigation of the “ah ha” moments in a researcher’s life.

The seminal time-pressured decision writer, Gary Klein (1998), is both a decision researcher and cognitive psychologist. He left his controlled laboratory conditions to investigate how decisions were being made in the stressful, time-pressured, and dynamically changing environments of Incident Controllers on firegrounds, in airplane cockpits, and hospital emergency wards. Klein (2002, 13) understands the experiences that build into intuition may be subconscious and unanalysed, therefore leading to the word “intuition” which he defines as “the ability to make decisions by using patterns to recognize what’s going on in a situation and to recognize the typical action script with which to react.” Klein’s understanding of intuition is therefore linear. I maintain that rather than “recognizing” and “indicating,” it is important that a definition of intuition includes a sense of transparency of all the elements indicative of immediate perception, not necessarily key patterns. My understanding therefore goes beyond Klein’s, in that I embrace an holistic understanding of intuition more aligned with Eisner and Powell’s “ah ha” moment (Eisner and Powell 2002) than with recognising key patterns. For Klein, experience comes first and then intuition. However, this linear progression does not explain individuals who have many years of experience, but who prove incompetent on the fireground. I argue that experience *is* important, but it does not guarantee anything. Eisner and Powell’s “ah ha” moment provides a more useful approach as it enables intuition, rather than rational order, as enabling judgment. What is missing from Klein’s definition is creativity. This is

why I draw on the world of art—to better understand the creativity of the decision making process, quite apart from a linear model understood through psychology, whether the psychology of art or of decision making.

## Expert Vision

The focus of this paper falls on dissonance and the handling of anomalies and discrepancies. What happens when an Incident Controller is confronted with a fire in which there are a number of competing features vying for his or her attention? At times they are not the only decision maker involved, and the way the incident evolves may leave the Incident Controller with the feeling “I would have done it differently.” Experts do not always agree.

Despite the contention over what makes an expert, there is a general agreement that he or she is able to generate more options than a novice, who may only see one approach, which is more often than not rule-guided (Bonner 2001). So what is it that processes and activates experience into the professional practice of an expert? How are experience and expertise differentiated? Most of us can think of someone who has been years on the job, performs it well enough, but who is not an expert in the truest sense of the word. What is the correlation between a gathering of experience on the one hand and the transformation to “expert” on the other? Why is it that an accumulation of experience does not necessarily equal expertise? To tackle these issues I draw on somatic response and aesthetic awareness as fundamental to decision making on the fireground and artistic practice.

## Method

Ethical approval for the study was granted through the University of Western Sydney, NSW. Twelve Inspectors from a large Australian firefighting organisation were interviewed. In this paper aesthetic connections are made between the risk perception, decision making, and somatic forms of awareness of emergency responders and artist practitioners through the multimodal visual analysis of one incident, the *Clothing Factory Fire*.

The emergency responders participating in this research typically have twenty or more years of experience in firefighting. As Inspectors they generally attend larger or more demanding incidents. The participant Inspectors are experts in the sense that they have been sifted and selected from their peers and intensively trained and tested within their fire service’s promotional program (Ingham 2008).

I gathered my information through semi-structured recorded interviews and provided the option for the Inspectors to draw mudmaps, diagrams, timelines, and various other images, while relating their selected fireground incidents to me. As a complement, I also collected multimedia images including newspaper reports, videos, and other related incident documentation pertaining to the incidents being described. In the following incident the connecting thread of aesthetic awareness is demonstrated in the expert appraisal of the scene.

## The Clothing Factory Fire

An illegal sweatshop constructed under a car-park and with no standard fire safety features is going up in flames. The Inspector interviewed is in the role of Fire Investigator and turns out at the fifteen minute mark. There are already six fire stations responding and an Incident Controller has been appointed. The part of the incident described here is characterised by a conflict in judgment between an experienced Fire Investigator (the participant Inspector) and an Incident Controller who is planning his fire attack according to the “rules.”

So I went in on top of this fire and went and had a look at all these units. There were three in a line, had a look at all these units, and started to see some cracking in the

concrete. So I sort of measured it and then went back and said, “We’re getting some cracks.” And then I came back and had another look and I could see that they were expanding a little bit, but, I still believed that it was structurally stable enough to go in and put it out. Then came the difference between what one could consider to be intuitive understanding. Once I said to the Incident Controller that there’s cracks in the concrete he said “Oh well, we’re not going in.” I said “Look it’s four hours rated. It’s made to crack. That’s how it releases its stresses. It cracks along certain lines. It doesn’t necessarily fail, but all the reinforcement and various things—it will crack, but it won’t necessarily fail.” But he didn’t have that fire engineering background—like I’ve done something like working with various companies and seen tests on this type of concrete. I knew what it would do. I knew it wouldn’t fail. And in the end the fire went on for another four hours. Seven hours, actually, the whole fire, and it still didn’t fail. So we could have got in there and put it out.

