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MENTAL FACTORS IN JAZZ PERFORMANCE

by Travis Gee

**Thesis submitted to the
Faculty of Graduate Studies and Research
in partial fulfillment of
the requirements for the degree
Master of Arts**

Department of Psychology

Carleton University

Ottawa, Ontario

July 31, 1992.

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ABSTRACT

The use of cognitively-based strategies to enhance human performance is well-documented in the sport psychology literature. A review of the literature was done which indicated that analogous findings were likely to occur if musicians were interviewed about the same topics. Such a study was undertaken, using a grounded-theory approach and focusing on jazz musicians. Methodological improvements to extant procedures were made to ensure the validity of the findings, and linguistic analyses were done to ensure their reliability. The results indicated that, much as in sports, the use of mental imagery, cognitive strategies which enhance concentration, and quality practice do a great deal for musical performance. Beyond this level, however, it became apparent that a full understanding of the psychology of jazz performance must go beyond the individual to the social system in which he or she is embedded; the system with which contact must be established in performance. Directions for future research are discussed.

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MENTAL FACTORS IN JAZZ PERFORMANCE

Character and intelligence: The poles your talent spins on, displaying your gifts. One without the other brings only half of success.

-Gracian

As the title suggests, the present research has been undertaken with an eye towards exploring the psychological elements involved in the performance of jazz music. The original purpose of this exploration was twofold. However, as the work progressed, it became apparent that to capture the richness of the information which was gathered, it would be necessary to make broader connections than had been initially planned.

The first aim was of a practical nature; to gain insight into the psychological elements involved in optimal jazz performance. This insight would elaborate the key mental factors and their determinants so as to be of general use to developing musicians.

In addition, it was expected that these factors would reflect similar ones which have been found in the area of sport psychology, laying a foundation for future work on a general theory of action. In particular, use of mental imagery, concentration techniques, and high-quality preparation strategies were to be examined with reference to their facilitation of peak performance.

Phenomenal dimensions of peak performance in jazz were used to validate the interviews insofar as the performers' descriptions of personal best performances corresponded to

an extant psychological model (Privette, 1984, 1986; Privette & Bundrick, 1987). One consistent difference suggested that while on the whole, the model describes peak performance in jazz, it has one internal inconsistency which the present study attempts to resolve. This appears circular; however, peak jazz performance is similar to peak performance in other domains to a very large extent. The inconsistency just mentioned is internal to that model, and can be resolved using principles to be discussed below.

As the interviews progressed, it became apparent that these mental factors are determined by a number of variables, not all of which are strictly mental (in the normal usage of the term). It was concluded that a broad systemic view is needed to gain insight into how top players evolve the requisite skills for excellent performances.

This work consists of a review of the relevant literatures on mental factors in sport and in music, a critical discussion of the research methods employed to date, and some foundation work for the present methodology. These will be followed by a Methods section describing the procedures of this research. The Results section will present the findings of preliminary and secondary sets of analyses. Brief discussions will follow each set of results. These findings will be connected to broader psychological research in the subsequent General Discussion.

As a guide to the introductory review, the following is the sequence of discussion. A discussion of mental imagery and its' relationship to concentration will be followed by a review of the literature on relevant mental factors in music and sport, and some non-mental determinants of those factors. A brief section will then discuss the social ecological perspective in psychology, and a theoretical discussion of methodological principles will lead into the Method section.

Mental Imagery and Concentration

The primary mental factor which underlies most of the ensuing discussion is mental imagery. Images are perhaps the most primitive of the elements of what we normally call consciousness. They are not sensations, but their qualitative similarity to sensations can lead to their being confused with sensations under some conditions. They are available to consciousness, and can be representations of past or future (imagined) states of the world.

When we recall an argument or discussion, the experience involves a sequential focusing of attention on various aspects of the memory one at a time. With imagery, we may focus simultaneously on several aspects of a memory at once. This simultaneous focus on numerous features distinguishes images from other contents of consciousness, and permits simultaneous mnemonic access to richer stores of information. The use of imagery involves those processes by

which imaginal memories are stored and retrieved, and so is related to memory.

Along these lines, Minsky (1986) and Neisser (1976) discuss images as a type of expectation. This points out a vital function of memory as will be pointed out below in the discussion of a sport-skill learning model. As well, Neisser and Kerr (1973) report the facilitation of memory by use of visual imagery. This is consistent with the views just described.

Thus, a well-developed ability to use imagery would be very useful to individuals who must store large quantities of highly-patterned information, and have easy access to it under severe time constraints. Jazz musicians are precisely such individuals: in performance, they must be able to access stored information about how the music should sound and where it can sensibly be taken in a highly efficient manner.

Thus it appears that we store information by using either of two modes of representation: linguistic or nonlinguistic. Indeed, these two modes have been known to psychologists for some time. Consider William James' observation on such modes:

"The intellectual life of man consists almost wholly in his substitution of a conceptual order for the perceptual order in which his experience originally comes."

(James, undated, p.77).

In his classic textbook he goes on to add

"The conceptual scheme is a sort of sieve in which we try to gather up the world's contents...whenever a physical reality is caught and identified as the same with something already conceived, it remains on the sieve..."
(James, 1950, ol II, p. 482).

Pattern-matching based on representations in the mind seems to be a primary function of the intelligent being. However, James is not clear on the extent to which the conceptual order is linguistic in nature. This is an important issue. In the case of face recognition, for example, it is most likely that we are comparing our perceptions to nonlinguistic representations. When we recognize someone we know, we do not hesitate to wonder why. On the other hand, think of the case where one mistakes a stranger for someone else. It is only upon enumeration of the differences which have fallen through the sieve (ie., 'That can't be John - John has a bigger nose') that recognition of the erroneous identification occurs.

James' perceptual and conceptual orders have been recently refined. Paivio (1971, 1977, 1986) describes a dual-system model where verbal information is coded in one system and non-verbal information in another. If a stimulus is linguistic in nature, it will be coded in the linguistic (ie, conceptual) system. If, on the other hand, it is non-linguistic, it will be coded in the (perceptual) non-linguistic system. The latter system is called

'imaginal' because its contents are images of sense-perceptions (such as the itch mentioned above).

All this is not to say that the two systems are completely independent. For example, dreams are images which are described in words after the fact, and conversely, any experiment in which mental imagery is studied as a component depends upon the elicitation of images through the use of verbal stimuli (eg., Woolfolk, et al, 1985), as do many hypnosis experiments.

Focusing on the Paivio's imaginal system, Gikalov (1982) describes a model of skill learning. The motor program system which controls the efferent flow to the muscles carries sensory information to a "template" or comparison centre where (ideally) correct images are stored. Corrections are sent back to fine-tune the motor program so that the kinesthetic feedback approximates better what is expected based on the stored images. The function of images as expectations here is vital.

Visual, auditory, kinesthetic and olfactory information goes to the comparison centre. The kinesthetic input signal 'itch' interferes with the smooth operation of the system, because it demands the motor output response 'scratch'. While linguistic inputs are not specified in this model, they too probably impact upon the comparisons, because they focus attention away from the efficient transmission of

relevant data. As the system suddenly has two competing input/output flows, its efficiency is reduced.

Although it was developed in the sport paradigm, this model is not limited to sport skills alone. It is implicit in many theories of musical instruction, as will be seen below. It relates to imagery in that images form the basis for comparisons. This underlines the importance of relating sensory to imaginal information. The process of relating these forms of information is a delicate one, however, which is easily disrupted. Therefore, we must consider the relationship of concentration to the use of imagery.

Concentration is the ability to control one's attentional focus, so that it centers upon relevant information and discards irrelevant information. Relevant information could be sensory feedback about a task being performed, as well as images to which that feedback is compared. Irrelevant information could be external distractions such as unanticipated events in the environment, or internal events such as a shift into a less efficacious mode of thinking.

The ability to concentrate may be developed through a variety of exercises (Knowlson, 1931). Such exercises achieve optimal effect when they involve interesting content and actions. They work best when slow practice is used: "Concentration with the speed of sixty miles an hour is a misnomer. Only the slow motion picture gives you the

details," (Knowlson, 1931, p. 33). As will be seen below, these are key features of high-quality musical preparation. Thus, quality practice in music can facilitate the development of the ability to concentrate.

The relationship of mental imagery and concentration to the motor skills is one of interdependence. Ultimately, we want complete, accurate control of motor behavior. Sensory feedback must be compared to stored images, and our motor processes must create automatically the sound required. If sequential reasoning must be employed to reproduce what is in memory, then the whole system is thrown off-balance and performance is impaired. For example, having to think about what combination of keys is required to play an F# on one's saxophone will ruin one's ability to play musically. The present study will focus primarily on the higher levels of imagery and attentional focus which are required for high-quality control of lower motor processes.

Having laid this foundation, we may now turn to an examination of the literatures in music and sport as they relate to these mental factors and their determinants.

Mental Factors in Music and their

Parallels in Sport

Skilled actions require preparations to store information about the required movements in the some form, and an ability to recall that information. The quality of the preparation, the mode of storage, and the degree of

ability to recall it determines the usefulness of that information. The quality of the performance of the action depends on all of these factors.

The broader dimensions which have come out of the music and sport literatures described below suggest that there are three necessary (if not sufficient) conditions for peak performance. These are high-quality mental imagery, the ability to concentrate well and block out distractions, and intensive high-quality preparation so that the more mechanical aspects of the performance are so automatic as not to occupy consciousness. The support for these dimensions is outlined in this section.

Mental Imagery in Music

The value of mental imagery as a component of practice and performance has been described by at least one music instructor (Olin, 1977a, 1977b), who notes that

In violin playing, learning must take the form of IMAGERY. Any given moment in playing a piece is the expression of a full or partial IMAGE...The player's concentration on these elements of IMAGERY is critical and must be constantly reinforced.

(Olin, 1977a, p.16)

The components of the musical image are listed thus:

1. sense of touch in the hands,
2. muscular sensations in the entire body,
3. a sensation of the amount of energy being used to operate the muscles of the body; and their intermuscular balance,
4. exact pitch!
5. tone quality!
6. an expressible musical idea.

(Olin, 1977a, p.16)

The use of a model such as this is implicit in the advice found in Green's & Gallwey's (1986) extension of Gallwey's (1974) work:

Before you start playing or singing the first phrase, imagine your body playing the piece. Allow your body to make just enough miniature muscle movements to ensure that your "image" is connecting with your body's own kinesthetic way of knowing."

(Green & Gallwey, 1986, p. 58).

As in *The Inner Game of Tennis* (Gallwey, 1974) , the inner game of music requires trust in the 'nonlinguistic' Self 2 and suppression of the 'critical' Self 1 for the successful use of mental imagery. The two-self model is Gallwey's analogy for two key patterns in the contents of consciousness which relate to performance. Self 1 refers to a state where thoughts extraneous to what is being done are predominant, while Self 2 refers to the contents and processes which relate directly to the task at hand. Self 2 is 'nonlinguistic' in that images, not words, are predominant. Selves 1 and 2 correspond roughly to Paivio's linguistic and nonlinguistic coding systems, and James' conceptual and perceptual orders, respectively.

If we consider Olin's components of the musical image, it seems to be 5 parts perception which are subordinate to one part conception. Thus, trusting the perceptions and ensuring accurate coding of non-verbal information is a logical procedure to follow.

The most comprehensive scholarly work done on the psychology of musicians to date (Reubart, 1985) has found the same thing. Both his personal experience as a professional musician and his findings from his survey of outstanding musicians led to the conclusion that the best players leave most of the playing to "a complex coordination of auditory with haptic memory, neither of which is conscious" (p. 65). In fact, he suggests (p.211) that among other things, the musician suffering from performance anxiety "consider sensory priorities, taking steps to align and balance auditory and kinesthetic awareness". This of course assumes an ability to concentrate, and effectively bring images in and out of conscious focus. The "unconscious" auditory and haptic memories are stores for images, which cannot all be conscious at once.

Mental Imagery in Sport

A variety of designs have been used to assess the effectiveness of mental imagery in the sports area. Pre-post designs have been used (ie., Silva, 1982), use of mental imagery has been correlated with differences in athletic performance, and various conditions have been contrasted with the imagery condition as pre-performance techniques (Epstein, 1980). Others (Woolfolk, Parrish, and Murphy, 1985) have collected baseline data on subjects inexperienced in golf, and then assigned them randomly to positive and negative imagery groups and a control group.

The group which imagined the ball rolling in a line to the cup and going in) showed greater improvement than controls, and the group who imagined the ball going in a line to the cup and narrowly missing at the last moment deteriorated in performance.

Another study (Inomata & Yamamoto, 1982) used two imagery conditions and a control group, where parts of a swimming stroke or the whole stroke were rehearsed mentally in the experimental groups. Both imagery conditions were superior to the control condition, and some non-significant trends were found suggesting that mental practice of the whole stroke may be superior at initial stages, and mental rehearsal of the various parts superior at later stages.

Other work has been done (Orlick and Partington, 1988) which studied 235 Canadian Olympic athletes. It was found that 99% of the athletes made systematic use of mental imagery as a preparation strategy. A gender interaction was found, wherein for males, quality and control of the imagery correlated directly with successful Olympic performance. For females, however, it did not correlate directly with rank, but did correlate with mental readiness for competition.

The sport psychology literature thus provides solid empirical grounding for the concept of mental imagery as a facilitator of physical performance. Mental readiness for a performance, while it may be related to imagery, has more to

do with first obtaining and secondly, maintaining, a sharp attentional focus which centres on some appropriate object. Now we may turn to concentration in music and sport.

Concentration in Music

The need for concentration on the prepared musical images has also been described by a music teacher:

The student should be trained to reserve his concentration for the music, which naturally is more conceivable if the music is well prepared, and this will leave scant room for self-indulgent thoughts.

(Wagner, 1978, p. 19)

Olin (1977b) is more explicit about the precedence of mental imagery when he states "Concentration is required to develop IMAGES in the practice..and the performing...phases" (p.16). The point of Olin's articles is that through diligent practice and correct instruction, the acquisition of the proper mental images of the sights, sounds, and feel of the actions involved in producing the notes will improve one's playing enormously. The basic formulation implied in this model is consistent with the model proposed in the sport skill learning paradigm by Gikalov (1982) described above. Furthermore, the 'self-indulgent thoughts' are noise in the system which of course reduces its efficacy. The negative impact of such thoughts is well recognized elsewhere in the music literature. For example,

In the case of narcissism, the dilemma in which the performer finds himself involves preoccupations vastly removed from his primary purpose of effectively communicating musical ideas. He has far greater concern for the state of his inflated ego than for his art.

(Blankenship, 1970)

Focusing on anything other than the music is by definition a lack of concentration, and narcissistic ideations can be as much a cause of loss of concentration as the unscratchable itch.

Reubart (1985) found that for superior pianists, their focus of attention during their best performances was not on specific objects or thoughts, but on the broad emotional and/or aesthetic qualities of the entire piece. The descriptions which he elicited corresponded to

an experience which Abraham Maslow would have called a "peak performance," and which Mihaly Csikszentmihalyi would identify as a "flow experience"... (p. 44)

The objects which Reubart recommends as foci of attention during performance are *Musical Values* (ie., anything connected with the auditory experience of the music) and *Musical Gestalt* (ie., one's here-and-now location within the total musical structure). Thus we return again to the trust in Self 2 (Green & Gallwey, 1986) or the need to develop the perceptual order (James, 1950). One's attentional focus must be primarily directed to auditory and haptic perception with as little interference as is possible. In this way interference with the

comparison of perceptual to mnemonic images is minimal. Control of attentional focus, or concentration, has also been studied in the sport psychology field, to which we now turn.

Concentration in Sport

The ability to concentrate has long been recognized as being fundamental to successful performance of many tasks (Knowlson, 1931; Pelman Institute, 1926). Superior archers, for example, report that relaxation and concentration are highly interrelated, and fundamental to topnotch performance in that sport (Orlick, 1980, p.118). Self-talk has much to do with one's state of relaxation and concentration, as perseveration on negative thoughts and irrational beliefs is a known stressor which can induce unpleasant emotional reactions (Deffenbacher, et al, 1986; Ellis, 1973, p.56).

In fact, in persons who show symptoms of panic disorder, it is not always necessary to desensitize them by direct exposure to anxiety-provoking situations, as mental images of such situations (induced through a vivid verbal description) have been shown to be sufficient to induce an attack (Watkins, et al, 1990).

In the Gikalov model (above) this would provide interference in the kinesthetic inputs to the comparison processor via physiological emotional correlates, as well as the linguistic inputs which can disrupt the comparison. If

we were to consider all information having to do with performance of a given action as 'signal' and all interference from non-relevant sources to be 'noise', then concentration may be defined as the existence of a high signal-to-noise ratio in the system. Any noise will lessen the efficiency of the system. Itches are noisy; positive affirmations and conceptualizations of the relevant aspects of performance are signal.

How noisy is noise? How strong is a signal compared to noise? A review of studies of positive and negative cognitions concluded that

"...all things being equal - negative thoughts interfere with coping more than positive thoughts facilitate it... negative events and cognitions are more salient and make a greater impact than positive ones... negative thoughts and feelings, relative to positive, may be more central to adaptation."

(Schwartz, 1986, p. 599)

This implies that each negative thought can undo the flow of a disproportionate amount of positive information. It was also noted that an 'asymmetry in the internal dialogue' appears to exist in normal populations where the ratio of positive thoughts to negative thoughts is about 1.7 to 1, whereas it is about 1:1 in dysfunctional populations. No studies of the balance in an unusually high-functioning population were reported, but it makes a certain amount of intuitive sense that it would exceed 1.7:1. An above-average signal is required for above average performance.

The idea of a good signal is not identical with the idea of positive thinking. It implies positive thoughts which are relevant to the task at hand. Thus, while some self-talk about being able to handle a difficult motor sequence is of value, positive self-talk about how great one is for being able to do it is likely to be worthless or damaging. Perls notes that

Whenever you leave the sure basis of the now and become preoccupied with the future, you experience anxiety... if the future represents a performance, then this anxiety is nothing but stage fright. You are full of catastrophic expectations of the bad things that will happen, or anastrophic expectations about the wonderful things that will happen.

(1969, p. 30)

Some support for the value of disciplined concentration on the positive has been found. The self thoughts of a world-class archer prior to her best and worst competitions have been compared (Orlick, 1980, p.122). The pattern of thoughts noted is consistent with the notion that an absence of negative thoughts permits optimal flow in the system, while suggesting that the presence of negative thoughts can create small flaws in performance, which produce more negative thoughts and so forth (in what must ironically be described as a positive feedback loop).

The day before the best performance, she used positive visualization. Warming up, she concentrated on form and controlling for external factors. Her thoughts during the competition were of staying calm and in control. On the

contrary, the worst performance was preceded by worry about insufficient preparation and rest, worrying about others and self-blame. This led to errors in the beginning of the tournament, nervousness partway through, and ultimately, giving up hope before the tournament was over.

This situation also makes sense in terms of the well-known inverse-U curve that describes the relationship of stress level to performance, which implies that a moderate level of stimulation is necessary for optimal performance. Concentration on the importance of good performance and the fact of a being in a situation which is physically taxing do contribute to stress. However, the failure to concentrate (or success in concentrating on the wrong thing) allows the intrusion of excess baggage such as catastrophizing or anastrophizing, and the consequent heightening of anxiety or lowering of focus beyond tolerable limits.

This of course pushes one past the optimal level of stress and into the region associated with performance decrements. Developing techniques for regaining vital concentration when it has been broken is a necessary ingredient for the the successful execution of demanding tasks.

Learning how to concentrate is therefore a valuable skill. However, as noted above, such mental states can be

very fragile, and so preparation for regaining concentration after disruption is necessary to the continuance of a top performance.

Planning for the Performance of Music

As with driving a car, sometimes a particular hazard is well-known, and permits of a planned detour to avoid it. For example, the phenomenon of stage fright is a pervasive one in music. It certainly involves foreseeing only the worst (catastrophizing, as Ellis, 1973, describes it) and is often due to a heightening of anxiety due to lack of familiarity with a new performance milieu (Mills, 1972).

In the psychological literature, cognitive desensitization has been used to treat stage fright (Norton, MacLean, & Wachna, 1978). This method was akin to the panic disorder study noted above (Deffenbacher, et al, 1986) in method, but not in content. A pianist suffering from extreme stage fright was trained in deep muscle relaxation, and then visualized a series of scenes while reclining on a bed in the therapy room. The hierarchy of scenes was progressively more similar to the phobia-inducing situation. At the end of the visualizations, positive self-talk about piano playing was elicited. Ultimately, anxiety symptoms were used as cues to repeat positive self-statements.