As Lloyd (2007, 196) notes, “The discourse of firefighting is rendered through the fundamental construct of safety.” In the Clothing Factory Fire we see a conflict in determining what is safe and what is risky, in terms of the cracking times of concrete. Helga Drummond (2001, 69) provides a description neatly illustrating the same situation: “Ambiguity means capable of more than one meaning. Scientific approaches to decision making see reality in black and white. In this view a given entity is either one thing or it is another. Something is either an act of resistance or of compliance. It cannot be both. In contrast, the art of decision making involves recognising that compliance can also involve resistance.”

It is not only “scientific approaches” which view reality in “black and white”—personnel within the emergency services tend to do the same thing. In fast-paced environments where decisions of life and death are made rapidly, decisions must be communicated without ambiguity, leaving no room for doubtful interpretations. The Clothing Factory Inspector read the colour of the smoke and realised the fire attack was not effective:

Because reading the fire will tell you a lot about what’s burning—the colour of the flame, the colour of the smoke, pressure, intensity of the smoke. All of this tells us what is burning. You can pick whether it is hydrocarbon, whether they’ve poured fuel around. We look at the security of the premises—what’s locked, what’s not locked. I can talk to the first arriving fireys, find out what they kicked in, what they busted open, what was already open. And your witnesses really are important—who is watching the fire? If it’s a deliberate fire by an arsonist, he might be in the crowd. They like to light fire and watch.

## **Black and White Vision**

Black is as dark as you can get. Very few places are totally pitch black as there is usually *some* light around to determine just how black is black—for example, a dark night is never as dark as a completely enclosed room—but this is the darkness confronting the firefighters at the Clothing Factory Fire. In this kind of fire the visors of firefighters may be so darkened with soot that they are unable to see other firefighters only a metre away. This is the thick, tangible blackness of smoke and soot, a screen so dense in colour and vapourial thickness that it may as well be a solid wall.

It is the colours of smoke emitting from burning materials that the firefighters must read and anticipate. From the perspective of the Clothing Factory Inspector, the firefighters kept pouring water onto the fire, but the colour of the smoke did not change as he would have expected, rather it was still burning strongly and there was trouble locating the seat of the fire. The dissonance created by this unchanging smoke colour, the violation of expectancy (put water on fire and the smoke turns a lighter colour) was discomfiting and alarming to the Clothing Factory Inspector:

“And you could see that the fire was not going out because the smoke wasn’t getting any less, it wasn’t getting any lighter, as one would expect smoke to do. It was just staying the normal, nasty, black colour.” Black is understood as “nasty.” The word also reflects the violation of expectation—the smoke was not getting any lighter.

In the next excerpt the Clothing Factory Inspector actually defends the actions of the Incident Controller, even though he would have initiated a different plan of fire attack. He understands the Incident Controller to be constrained by recent Occupational Health and Safety (OHS) requirements and thus hindered from doing the “real” work of a firefighter—extinguishing the fire—but, says the Clothing Factory Inspector, I would have done it differently, I would have gone in and put it out: “He’s a very experienced Incident Controller actually. And he was making decisions a lot on what we were telling him, and he’s been in a long time, a very experienced officer. We have the equipment, we have the breathing apparatus, we have the thermal imaging cameras, we have the gear that will allow us to do that job. And I think we should’ve gone in and done that job.”

Here the Clothing Factory Inspector is acknowledging two different plans for resolving the incident, but he would have done it differently if he had been given the go ahead. He recognises the difficulty of the decision facing the Incident Controller—whether to risk the concrete collapsing and compromise crew safety, or to let it burn and play it safe. In a sense he views the choice as a binary: stay put or move in, black or white, not an ambiguous mix of options.

As a personal observation, I have noticed from conversations and reading student assignments on emergency decision making that many are very “black and white” in their perspective on life. There is a predictable resistance every year as they struggle through their sociology assignments, with one student repeating Introduction to Sociology three times in an effort to convince his lecturer (not myself) of another viewpoint to what he perceived as the “grey” interpretations of “the truth.” I have watched others simply surrender to the “rules” and comply with the subject requirements, putting aside their personal understanding of “black and white,” and regurgitating the required viewpoint of multiple realities in which truth is relative and socially constructed, simply in order to pass the subject.