Actual practice in front of small groups was eventually used as well, but what is of particular note is the reinterpretation of anxiety signals as cues for positive

self-statements. A similar method has been devised for athletes (Orlick, 1986, p.40), and is described below.

The positive feedback loop of negative thoughts and a remedy for it has been identified by a musician as well:

Several reasons can be enumerated which lie at the base of nervousness. First is the fear of failure and the expected criticism that would accompany it...Fear of failure often causes failure and subsequent performances are riddled with more fear of failure...To counteract this, a positive attitude is needed...failures could be considered as part of a growth process, something the student can use as a learning experience rather than a complete disaster.

(Wagner, 1978, p. 19)

Distractions in rehearsal and performance (other than anxiety cues from the body) are also problems for musicians. A distraction index was developed for student musicians whereby any break from concentration during practice sessions was recorded (Madsen & Geringer, 1981). The act of noting the distractions was to be a cue to start practicing again. Use of the index by an experimental group did indeed produce increments in perceived quality of practice and net gains in objectively measured attentiveness. An index of association was not reported. However, an ω^2 was computed from the t statistic and the sample size (which were reported) and it was found that $\omega^2 = .40$. This statistic reflects the percentage of variance accounted for by regression and is interpreted exactly as an r^2 . Thus the effect of treatment was rather strong.

Use of this instrument seems to offer tangible practice in refocusing attention irrespective of the nature of the distraction.

Reubart's (1985) work stresses the value of playing pieces correctly the first time, even if not up to speed. Internalization of the music the way it must ultimately be played is of the essence. This translates into ensuring that the mental images against which successive performances will be compared are flawless. Development of the proper images is therefore necessarily a combination of hearing the right sounds and producing them mechanically with as little error as possible.

Hearing the right sounds can involve extensive listening to records and live performances of top musicians. Producing the sounds oneself must involve minimal errors, because repeating a passage with errors only serves to embed the errors deeper into the automatic reflexes which produce the music. This easy availability of well-rehearsed mistakes will manifest itself at the first break in concentration. In short, practicing mistakes qualifies as bad planning.

The focus of attention must be on the overall piece of music, not the details of execution. The musical values of mood, projection, line and continuity, timing, and the sonorities and their succession are what the musician should learn to focus on through practice (Reubart, 1985).

Learning how to listen for these things involves a re-ordering of the priorities so that *the whole sound and feel* - the Gestalt - is as available to the player as are the individual notes. Gestalts are total perceptions: the forests that we often fail to see because of the large number of trees. Learning to see the forest requires systematic practice and a well-cultivated trust in Self 2, to borrow Green & Gallwey's metaphor.

The negative effects of anxiety and other distractions are apparent. However, care is required in reducing such noise in the system. The results of going too far and ending up on the low-stress side of the inverse-U curve is also exemplified in the report of a performer who took a tranquilizer before a performance and did not play as well as was possible, as the performance was lacking in the 'fine edge' given by the normal excitement and nervousness of the situation (Wagner, 1978, p. 19).

This is a good example of bad planning. While the negative effects of overanxiousness were erased, the positive effects of arousal on alertness and concentration were wiped out as well in an irreversible manner. The baby, that is to say, went out with the bath water. Better methods for anxiety control are available, and they are primarily cognitive in nature.

The advantages of high-quality preparation in music are apparent. Endless practicing can be replaced by making the most of the practice time through use of imagery and ensuring that attentional focus on the musical values which lie over and above the basic mechanics is sustained. The same results have been found in athletics, as described below.

Planning in Sport

Obtaining a state of concentration is one thing; maintaining it is another. The means of getting focused must be flexible enough to allow for those situations where a pre-planned ritual cannot be followed for whatever reason, and so must be individually tailored. Thus, while researchers may glean broad generalities from the experiences of top performers, the application of those techniques to the individual case is nevertheless a trial-and-error process. However, if one finds that concentration has been lost, it must be regained. Some routine for dealing with broken flow (or an interrupted internal monologue) should be pre-planned, as flow can be broken by any number of things.

Murphy's law dictates that if something can go wrong, it will. The individual who prepares for glitches will be the one who has an edge in the competition, as the duration of the effects of the glitch will be shortened in direct proportion to the efficacy of the plan for dealing with it.

Out of his work with top athletes, Orlick (1986) has developed a system for planning one's event so that Murphy can be accommodated. For example, he notes how fatigue signals will come from the body, and

if you listen to fatigue signals and interpret them in the same way as untrained people, you will fall short of your goals and potential almost all of the time...You have to move beyond sanity to a higher level. Some people call it insanity -- high-level insanity (That's a joke in case you aren't smiling).

(p. 40)

Orlick's joke nevertheless rings a bell - Schwartz's (1986) concept of asymmetry in the internal dialogue speaks of dysfunctional ratios of 1:1, and normal ratios of 1.7:1. How would we label a ratio of 2.5:1? High-level insanity not unlike mania, perhaps, in which a fatigue signal becomes a cue to visualize maximum output rather than a cue to visualize one's bed. A successful cognitive reinterpretation of noxious stimuli which resulted in superior performance would be consistent with the effects of Rational Emotive Therapy (Ellis, 1973).

As another example, Orlick (1986, p. 51) suggests a remedy for distraction: taking a deep breath, telling oneself to relax and focusing on something that is in one's control and of use, such as productive images of a particularly good game one has had. This restores a sense of control which can relieve the worry which accompanies a sense of loss of control.

The success of cognitive strategies has been shown elsewhere. U.S. Army soldiers were instructed to use a pseudomantra (thinking "Down" with each step), to focus on a point straight ahead and 'chase it', and to 'psych themselves up' in a difficult treadmill endurance task (Morgan, et. al, 1983).

This theoretically created some degree of dissociation from kinesthetic pain signals, and the experimental group exceeded controls in their endurance time by 50% , with no difference on physiological variables. This is parallel to the monologue sustained by elite marathon runners (ie., "stay loose", "relax"). Such elite runners have been found to consume significantly less oxygen than middle-distance runners who do not use such a strategy (Cavanagh, Pollock, & Landa, 1977).

It has been found that one of the best ways to ensure that one's plans are solidly embedded in memory is through the use of simulation training (Orlick & Partington, 1988). This means that practice sessions are made as identical to actual competition situations as is possible (for example, practicing in full uniform). In mental imagery terms, this technique would appear to make available very vivid images of the situation through direct, rather than imaginal, input.

The simulations described above involve running through the precompetition plans (ie., mental warm-ups through

visualizations, etc.) and competition focus plans (where the important things on which to concentrate attention at any given point are recalled).

Another area in which it was found that superior athletes were strong was in distraction control through advance planning for potential distractions. Development of means to control distractions was an integral part of training and competition routines, and

"...athletes who performed at their highest level consistently had excellent strategies for getting back on track quickly when things didn't go well, or when faced with distractions"

(Orlick & Partington, 1988, p. 117).

Strategies may be classed into two categories: cognitive and behavioural. Cognitive strategies do not involve overt behaviours; they are essentially organized ways of processing information which facilitate some kind of performance by enhancing concentration. Behavioural strategies are methods of improving performance which do involve overt behavior. A recognition of the cognitive effects of behavioral strategies is important to both athletes and musicians. For example, the need to practice complex motor activities slowly at first is discussed below, in the Results section. The benefit of the strategy is that the sequence becomes 'natural' more quickly, and errors are reduced. This is also a strategy by which imagery may be enhanced and concentration improved.

The development of imagery and concentration in a performer requires dedication, and a commitment to excellence in performance. These latter two characteristics require an environment which facilitates the pursuit of excellence, and guides the novice musician in fruitful directions. An examination of these elements will follow the next section, which deals with the mental factors as they are represented in the jazz literature.

Mental Factors: the Jazz Literature

The factors discussed above are mentioned in the jazz literature at various points. However, no in-depth, systematic work (such as Reubart's) has been undertaken. This section will point out some areas which have been explored, and which relate to the present work.

The development of auditory imagery is implied in Baker's (1969) work on jazz improvisation. Methods are described which involve analytical listening, singing, and systematic practice. These methods serve to "develop a good ear", in the service of developing an "ability to hear everything he plays before he plays it" (p. 79). However, no mention is made of the value of mental rehearsal away from the instrument. Many of the methods which he describes might be expected to help improve concentration (if only by obliging one to practice concentrating); however, this aim is not explicit in his book.

Baker (1969) does recognize the psychological side in clear terms in a 3-page chapter near the end of the book. His key point is that because music expresses emotion, the musician must learn how to elicit feelings and relate culturally accepted musical expressions to these emotions. While this aim is laudable, it does not elaborate what must be done to attain a state wherein one can focus on such musical values in the manner which Reubart (1985) describes.

In a chapter on learning how to listen to jazz, Gridley (1985) describes the use of visual imagery as an aid. He suggests that imagining a graph of the solo line, with time as the horizontal axis, is a useful conceptualization. Indeed, one of the interviewees in the present research arrived at the same method independently, whilst lying in a hospital bed watching an oscilloscope. Such visual imagery can aid in keeping track of where one is in a piece without having to recall things in a sequential manner.

Gridley (1985, pp. 27-30) also enumerates the skills of a musical improviser:

- Near effortless command of the instrument
- Acquaintance with harmony
- Versatility on several instruments
- A quick, keen ear for sound
- Remarkably good memory for sound
- Good memory for tunes and chord progressions
- Ability to recognize chord progressions quickly
- Ability to listen to other musicians and interact flexibly
- Ability to read, write and compose music

The emphasis on speed in memory processes echoes what was pointed out above with regard to imagery and the efficacious processing of information . In fact, Gridley (1985, p. 28) observes that it is important to be able to imagine a note and immediately play it. Thus he implies that a good foundation of imagery as a requirement for excellence in improvisations.

As well, the ability to listen well requires a reasonable level of concentration, because he also points out that in a piece "based on preset chord progressions, each group member is aware of the portion of the tune going by at each moment, whether or not he is actually playing at that moment," (p.29).

Other work has been done which suggests that different factors also come into play. Some, like values and motivation, may be classed as mental factors which nevertheless have clear ties to social processes.

For example, in a sociological study which examined some of the values which jazz musicians hold, Vigderhous (1972) found the jazz musicians did not differ from commercial musicians with respect to emphasis on intrinsic vs. extrinsic values of their occupation. All musicians emphasized intrinsic values (such as "feeling of musical accomplishment" and "feeling of musical creativity") over extrinsic values (such as "prestige of the profession" and "pay"). This suggests that values override extrinsic

rewards as motivation factors for all musicians. This may, however, be stronger among jazz musicians, because of the additional finding of this study that jazz musicians are perceived as being of lower social standing than commercial musicians. Nevertheless, if we recall here the preceding discussion of the need for intrinsic rewards in monotonous practice (Knowlson, 1931), we can see a linkage between values and skill development (here, concentration).