I think a part of the explanation lies in the experience of these students. They are predominantly professional emergency service personnel with finely honed decision making capabilities in time-pressured incidents. They are experienced in situations where a “yes” or a “no” has to be issued very clearly and without tones of indecisiveness, because anything else may lead to confusion. Theirs is a life and death world, where a blurry, indistinct command could result in a mismanaged incident leading to dire consequences. Encouraging these students to acknowledge in their assignment writing situations of “perhaps,” “maybe,” and “in most instances” brings anxiety on their part, as they see this greyness as a weakness for precisely the same reason we value it in academic writing—they are accustomed to making definitive judgment statements of the kind postmodern academics avoid. While in the postmodern world truth is relative and socially constructed, in the firefighting arena truth is predominantly perceived as objective, and there is an expectation that it can be described and stated objectively.

### **Cloudy Vision—Grey**

In the following excerpt, the Clothing Factory Inspector uses the word “clouded” to mean a blurring of judgment capability: “I think things like the OHS Act have clouded what would be normal risk taking judgments which say ‘Yeah, we need to get in there and put that out.’” Interestingly, clouds, whether of smoke or precipitation, are usually some tone of grey. Grey is the colour of spent fuel, ash and it also “suggests confusion and a loss of distinction” (Varley 1988, 178). In English we talk about nothing being “black and white” meaning “absolute,” but various shades of in-between. Similarly, the Clothing Factory Inspector perceives a “clouding” of the situation as a result of OHS legislation which has led to indecisiveness and indistinctness on

the fireground. In this paper the concept of intuitively negotiating uncertain terrain through feelingful impressions and expectancies has been illustrated through the Clothing Factory Inspector—who would have sent firefighters in to the clothing basement fire to fight offensively, trusting his own expert understanding of the cracking time of concrete.

## Spatial Vision

For firefighters, there is a running *towards* the incident ground, despite the risk, because lives are in danger. As the Clothing Factory Inspector says: “Our guys have a really different perspective when somebody is trapped. They’ll take way greater risks than they would if it’s just property.” These days there is comprehensive OHS legislation in place to reduce the number of deaths and injuries in workplaces. For firefighters there are related Standard Operating Guidelines, Standing Orders, and the Fire Brigades Act and other relevant legislation. These advances can at times inhibit action, and at other times protect action. As Lloyd (2007, 193) found, the policies and procedures of the “institutional discourse” are challenged and interpreted by the practice of expert firefighters in that: “The community may present a version of professional practice that challenges the institutional discourse, because information is drawn from experiences of experts in everyday workplace situations.” As the Clothing Factory Inspector realised, learning to negotiate these “discourses” provides the key.

## What Is Lost in Translation?

“Certainly people are able through drawing to represent aspects of their experiences that cannot be recounted verbally” (Pink, Kurti, and Alfonso 2004, 7).

There are problems associated with researching aesthetic awareness and somatic and intuitive response, whether it be a response to an image in an art gallery or on a fireground. The understanding that the visual can easily be portrayed in written form or that the textual can simply be translated into diagrammatic form, is problematic (Doloughan 2002). According to Sneider (1996, xiv), “Although something is always lost in translation, even in the same medium, still more is lost when a work from one medium is translated to another.”

In an ethnographic study of scientific practice, Latour and Woolgar (1986, 283, original italics) researched how “facts” are constructed by observing life in a research laboratory over a period of two years: “One interesting aspect of the exploration of reflexivity is that our writing is conventionally constrained by the use of report-like formats. Reports encourage a reading that reflects an understanding of the ‘facts’ and that is *straightforward* and reports the *actual state of affairs*. There is a place for this kind of reading. Reflexivity is thus a way of reminding the reader that *all* texts are stories.”

The title of the book *Visual Literacy* implies that “seeing is somehow like reading” claims W. T. J. Mitchell (2008, 11) in a chapter titled “Visual Literacy or Literacy Visualcy?” Mitchell makes the point that we may think learning to read is much more complex and difficult when compared to learning to see. He turns this idea around and maintains that we need to see in order to learn to read (Mitchell 2008). As the Clothing Factory Inspector comments: “Well, to my mind there’s only so many things you can write in a book to say how you do something. There’s lots of unwritten things that you don’t, you can’t, really articulate well into words. But it’s just the vibe, the feeling, the way you do something and you can’t, I don’t think you can teach people out of a book how to lead” (Mitchell 2008, 14).

The technical aspects of fire behaviour may be described in scientific language quite easily, such as concrete being “four hours rated.” Having said this, firefighters are not primarily focused on an objective representation of the truth, but rather on the unpredictable, uncertain conditions which they must address to be effective. The Clothing Factory Inspector had an independent view based on intuition and a greater level of scientific experience, which is a paradox—that

better science can be part of intuition. His call was accurate in that the concrete lasted, indicating his wider scope of judgment.