The importance of the linguistic side of jazz has been pointed out by Nanry & Berger (1979). The role of the culture in defining many musical forms and conventions is not a prototypical psychological issue. However, jazz is "based on an aural tradition," (see Gillespie, 1991) and linguistic constructions such as pieces of jazz music are "'plans of action' for social actors" (Nanry & Berger, 1979, p. 10).

As a further example, music critics look at jazz as an integral part of the social fabric, especially in the United States. Consider this passage from Tirro's (1977) history of jazz:

A musical revolution was brewing in jazz at the same time a social revolution was taking place in America.....Ornette Coleman was as much a spiritual leader as he was a musical innovator, for his music carried with it a message that was interpreted by black Americans to mean freedom, love, and black beauty," (p. 341).

The interdependence of musical messages and the political messages of a period is a given to the music critic. The need for such political messages to be expressed by black jazz musicians arose perhaps in response to the assassination of U.S. President John F. Kennedy. Another critic, Chambers (1985), notes that Kennedy was well-respected among jazz musicians for improving race relations (as well as for pardoning jazz pianist Hampton Hawes, who was imprisoned for heroin addiction). Kennedy's death sent shock waves through the community, and politicized it. While no empirical psychological evidence exists to attest to this phenomenon, the connection perceived by critics and historians does raise interesting questions about the nature of the linkage. While we cannot begin to formulate a psychological basis for such connections with the present state of knowledge, this does bring us back to the need for an ecological approach to understanding the intentions and motivations of jazz musicians.

Ecological Determinants of Mental Factors

As Gracian noted, talent and character are crucial to success. I have argued that concentration, mental imagery, and strategies are also important. The two ideas are not irreconcilable: in fact, it will be shown in the Results section that the ability to concentrate depends on contextual factors and social skills which cannot arise nor

exist in a vacuum. Character, as Gracian would have meant it, refers to certain central aspects of the personality which determine to a large extent what one does. Music is very much an expressive art, and what the jazz musician does reflects very much that personality as it exists within a community which shares certain standards, values, and problems.

As Gordon Allport has observed, to a certain extent we are like everyone else, like some other people, and like nobody else. Any expression must reflect universals, group norms and individuality. The jazz community in which the musician learns modes of expression peculiar to that tradition shares a specific "dialect" of the musical language within which individual expressions of universal human emotions become possible. Thus factors which relate to the development of character necessarily affect in some way upon musical performance; mediated, of course, by talent.

The preceding references to music as language were not accidental: rather, they underscore the social and communicative dimensions of music. Communication implies an intentional message: indeed, such a message is fundamental to musical expression. I suggest that well-focused imagery-related processing is one key to superior skill in this mode of communication.

The existence of norms in the expression of music implies community standards. Such standards set limits on individual behaviour. Here we may return to Gracian's observation about "character" as a determinant of success. This word also has value-laden implications. Values within a community set standards, and must be adopted by the members of that community. They also make it easier for individuals within that community to anticipate one another's actions. Such values have several modes of transmission, including teachers and, in a community-based learning context such as the jazz scene, mentors (relatively superior players who aid in the learning process in somewhat unsystematic, informal ways).

Deschenes (1991) explicitly ties the experience of aesthetic appreciation of music to

"the viewpoints and beliefs we identify with...the kind of interrelationships we will be able to created with music...the experiential context that we are looking for in music or that we are creating with our content of consciousness," (p.193).

This view was expressed with implied reference to the audience, but must by extension apply to the musician as well. He goes on to describe that the state in which proper appreciation of the music can occur is one in which

"our content of consciousness will not interfere with what we have aesthetically experienced while listening to music," (p. 193).

When considering the musician, the "contents of consciousness" must be congruent with the value-system

shared by the musician and the audience in order for the experience to be pleasurable. As well, it is necessary for the player to be able to judge whether or not the performance was a good one. This latter information is logically necessary for any development as a musician. Thus superior musical performance is linked to value systems.

For the preceding reasons, to gain an understanding of how the concentration which is necessary for the development and use of quality imagery, we must pay attention to broader contextual factors. In a study of excellent performers, we may hope to learn what is important by looking for commonalities. The development of a rigorous method for the pursuit of these commonalities will now be developed out of a critique of the methods employed in the research mentioned in this review.

Research Methods- A Critical Review

The evidence for cognitive strategies in top-flight performance is abundant. And yet, any one of the works cited above may be criticized on methodological grounds for some flaw or another. They range from simple reports of experiences over a long career to fairly well-controlled experiments in which numerous extraneous variables were excluded by the methodology. The difficulties inherent in each are the subject of this section.

Experiments and Quasi-experiments

Where it is possible, an experiment which controls as many extraneous variables as possible is commonly viewed by psychologists as being most desirable (Cook and Campbell, 1979). At least one study on imagery fits into this category (Woolfolk, Parrish & Murphy, 1985), as does one study on cognitive strategies (Morgan, et al, 1983).

Cook and Campbell (1979) distinguish true experiments from quasi-experiments based on the extent to which extraneous variables are controlled or excluded. The experiment is always preferable where possible. However, it is not always feasible to conduct such research for any of a variety of reasons, and so a treatment may be tested in a quasi-experimental setting.

Ideally, experiments involve the random assignment of subjects to treatment and control groups. Logistics often make this impossible. With amateur athletes, for instance, there is not a great deal to lose in trying out a previously untested program. Thus, a random selection of subjects who are willing to be randomly assigned to treatment/ no treatment conditions may be possible.

For top-level professionals, however, there may be a great deal of risk involved which could well bias the sample a great deal (ie., we would only be studying the risk-takers). They may only be willing to participate if they are put in the treatment group. Also, the very fact of

top performers seeing themselves as experts (not an invalid perception!) could create a negative reaction to an experimental program designed by non-experts, and thus treatment-related attrition could occur.

In the case of musicians who travel a great deal, further attrition could quickly dwindle numbers after great initial outlay. Also, standardized treatment may have an effect but for different reasons than those hypothesized (ie., a Hawthorne effect) and unless the subjects are asked about the validity of the conclusions, this valuable information could be missed.

Random assignment may be achieved in a study, but the nature of the treatment is such that rival hypotheses may not be ruled out. A lengthy treatment where subjects have the opportunity to communicate between themselves and speculate or compare notes on the treatment (see Madsen & Gerringer, 1981) may be affected by the good-subject effect, wherein subjects tailor their responses to fit the experimenter's hypothesis (once it has been deduced). On the other hand, subjects may also react negatively if they find themselves with an unacceptable group assignment.

The pre-post design (Silva, 1982) implements a treatment but fails to rule out the possibility that the change could have occurred naturally, whether the treatment was present or not. An equivalent control group is necessary for this design to be truly interpretable.

The non-equivalent control group (or comparison group) such as that used by Cavanagh, Pollock and Landa (1977) has problems as well. Other variables may account for differences between the groups. In the case of middle-distance versus elite marathon runners, it is equally plausible that an inborn physiological difference in metabolism underlies the lower oxygen use among elite performers, and not the cognitive strategy proffered by the authors. Perhaps the elite athletes' more efficient use of oxygen allows their brain to focus better and so develop strategies which would be impossible for people with less available oxygen for the higher regions of the central nervous system.

Anecdotes & Interviews

Much of the work to date in these areas is based on anecdotal reports of personal experiences (ie., Epperson, 1974; Lindstrom, 1974; Macnab, 1973; Miller, 1982; Olin, 1977a and b; Wagner, 1978). Many of the experiences were acquired over years of professional experience as a music or sports instructor. While this does not necessarily invalidate the report (see Allport, 1951) it does nevertheless imply a certain lack of rigour in the acquisition of the data.

The organization of our experiences is the initial step that we all must take in forming a theory about the world.

That theory must be testable, though, and so the means by which we came to our conclusion must be communicated clearly. In the writings just mentioned, they are not. Other works, however, do offer some description of how the information upon which conclusions were based was gathered.

To say that we did an interview indicates that the topic at hand was discussed with someone presumably expert in the field, and that we drew our conclusions based on some statements made by our expert (typically quoted in the report). This describes some of the other work that has been done (Bennett, 1976; Green & Gallwey, 1986; Knauss, 1977; Miller, 1982; Orlick and Partington, 1988). Unfortunately, while this does indicate that the topic was discussed, it is sometimes hard to find references to a particular area, because the interview was very broad and the interviewer not very directive in the questioning.

For psychological research, the usual method for accessing personal knowledge and expertise for the purpose of generalization is to do a semi-structured interview with several individuals. This interview should focus directly on the topic(s) of interest. This is the best way to get beyond the idiographic level of analysis and onto grounds where nomothetic generalizations can be made. Typically, the interviewer uses a standard format not unlike a questionnaire. This standard format can take into account the fact that there is a gap between the mode of discourse

involved in the asking and answering of questions in a research setting and the mode of discourse of everyday conversation (Harre, 1979, p. 128; Mishler, 1986, p. 2).

In the area of music, the key work done in this manner is that of Reubart (1985). In sport psychology, the technique has been used by Orlick and Partington (1988). The development of the semi-structured interview method and its essential logical underpinnings are the subject of the next section.

Social Ecology and The Grounded Theory Approach

Brunswik (1956) wrote at a time when the systems view was in its infancy. His critique of the experimental method was inspired by Lewin (1943), and extended the idea of ecological factors from biology to psychology. Bateson (1972) has (among others) carried on in this vein, and the Little & Ryan (1979) have worked on a social ecological model of child development. Harre and Secord (1972) have also critiqued the experimental method for its loss of relevant social information, and Harre, Clarke and DeCarlo (1985) hold that thought is "a social and collective activity, created in conversation." This view disallows a social psychology which fails to examine contextual, ecological factors.

One approach which has evolved from this school of thought is that of Little (1983), who holds that the personality of an individual is very much tied up in the

social ecology in which he or she exists. The activities (projects) which are undertaken are the basic units of analysis for his Personal Projects Analysis (PPA) method. Projects have meaning, structural relationships, and exist in a community context. They are more or less stressful, and one's efficacy, or confidence, is very much tied up with them. The relevance of these dimensions to the present work, if not immediately apparent, will become so in the General Discussion portion of the present work. PPA is a quantitative method, with some room for qualitative evaluation. It is not, however, the only ecologically representative approach to acquiring knowledge about people.

In those social sciences which do not share psychology's laboratory traditions (such as sociology and cultural anthropology), the methods of naturalistic inquiry are highly evolved, and give access to ecological factors. Part of this evolution acknowledged the fact that an interviewer can learn things during the course of a study which prove valuable, despite their not having been included in the original structure of the interview. Partly in response to the need for incorporation of such information, the Grounded Theory approach was developed (Glaser, 1967; Lincoln & Guba, 1985).

Grounded theorists attempt to conduct their research as a theory-free enterprise. They avoid reading anything about

a subject before asking questions of the people whom they are studying. This theoretically results in the development of a model which is grounded solely in the data. Connections to extant literature are made only after the model is developed. Another aspect of this approach is an awareness of the hypotheses generated about the material as the study progresses. These are recorded in a journal form as the work goes on, and serve to remind the investigator of what may have led to particular questions in subsequent interviews. The semi-structured interview is thus permitted to grow in scope as the investigator learns more and (in the case of the novice) becomes a better interviewer.

Given the theory-free bias which a pure grounded theory approach holds, this method is best described as inherently exploratory in nature. No one is entirely theory-free, however. Simply having an interest in a topic will lead one to certain questions, which a truly curious individual will unavoidably try to answer in some tentative way.

Thus, it becomes important to acknowledge the extent to which one has formulated hypotheses which are to be explored. If there is a literature of which one is aware, then attempts to explore ideas in that literature are valid (as in the case of the semi-structured interview), provided one is very cautious to remain non-committal about those ideas when questioning.

It is therefore possible to conduct a semi-structured interview which evolves from a simple core structure. Combinations of directive and non-directive questions and probes can be used to acquire information about our original target areas without remaining deaf to other issues. This is ultimately what the present study has attempted to do.

Prolegomena to a Procedure

The use of a semi-structured interview provides a valid means by which particular information can be gathered. A grounded approach permits the inclusion of new material as it relates to the topic at hand. Starting from the literature with a semi-structured approach provides a base for future replication. Continuing from there with a grounded approach is a method susceptible to replication, because if its results are valid, then the phenomena which it describes should reappear in any future work, in comparable form.

The use of the interview to gather information from experts in a particular area has a particular logic to it. This logic has recently been made quite explicit by Walton (1989), whose general schema is presented in Fig. 1.

Fig. 1 Fundamental Logic of *Argumentum ad Vericundum*

Argumentation Scheme

1. E is an expert in domain D
2. E asserts that A is known to be true
3. A is within D
4. Therefore, A may (plausibly) be taken to be true.

Critical Questions

1. Is E a genuine expert in D?
 2. Did E really assert A?
 3. Is A relevant to domain D?
 4. Is A consistent with what other experts in D say?
 5. Is A consistent with known evidence in D?
- (adapted from Walton, 1989, p. 386)

The Logic of Expert Opinion

Walton (1986) observes that the *argumentum ad vericundum* is a fallacy when the proponent using it fails to respond to one of the critical questions in his schema. It is by these standards that the interviewing of experts - in this study, jazz musicians - must be judged. Let us consider the devil's advocate position, and pose the critical questions to the present research.

1. Are professional jazz musicians really experts on peak performance in jazz? In short, if they aren't, then nobody is. However, the implications of this run deeper. For a moment, let us try to deny that people experiencing something, knowing something, or performing an activity know what they are experiencing, knowing or doing better than

anyone else does. We thus render any questioning whatsoever (including Critical Question # 1) as a meaningless exercise - *reductio ad absurdum*! This is because such an assumption leads to an untenable solipsism wherein only the person posing the question can really know what is going on. Thus, we fail to answer this question only if our informants turn out to be impostors.

The selection process in this study was designed to avoid this possibility. In addition, a positive answer to question 4 is extremely unlikely if impostors are interviewed. Thus a 'yes' to question 4 implies a 'no' to the suggestion of fraud.

2. Did the interviewees really say what we assert that they did? This was answered by tape recording the interviews to ensure that there is no cause to disbelieve the accuracy of any assertion. We may ensure that the meaning which is extracted from their statements is a shared one by taking the abstracted model back to jazz musicians who can validate that model.

3. Are the statements relevant to peak performance in jazz? The interview guide was structured and permitted to evolve in such a way as to elicit as many relevant statements as is possible. The relevancy of these statements - and the answer to this question - should be apparent.

4. Are each expert's statements consistent with the statements of the other experts? This will be answered in the discussion portion of this work.

5. Are each expert's statements consistent with known evidence in the field? This question, too, remains to be answered in the discussion.

A theoretical issue which might arise and which was not mentioned by Walton is whether or not the expert is has to the essential linguistic skills which are necessary for the expression of his or her expertise. To ensure that this possible objection is met, we may turn to psycholinguistic measures of verbal ability. The Type-Token Ratio (TTR) is one such measure (see Conville and Cronin, 1974; Hess, Ritchie & Landrie, 1984). The type-token ratio is a commonly-used measure of lexical diversity which has found many applications in linguistic research. While the TTR has not been shown to be directly correlated with the accuracy and validity of expert opinion, there are two key reasons to examine it.

The first reason that it is valuable to compute a TTR for each interviewee is that Osgoode (1960) has presented data to suggest that language produced under negative affect conditions is more redundant than that produced under normal conditions. Thus if the interview is done in such a way as to threaten the interviewee, below-normal TTRs may result. It

may thus serve as a check on the quality of the interviewing process.

A second reason stems more from theoretical factors than purely empirical considerations. If the musicians exhibit low TTRs, then because the data are linguistic in nature, the coding of the data into numerous categories may be viewed as a questionable enterprise. If, however, normal or above-normal TTRs are observed, then the whole process seems less objectionable. Despite the current lack of work linking TTRs to expertise, a rhetorical advantage is to be gained from demonstrating that the interviewees do not differ in a negative way from the population at large. While poor interviewing would be a viable alternative explanation for the low TTRs, it would hardly be one which lends credibility to the present work!

To compute a TTR, a sample of words is taken from a dialogue, and the ratio of the number of different words used to the total number of words is computed. A sample of 100 words is fairly standard. This index of lexical diversity may then be used in comparing an individual to norms, or a group to historical data. A TTR of about .57 may be considered normal (Conville & Cronin, 1974). Experts not markedly below this range may be viewed as reliable conveyors of expertise, provided they meet the other Waltonian criteria.

Interviewing Experts

Several steps have been developed to increase the acceptability of qualitative data obtained from interviews with experts. For example, following interview completion, Orlick and Partington (1988) copy-edited transcripts. These were then sent back to the athletes for review, to confirm the authenticity of the statements. The procedure may be called 'negotiated accounting' (Harre & Secord, 1977).

This approach also addresses Critical Question 2, insofar as any misinterpretation of a statement by the interviewer can be cleared up before conclusions are drawn. As an addition to this method, the present study added an extra step to ensure validity and generalizability of the results. Once the conclusions were drawn from the original data collected, they were validated by taking the model derived from the interviews to peers of the original interviewees (who shall be termed *research collaborators*).

This will provide a measure of validity over and above any internal consistency of the statements of the original subjects, and will give a more satisfactory answer to Critical Question 3. This is due to the fact that they are of the same level of expertise as the original interviewees which makes them the ultimate judges of relevancy of the statements collected. We may also expect a better response to Critical Question 5 based on the statements of the

collaborators, as their knowledge of what has worked for themselves and others is likely to be expansive.

Furthermore, the research collaborators do not have any investment in the conclusions (due to the fact that they were not involved in helping to generate them) and can therefore be highly objective about them.

One theoretical concern which may arise concerns the Barnum Effect, which is "the tendency to accept certain kinds of personality readings as true of oneself but not of others (Blackmore, 1992, p. 374; see also Dickson and Kelly, 1985). If a model is presented in a way which provides random statements with no specific logical relationships, people will often view it as descriptive of themselves if the statements are vague enough (Hyman, 1977). This requires that a model be sufficiently specific about particular factors and their interrelationships. With vagueness so reduced, the likelihood of agreement (when no such agreement actually exists) is much smaller. In addition, asking for disagreements and clarification of any points which so require shuts the door more tightly against Type I errors due to this effect by allowing ambiguities to be refined in ways which may or may not be consistent with the intended model.

To summarize briefly, a literature review has given reason to believe that superior musicians use strategies (both cognitive and behavioural) similar to those that have

been demonstrated among top athletes. These strategies sharpen the mental factors necessary for top performance.

Although each study taken individually has some methodological flaw(s), the sum of the work cuts across methodologies and points strongly towards the importance of mental factors in performance.

The research methods employed to date in the area of performance enhancement have been critically reviewed. A semi-structured interview with openness to revision and additional reliability and validity checks has been shown to be a suitable procedure for the present purpose of determining which techniques are used by top jazz musicians, and what is required for those techniques to evolve. Let us now turn to a detailed description of the methods used in the present study.

METHOD

Purpose

The purpose of the present study was to examine the mental factors which enable jazz musicians to attain optimal performance levels. This study involved semi-structured interviews with jazz musicians, the results of which were subjected to content analysis at the manifest and the latent levels.

Reubart's (1985) model of conscious awareness in musical performance forms the basis for many of the questions in the interview and much of the subsequent discussion. This is because it appears to be the best one to date insofar as addressing the question of top musical performance is concerned. It covers the three main areas described above: use of mental imagery, attentional focus, and recovery from distraction. The questions focused on the extent to which top jazz performers use various techniques and strategies to improve their performances, in addition to looking at the phenomenal dimensions of peak performance. A primarily qualitative analysis was performed on the data, with quantitative linguistic analyses for specific questions about reliability and validity.

As well, questions concerning the phenomenal aspects of the musician's best performance were asked. These questions were based on dimensions which Privette (1984, 1986) and

Privette and Bundrick (1987) view as fundamental aspects of optimal performance, and were intended to validate the interviewees as experts on jazz performance.

Interviewees and Collaborators

The interviewees were twenty-three professional jazz musicians. To ensure a standard minimum level of experience, at least five years' professional experience was required for participation in the study. Two of these interviewees served a second function as research collaborators in the model validation phase (see below). Two more professional jazz musicians with over twenty years' experience also served as research collaborators.

Materials

The study made use of a consent form, a semi-structured Interview Guide, a Follow-up Interview Guide, and two Coding Manuals.