## Reflection in Action

Incident Controllers shape reality through their actions. This kind of “reflection-in-action” is articulated by Schon (1983), who described it as thinking about doing something while doing it, rather than reflecting on it after the event. In “reflection-in-action,” Incident Controllers would use a theory (for example, put water on fire and fire goes out) to initiate an action. They also add to and develop the theory when things do not shape out the way the theory predicts; for example, the fire does not go out. They add and develop the theory while the action is occurring, “drawing on intuitive knowledge, then incorporating the new knowledge into their personal knowledge base for use in future intuitive actions” (Rose and Parker 1994, 1008). Intuition in nursing is also called “personal knowing” and “clinical judgment” (Rose and Parker 1994, 1007–08). Reflection-in-action intuition is recognised in nursing as integral to facilitating the actions of nurses when they find themselves in previously un-encountered circumstances. It “is important in enabling nurses to respond to new situations creatively, using imagination and abstract thinking” (Rose and Parker 1994, 1008).

Transposing the concept of reflection-in-action to decision making on the fireground, if an Incident Controller cannot articulate a rationale for his or her decision it does not mean that it is an irrational decision. The lack of measurable vocabulary is not justification for dismissing a decision as irrational. If the action of firefighting is dehumanised and the theory of firefighting “is not related to the context, then actions become mindless repetition which becomes self-destructive” (Jarvis 1992, 176). According to Rose and Parker (1994, 1009), “It will be practitioners acting in this way who, whilst they may have extensive knowledge, will never become experts.” Carper (1992, 77) succinctly describes this type of knowing and the conceptual framework upon which this discussion rests:

This pattern of knowing is knowledge of that which is individual, particular, and unique. Esthetic knowledge requires the active transformation of what is observed, through the experience of subjective acquaintance, into a direct, non-mediated perception of significant relationships and wholes rather than separate, discrete parts. Esthetic knowledge is the comprehension and creation of value and meaning from both generalized abstractions and concrete particulars. It enables us to “go beyond” what can be explained by existing principles and theories and to account for variables that cannot be systematically related or quantitatively formulated. It is interpretive, contextual, intuitive, and subjective knowledge. It requires synthesis rather than analysis.

Time-pressured decision making has an aesthetic quality in that the Incident Controller holds all the loosely related tendrils and strings, some closely related, some distantly tweaked and pulled, in an interrelated and complex weaving, impossible to unravel into single threads and ethers. The patterns created shift and move with each decision, but the essential elements remain intertwined. The skill of the expert is evident in the manipulation of this image towards a speedy resolution. Waiting too long, or making the “wrong” call can result in a knotted mess, which to unravel means backtracking and sidestepping and being diverted from the core problem. Delicately slipping and shoring up the various threads means being able to predict what will happen to the whole when one part is manipulated. Inexperienced hands, following a rigid and inflexible set of manoeuvres, may precipitate knots of resistance.

## Conclusion

“Our lives teem with numbers, but we sometimes forget that numbers are only tools. They have no soul”  
(Bernstein 1998, 7).

As demonstrated in the Clothing Factory Fire, the world of the Incident Controller is intertwined and networked by orders, for example, Standing Orders, Standard Operating Guidelines, OHS legislation, orders from senior officers and Safety Officers, and Codes of Conduct. The mandate is to save life and protect property. To do this the Incident Controller must constantly analyse and make judgment calls on the risks inherent within both the situation and their planned actions. These orders and risk analyses are considered “scientifically” verifiable. That is, they are about measuring and being able to verify numerically. The cracking time of concrete and the angle of a tilt-slab wall as in the Clothing Factory Fire, the rate of wind acceleration to fire movement, calculations of flashover, back draughts, and so on. Organisationally, what is valued are measurements and verifiable figures, how much water, how many hoses, what size hoses.

The fireground is a complex place of competing priorities and one way to deal with complex cross-over issues is to clearly delineate between black and white “absolute” situations, supposedly enabling an objective viewpoint. An interdisciplinary approach is about relationship: structure, harmony, discord, context, and therefore well suited to the study of the complex, the multifaceted, indivisible whole of time-pressured decision making. I argue that despite the ways in which these relationships are logically and rationally articulated in the science of firefighting and consequently understood as “facts,” that without aesthetic judgment they cannot even begin to be comprehended.

The way in which Incident Controllers conceptualise the fireground establishes and determines their awareness of the scene and consequent decision making. This research calls into question the dominant paradigm involved in recognising just *how* they do this. The dominant science-based paradigm could be conceptualised as a set of linear controls and rules based systems. The important contribution of aesthetic awareness on the fireground, which connects decision making on the fireground in multiple non-linear ways, has until now been largely unnoticed.

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