Consent Form

The consent form served to inform subjects about the study insofar as was possible without biasing their responses. It permitted the musicians to determine the degree to which the information they provide may be used. This form allowed interviewees to indicate whether or not they wished to be identified by name in this and/or any future reports written for educational purposes. A copy of the Consent Form is provided in Appendix A.

Interview Guide

A semi-structured Interview Guide was developed, as were a Follow-up Interview Guide and a Coding Manual for preparing data for analysis. Initially, the questions began with subjects being asked to describe their best and worst musical performances, then asked to compare the two (after the method of Orlick & Partington, 1988). Because of difficulty in eliciting information about personal strategies for enhancing performance in the first three interviews, the interview guide was modified so as to start with Kellian (Kelly, 1955) triadic elicitation of constructs by which the interviewee distinguished top players from mediocre or poor players.

Triadic elicitation involves asking an individual to compare three people whom he or she knows. The task is to identify ways in which two are similar, and differ from the third. The musicians in this study focused primarily upon differences between the top player and the two mediocre players who they were asked to compare. Some useful distinctions did arise, nevertheless, in comparing one mediocre player to another.

Having drawn the interviewee out and committed him or her to certain dimensions, it then became easy to use non-leading probes. The interview could then focus on the two key factors of the peak performance model (ie.,

attentional focus and quality of mental imagery). Other categories were then added as needed.

The questions attempted to discover the extent to which mental imagery is a factor in preparing for performances, and the techniques and steps involved in obtaining and maintaining an optimal level of attentional focus. A copy of the original Interview Guide is included in Appendix B, along with an outline of the revisions which were in use by the end of the series of interviews.

Follow-up Interview Guide

The Follow-up Interview Guide outlines the questions that were asked of interviewees after they had had the opportunity to read copy-edited typed transcripts of the original interviews. There were two main targets of the questions in this Guide. One was simply to ask interviewees if they wished to change any of the statements made previously. The other target was to determine the extent to which the content of the transcript (with changes) reflects the interviewee's own opinions.

Coding Manuals

The Coding Manuals had two key foci. The first focus was to target those dimensions of peak performance which have been identified in other empirical work as common to peak performance in a large array of other fields (Csikszentmihalyi & Csikszentmihalyi, 1988; Privette, 1984, 1986; Privette & Bundrick, 1987). This was intended to

validate the responses of the subjects to the interview question wherein they describe their personal best performance. The Peak Performance Manual is presented in Appendix D.

The second manual was designed to organize the responses of the interviewees to the other questions about attentional focus and mental imagery. This Manual is presented in part II of Appendix D.

Tape Recorder

A Sony portable WM-F46 stereo- phonic tape recorder with an unobtrusive 2-channel microphone was used in this study. This tape recorder had a frequency response of 40 to 15000 Hz (covering the full normal voice range) with 10% harmonic distortion (low noise). The microphone had a sensitivity of -50 dBs (normal conversational range at a comfortable distance).

Procedure

A flowchart of the procedure used in this study is provided in Fig. 2. It involves a loop in which after each musician was interviewed, the questions to be used in subsequent interviews were enhanced, and another interview was done. This procedure was followed recursively until new questions did not appear to be forthcoming. At this point, the series of interviews was terminated, and the subsequent procedures begun. The rest of this section will give a full understanding of the remaining terms in the flowchart.

Fig. 2: Procedural Flowchart

Data Collection.

The musicians were identified through the musicians' union and newspaper jazz critics (Lois Moody, of the Ottawa Citizen, and Paul Wells, of the Montreal Star). To increase the sample size, the interviewees were asked to recommend someone else whose work they respected. Contacts were made by telephone. The musicians were then interviewed according to the semi-structured format of the Interview Guide, as it stood at the time of the interview. Interviews were typically conducted at the musicians' homes, or in a quiet environment in which they felt comfortable. The interviews were tape recorded.

Data Authentication.

Copy-edited typed transcripts of the interviews were returned to the interviewees to authenticate the statements made and to control for bias (Orlick and Partington, 1988). The interviewees were asked to pencil in any changes, and were provided with two sheets of paper to make any additions that they felt were necessary. Interviewees were asked to what extent the interview material reflected their own personal view. At the time that the model was derived, three transcripts were still outstanding (and so any changes that were to be made could not be incorporated). This method ensured maximal accuracy of the information and served as a measure of its reliability.

Preliminary Analyses

Both quantitative and qualitative methods were used in the preliminary analyses, which addressed questions of reliability in the data.

Quantitative Linguistic Analyses

To address concerns about theoretical difficulties which might arise from the interviewees' linguistic abilities, analyses were done to demonstrate their competence in English.

The first such analysis was a computation of the type-token ratio for each subject. Because the standard 100-word sample was used, it shall be referred to as the TTR-100. The first 100 words in the raw data were used, before the clean-up phase of the study. A 100-word sample is common in the literature (Hess, Ritchie & Landrie, 1984), because it provides a sufficiently large sample, but avoids the pitfall of too large a sample. (If an excessively large number of words are drawn, then extremely common words such as 'a', 'an' or 'I' depress the ratio. A strong negative correlation between sample size and type-token ratios is well-known (Hess, Ritchie & Landrie, 1984). The use of the uncleaned data allowed more direct access to the verbal fluency of the interviewees, and a good answer to the criticism (above) concerning ability to express expertise.

In addition, a Daniel test (Hawkins and Webber, 1980) was performed to test the hypothesis that the methodology

resulted in progressively longer interviews, corresponding to the addition of content categories. Time pressure could conceivably confound the results if more categories were compressed into interviews of equal length.

Qualitative Analysis: Peak Performance Coding

The typed transcripts were coded in accordance with the Coding Manual. Relevant quotes from the interviewees regarding their best performances were organized along the dimensions described in Appendix D, to "permit the reader of the analysis to enter into the situation and thoughts of the the people represented [therein]", (Patton, 1980, p. 343). Sample quotes appear in Appendix E. This coding addressed the reliability of the interviewees with regard to experiential dimensions of which top performers should be aware.

Secondary Analyses

Content Analysis

A content analysis of the data obtained was performed to identify mental factors which the musicians felt contributed to their peak performances, and the determinants of these factors. Phenomenological dimensions of peak performance from the initial coding were originally to be cross-tabulated with elements of the model to identify trends which may or may not be explained by it. However, the addition of new topics to the core elements of the interview (see below) precludes this analysis. Because it

was not possible to re-interview each musician with regards to each new topic that came up in later discussions, no such analysis is logically possible.

Model Validation

After the content analyses were completed, the resulting model based on abstractions made from the data were taken back to two of the original interviewees who reported frequent peak performances as well as to two professional jazz musicians who were not included in the original interviews. These research collaborators were then be presented with the model and asked to note which parts they disagreed with, and which parts they felt needed clarification. The re-use of informants as research collaborators in this way has been described as the method of 'negotiated understanding' (Harre and Secord, 1977).

Like the data authentication described above (Orlick & Partington, 1988) this procedure offers further validation of the procedures used, and supplemental bias control. The use of musicians who were not originally interviewed further precludes bias on the uninterviewed collaborators' parts (ie., the possibility that they will bend the truth due to the fact that the abstractions were based at least in part on their own experiences). Concordance between their reports and the reports of the two previously-interviewed collaborators provides additional support for the model. As

it is a novel method, but in the spirit of Harre and Secord, perhaps we could term it 'mortgaged understanding'.

As an additional check, a chi-squared statistic was computed to ascertain whether or not there was an association between interviewed/uninterviewed status and frequency of disagreement and clarification on the part of the collaborators.

Debriefing

All interviewees and collaborators were sent a brief summary of the results of the study. This debriefing outlined the model and the degree to which support was found for it. No interviewees were identified by name in the debriefing.

Logical Overview

The overall logic of the argument for the conclusions presented below is a product of the ideas in the *Prolegomena* to a *Procedure* section above. It is diagrammed in Figs. 3 and 4.

Fig. 3 addresses the essential arguments for the reliability and validity of the model which are presented in the Results section.

Fig. 4 presents the essential logical structure which the methodology provides for the extension of the model to include broader factors which our experts have deemed to be important.

Fig. 3: Essential Logical Underpinnings for the Model

Fig. 4: Essential Logical Underpinnings of Argumentum Ad Vericundum for Other Conclusions

RESULTS

This section provides the results of the analyses done on the interview materials. First we consider who did and who did not participate in the study. Next are presented the quantitative linguistic analysis results. These are followed by the peak performance coding findings, and a brief discussion of the reliability of the interviewees.

Following this will be the results of the major analysis of the study: an heuristic model of excellence in jazz performance. The model is presented here as it was given to the collaborators, except that it now contains their disagreements and clarifications.

Success Rate in Solicitation of Help

The initial series of interviews was highly successful in terms of participation. Every potential interviewee who could be contacted participated in this phase. Two individuals could not be reached at the time the interviews were being conducted, and one of those two later served as a collaborator in the second phase.

The musicians came from a variety of cultural and ethnic backgrounds. Among the original interviewees, a wide variety of instruments was represented. There were three percussionists, six keyboardists, six saxophonists, two brass players, four string players, and two vocalists

(who comprised the female portion of the interviewees). At least six played one or more other instruments. The research collaborators comprised one brass player, one woodwind and piano player, one female vocalist and one keyboardist.

The success rate dropped for the second phase. Of the seven individuals who were solicited by mail for assistance, three were unable to help due to time constraints, three did not reply, and one participated. Another individual was contacted by telephone. Both of the uninterviewed collaborators had been recommended by several of the interviewees who held their competence in high regard. One was to have been interviewed initially, but was unreachable at that time.

Quantitative Linguistic Analyses

The data for the quantitative analyses appear in Table 1, and the descriptive statistics for those data are in Table 2. Table 3 is the correlation matrix for the variables discussed in this section.

Table 1. Data for Quantitative Linguistic Analyses:
Peak Performance Codings

INTERVIEW	LENGTH IN WORDS	TTR-100	NUMBER OF DIFFERENT CATEGORIES	TOTAL NUMBER OF CODABLE REFERENCES
1	2607	0.66667	2	6
2	1131	0.65000	2	4
3	1390	0.69792	4	9
4	1236	0.72277	3	4
5	2009	0.70588	4	9
6	4626	0.67647	4	9
7	3328	0.63107	4	9
8	4362	0.68627	5	14
9	5060	0.60000	3	9
10	5893	0.62376	4	6
11	3706	0.60000	4	9
12	3460	0.59406	1	5
13	6859	0.66000	4	14
14	5522	0.69231	3	7
15	3219	0.52000	3	7
16	9103	0.77000	4	20
17	5780	0.62000	4	10
18	7649	0.54455	5	21
19	10359	0.58000	6	18
20	4077	0.63366	4	9
21	2686	0.69000	4	6
22	7944	0.55000	5	12
23	6224	0.72000	5	13

Table 2. Descriptive Statistics for Table 1 Data					
Variable	N	Mean	Std. Dev.	Minimum	Maximum
LENGTH	23	4705.7	2518.02	1131	10359
TTR-100	23	.65	.063	.52	.77
CATEGORIES	23	3.8	1.13	1.0	6.0
REFERENCES	23	10.0	4.77	4.0	21.0

Note:

The lowest TTR-100 was 0.52 . This is only 1 standard deviation below the mean of the historical data cited, where mean=.59, with a std. dev. for the present group of .063. No std. dev. was reported in the historical data, so the present estimate must be used, and equal variances assumed.

Table 3. Correlation Matrix for Linguistic Variables

	Number of Dimensions	Peak Performance # of Codes	TTR-100
Peak Perf. # of Codes	.71 *	-	-
TTR-100	-.04	-.05	-
Length of Interview (words)	.60 *	.79 *	-.22

Note: "Number of dimensions" is the total number of dimensions which had at least one non-zero value for at least one of the codes in that dimension for that interviewee. The "Peak Performance # of codes" is the number of codable statements made by the interviewee.

Verbal Fluency

The mean Type-Token ratio was .65, with a standard deviation of .06. If we examine Conville and Cronin's (1974) results, it is possible to average the TTRs obtained under for a variety of levels of interest in topic discussed. Doing this, we arrive at an estimate of a mean TTR= .59 for normal individuals under normal affect conditions. Using these historical data, it becomes possible to compute a single-sample $t(23)=4.91$, $p<.005$ using the present results. The effect size is large (1 std. dev.), and indicates that the interviewees are above-average on this measure of verbal fluency. Thus, the objection raised in the *Prolegomena* to a *Procedure*, above, has been satisfied, and the interviewees seem able to express themselves. Furthermore, the possible lowering of TTR which could have happened (under Osgoode's (1960) hypothesis of negative affect) if the interviews were done in a manner which was threatening or otherwise negative did not occur. Indeed, this effect was reversed, leading to the speculation that the positive affect that would be expected when discussing a highly meaningful topic which is very closely tied to one's well-being may increase the TTR. This would be particularly true when dealing with experts who have well-developed ideas about the topic. This would be an interesting avenue to explore in future studies.

Interview Size

Because the scope of the interview was allowed to grow as the interviewer developed more and better questions, the length of the interviews (in words) was expected to grow over time. A Daniel test (Hawkins & Weber, 1980) tested this possibility. The Spearman r for the correlation of sequence of interview to length of interview (in words) was $r = .67$, $p < .001$. Thus, the broader range of topics appears to be reflected in increased content. This artefact of the methodology is thus very apparent, and leads to the conclusion that normative analysis which aggregate across all interviewees would be inappropriate. This is due to the fact that the growth of the 'stimulus' (i.e., the interview) makes the frequency of various codings in later interviews incommensurable with those of earlier interviews in which the interviewer was armed with a weaker probe (if any probe at all) on a given codable topic.

Increased content does not necessarily imply that the content was of good quality. The diversity of semantic content must also be taken into consideration to judge fairly whether or not the goal of improving the interview was attained. So, the relationship of size to such quality measures was examined next.

Interview size was correlated with total number of codings for each interviewee ($r = .798$, $p < .001$), and to the

number of dimensions alluded to ($r=.602$, $p<.002$). The number of dimensions used by each interviewee was correlated to the total number of codings ($r=.71$, $p<.0001$). Thus, the expected growth of the interviews does appear to have occurred.

As well, there does not appear to be a problem due to time pressure, as noted above. If more content categories had appeared in interviews of equal length, then the quality of information in those categories could be argued to have suffered. Since the content covaried positively with interview length, this is not a problem.

Given these findings, it is not possible to proceed with further quantitative analyses. Such analyses would be confounded by the fact of the ever-growing interview question set. The frequency of codings in Interview #23 cannot be compared in a meaningful quantitative way with those in Interview #1.

Qualitative Linguistic Analyses

Peak Performance Coding

In the entire set of interviews, 225 references to the aspects of peak performance (see Appendix D) were coded. The frequencies of these codings are presented in Table 4. The most common aspects mentioned were with reference to Other People (including both the audience and other players; $n=58$), indicating a recognition of the important role of others in the performance. Examination of the specific

Table 4: Frequencies for Peak Performance Codings

Category/ Coding	Meaning	Frequency	Percent
Other People			
o1	enjoyed other people	3	1.4
o2	encounter with person/thing	12	5.5
o3	interaction/connection	18	8.2
o4	others influenced outcome	13	5.9
o5	contribution of others	12	5.5
Clear Process			
c1	inner process clear	9	4.1
c2	felt all together	3	1.4
c3	awareness of power	4	1.9
c4	clear focus	2	0.9
c5	strong sense of self	9	4.1
c6	free of outer restrictions	6	2.7
c7	intentions strong	6	2.7
c8	absorption	6	2.7
c9	spontaneity	7	3.2
Significance			
s1	great meaning	6	2.7
s2	senses/thoughts overwhelmed	2	0.9
s4	personal value	11	5.0
s5	experience beyond words	6	2.7
s6	personal expression, understanding	8	3.6
s7	intensity	5	2.2
s8	spiritual/mystic quality	4	1.9
s9	personal responsibility	4	1.9
Emotion/Feeling			
e1	feelings afterwards	7	3.2
e2	feelings	10	4.6
e3	joy, fulfillment	11	5.0
e5	intrinsic reward	7	3.2
Altered States			
a1	loss of time/space	6	2.7
a2	unity of self/environment	6	2.7
a3	brevity	1	0.5
Functional Goal Drive			
d2	need to continue to completion	3	1.4
d3	practiced	3	1.4
d6	process 'clicked on'	4	1.9
Fun			
f1	was playful, lighthearted	1	0.5
f2	was fun	4	1.9

context of the 'O' codings revealed that the vast majority of references to Other People were in fact references to the other musicians with whom they perform (76%), compared to 10% which were references to the audience only, and 14% which referred to both audience and fellow musicians.

Next most common were the 'clear process' dimensions (n= 52), indicating that a mental state in which the production of music was unhampered by irrelevant factors was involved in best performances. One point that must be dealt with, however, is that all references to a 'strong sense of self' were negative. There were, instead, allusions to a sense of loss of self in something larger, or of being a 'channel' for something else. The 'significance' codings were the third most frequent codings (n=46), particularly a 'sense of great personal value'. It was commonly stated that a peak performance gives one a feeling that 'this is what you do all the other stuff for'. In addition, the experiences tended to have 'spiritual or mystical qualities' and gave a sense of personal expression and understanding'.

After significance comes emotional aspects. Each aspect was mentioned at least 7 times, and the most common was a 'feeling of joy, fulfillment'. Coding E4 ("performance") was ignored because any peak performance involves performance by definition and so should not be counted as a credit towards validating that these interviewees have had peak performances.

Individual Analysis

This last point brings us to where we must look individually at the interviewees to ascertain that they have indeed experienced peak performances. This was the point of the Appendix D codings, where a description of the best performance is defined as one containing elements in at least three of the general dimensions of Privette's model.

The first two interviewees made 6 and 4 codable statements (respectively) on 2 dimensions each. After these first two brief interviews, only one interviewee referred to fewer than 3 categories, and within that category (other people), all but one of the relevant aspects were mentioned. Thus, while three of the interviewees do not have verifiable examples of peak performance as defined herein, the other twenty do, and should be judged reliable sources of information about how to facilitate peak performance.

It should also be taken into consideration that the interview was changed after the first two interviews, based in part on their results. First of all, I developed better probes out of the information. Also, the initial open-ended questioning was replaced by Kellian (Kelly, 1955) method of triadic elicitation. This involved having the interviewee compare one outstanding musician to two less-able musicians, and describe the key differences. Out of this 'triadic' comparison, it is possible to access constructs which the

interviewee uses to organize information about musicians. This resulted in much more relevant information, suggesting that the first two interviewees did point me in the right directions. Thus, despite not meeting the criteria, their data should not be entirely discounted.

Table 5 permits the interested reader to examine which peak performance codings appeared in the individual interviews. The codings have been grouped by dimension, and correspond to those used in Table 4. The dimensions have been organized in both tables to reflect the rank ordering of their total frequencies. On all dimensions except Altered States, the statements are scattered across the series of interviews with no particular concentrations. This reflects the fact that the request to "Describe your best performance" did not change at any point, and no probes were added as the interviews progressed.

Table 5: Peak Performance Codings by Interviewee

	Interview Number																							Total	
Coding	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Other People																									
o1															1				1	1					3
o2	1		1			1					1	1	2		1	1	1	1	1						12
o3				1		2	2	1	1			1	1		1	2	1	2	1			1	1		18
o4			1		1			1			1	1	1			1		1	1		1	2	1		13
o5			1	1	1			2	1		1	1				1			1		1	1			12
Clear Process																									
c1	1								1			1				1	1	1				1	1		9
c2										1		1						1							3
c3					1		1						1					1							4
c4			1														1								2
c5	1			1					1			1	1			2			1	1					9
c6	1	1			1	1	1									1					1				6
c7					1	1	1									1			1				1		6
c8					1					1		1											2		6
c9	2			1	1	1	1								1				1						7
Significance																									
s1		1							1									1			1	1	1		6
s2																		1	1						2
s4								1	1	1	1					1	1	1	1			1	2		11
s5		1							1					1		1			1	1					6
s6					1	1	1	1					1			1							2		8
s7						1	1	1										1	1						5
s8										1						1	2								4
s9																1		1			2				4
Functional Goal Drive																									
d2							1												1	1					3
d3		1						1														1			3
d6			1						1									1	1						4
Emotion/Feeling																									
e1									1				1		1	1	1		1			1			7
e2					1		2	1							2			1	2				1		10
e3		1		1	1	1		2					1							1	1	1	1		11
e5		1					1	2					1		1							1			7
Altered States																									
a1												1			1		2	1					1		6
a2										1						1	1	1		2					6
a3																		1							1
Fun																									
f1											1														1
f2						1					1		1	1											4

Note: the codings have been left as they were used for typographical reasons. However, they correspond to the meanings presented in Table 4.

Discussion of Preliminary Analyses

The quantitative linguistic findings suggest that the interviewees were above-average in terms of verbal skills. As well, the progressively more in-depth questioning brought to light more aspects of optimal performances. The latter characteristic of the methodology effectively rules out further strict quantitative analyses.

With regard to the peak performance codings, the interviewees clearly recognized the important interactive role of other people in contributing to optimal performance. Both audience feedback and the musical contribution of other musicians were included in the "other people" statements. This does make a certain amount of intuitive sense, because jazz musicians almost invariably perform in small-to-large groups. However, recognition of the role of other people is a hallmark of maturity. Indeed, Overstreet uses it as a criterion for the mature person, who

...is a person who has learned how to operate well in a human environment so that he continues both to add new people to those whom he cares about and to discover new bases of fellowship with those already familiar."

(Overstreet, 1949, p. 43)

A similar opinion is voiced in the team sport literature by Orlick (1986) who views team harmony as another crucial determinant which can affect the outcome of group performances. We will consider the concept of maturity in more depth, below.

The sense of loss of self in something greater has theoretical implications for Privette's (1986, 1987) model on which the codings were based, insofar as it points out an apparent contradiction between a 'strong sense of self' (C5) and 'unity/fusion of self/environment'. The former affirms the barriers which define the self, while the latter blurs them. I suspect that one is most prototypically oneself when engaged in highly meaningful activities which define much of one's identity. Thus, in hindsight, a strong sense of self may sometimes be ascribed to an experience which (while it lasts) involves a loss of self.

Loss of self appears to be a phenomenon which occurs as a result of the "cleaning out" process of concentrating. Along with other excess baggage, self-related thoughts are eliminated as the attentional focus centers upon the information needed for performance: imagery and essential sensory inputs. In peak performance, the cognitive systems are working so well that there is a striking absence of extraneous thoughts. Indeed, recognizing that one is in such a state can, if not controlled, upset the balance and remove one from that state, as will be seen in the secondary analyses.

Following Up

At the time of this writing, two transcripts had not been corrected and returned. Both of these interviewees were unavailable for telephone comment. All others had

returned the transcripts with no more than minor changes: spelling, syntax, and removal of some socially unacceptable words which crept into the dialogues. Only one interviewee added more than a sentence to the original material, and this addition re-stated points made elsewhere. Two interviewees struck one whole sentence apiece (on the grounds that if they were quoted, some people might construe certain off-the-cuff remarks as offensive).

Conclusion: Reliability of Source Data

The quantitative analyses and the peak performance codings indicate that the vast majority of the data are from competent, reliable witnesses. No theory-relevant changes to the original data were made, although some relevant additions were made which re-stated points made elsewhere. Therefore, let us look now at the main content analysis which was validated by two of the original subjects, as well as by two members of their peer group. To further validate the descriptions of peak performance which were coded, the last main section of the model (below) that was presented to the research collaborators contained a description of the phenomenology of such an experience.

*Secondary Analysis: Towards a Psychology
of Jazz Performance*

The model described below is an heuristic interpretation of the content of the interviews. In a sense, it is doubly heuristic. The musicians with whom I interacted

have developed their own heuristic models of what is necessary for excellence in performance. These models are based on their own personal knowledge derived from experience. Through the interviews, it was possible to discover some common themes. The interpretations and generalizations below are based upon those threads. They were validated by presenting them to several of the original interviewees as well as to two of their peers, and asking how well they corresponded to their personal knowledge.

The clarifications and disagreements of the collaborators have been included in the body of the model's text. Disagreements coming from original interviewees could be construed as more serious threats to validity than the disagreements made by those to whom I wish to generalize the model. Therefore, a special notation was developed. The comments of the two former interviewees are set off in square brackets [thus], while the observations of the previously uninterviewed collaborators are set off in curly brackets {thus}.

A Model of Excellence in Jazz Performance

A number of themes came out of the interviews in which I participated with 23 jazz musicians. They will be presented in a way which reflects the process of evolution which transforms the novice musician into a seasoned professional. First it is necessary to consider a number of factors which determine the nature and the strength of the

skills which are learned. The skills which top players develop go well beyond simple technical mastery, and include life-skills such as ability to concentrate, and to make sacrifices. Mental skills involving the constructive use of imagery are helpful, as is a measure of self-knowledge concerning one's limits.

Ultimately, this will give insight into the best performances of a mature jazz musician. Let us begin at the beginning.

Determinants

Early Experience and Personality Factors

Not all of the musicians interviewed had extensive early experience with any form of music. Those who did have such experiences when young did view it as a contributory factor, but were not more specific. It was mentioned that curiosity is an essential factor, and that the thrill of making a discovery after much exploration carries through to adulthood as a motivating factor in composing and playing jazz. New ideas and inventions are intrinsically fascinating and rewarding to the mind which remains open to them in a child-like way.

The playfulness implied in the last paragraph finds expression in the approach taken to practice. Ideas are turned over and over, much in the way that a child plays with a prism. The variety of patterns and colours are closely observed until one stands out above the others.

This is a vital aspect of the creative process.

[Clarification: in developing something, one tries new combinations of things whose sound is already imaginable, to find out how the combination will sound. After a great deal of experience, even many combinations can be imagined without having to try them]

Other personality factors mentioned were shyness and insecurity, particularly as a youth. These factors lead to slow development of confidence, which emerges only after much exposure to musicians at a similar or higher level, and a good deal of experience with public performance. This apparent timidity belies a strong core of tenaciousness, which is necessary to survival in the jazz field. It is what prevents the novice from giving up in the face of financial, personal and emotional obstacles.

It seems contradictory that confidence develops slowly while at the same time a core of tenaciousness lies below. This contradiction is resolved if we allow that the confidence stems from conscious recognition of one's ability, while the tenacity reflects an ability to withstand *emotionally* the intense course work of the School of Hard Knocks. Thus, confidence may not show up onstage until later in development, but tenaciousness will prevent the player who is still developing confidence from giving up. [Clarification: tenacity, when tied to egotistical attitudes, can present an obstacle if it is sufficiently

intense to prevent the player from 'laying back and riding with the waves'.]

[Clarification: the tenaciousness is created by the feeling of a sense of avocation about music, and is related to a "creative angst", or compulsion to create music which is felt as an objective, irresistible force.]

Jazz players appear to be very individualistic, and have a high regard for originality and spontaneity. These factors are probably what leads them to select jazz over more traditional forms of music. They prefer to express their own ideas, rather than interpret someone else's. However, becoming familiar with the way in which ideas are expressed is necessary. Thus having someone to look up to, whose work may be studied is necessary.

Teachers, Idols and Goals

The development of a musician may be seriously arrested without the presence of a teacher, if only for technical reasons. A teacher has experienced the development process, and is aware of the errors that can be made and how to correct them. This technical feedback is of course invaluable. However, the teacher serves a second and equally important non-technical function. This function is the transmission of the values of discipline and commitment, thus providing a model whom the novice may look up to.

{Clarification: "mentor" is perhaps a better word than "teacher". It underlines the manner in which jazz has

traditionally been passed down from generation to generation. Formal lessons are not a key feature of this transmission. Rather, community-based learning from senior members of the various jazz traditions is a mainstay of the preservation of the musical form.}

Teachers are also invaluable in the transmission of ethical and professional precepts from one generation of musicians to another. Going to live performances was emphasized by several interviewees as a means of acquiring an appreciation for the intense lifestyle of the jazz player, as well as for picking up musical pointers.

The teacher is not the only role-model for the musician. Many of the interviewees stressed the need to have play with other musicians who are somewhat above one's own level, in order to improve. Idols are particularly important for musicians whose dislike of routine leads to an inability to stick with formal lessons, and who therefore have no one person to guide them. One interviewee, when asked about the relative importance of idols, stated that "you need them, because they provide an inspiration, and a goal." {Clarification: role-modelling also extends to the members of the broader community in which the musician evolves, in that the values of the community are vital in orienting him or her.}

{Clarification: musical role-models proved a social sense of inclusion. One honors this tradition of musical kinship and

therefore approaches the study of the music from the inside.)

Goals help to organize and focus efforts, which would otherwise be frustrated. The level of the teacher or idol provides a point on the horizon towards which growth may be directed. Of course, once the desired level is attained, it is time to move on to a new target. While goals are important, musicians who aim only to duplicate the sound of one of their idols are not as well-respected as those who incorporate what they like into a unique sound. This is consistent with the high value placed upon individuality and originality which was discussed above.

{Clarification: "idol" is perhaps too strong a word, and "hero" would suffice.}

{Clarification: "role-model" might be a better word than "idol" in this context.}

Rather than inspiring one to become a "clone", the value of idols lies in learning how they expressed their own individuality, so better to express one's own. {Clarification: they are the ones who consistently articulate universals and celebrate the spiritual function of music.} One interviewee stated that "I might listen to Charlie Parker, John Coltrane or Art Tatum. Old masters like that. Not that I want to play like that now, but just that I appreciate how they utilize the human attributes and did it so masterfully. They were such masters in the art of

self-expression that it is a good standard to identify with." Mastery of the art of self-expression is the ultimate goal of the mature jazz musician. [Clarification: the 'clones' either have no confidence in themselves, or are motivated by greed, envy, and/or the desire for self-glorification]. [Clarification: at the highest levels, the art of self-expression is attained, so it is no longer a goal, and instead is the basis of the pleasure in playing music.]

Attributions about Talent

Not everything can be taught. When people cannot explain something in terms of observable or environmental factors, 'innate' factors are commonly invoked to account for these things, particularly when it comes to individual differences in learning abilities.

The attributions made by the interviewees about broader factors of excellence cluster around two such constructs: native talent, and sheer effort. There are the talented and the untalented, and within each group there are hard workers and those who need to work harder. The untalented get weeded out early, and among the talented, it is the hard worker who has the necessary combination to become an outstanding player.

While these beliefs might be expected to influence the effort and advice of teachers with respect to their students, this area is not a main focus of this study.

Nothing can be done about native endowments, so a practical study such as the present work does best to focus on what we can change; things such as effort, motivations, and effectiveness of strategies, and the values mentioned above.

Locale

The impact of geographic location on the economics of jazz was mentioned by several of the interviewees. Ottawa was not viewed as a city conducive to making a living just playing jazz, and was referred to as 'stifling' at one point. The market for jazz groups is not as strong there as in Toronto or Montreal, and certainly not as strong as in New York.

The need to survive must be met prior to fulfilling any further needs. A lack of ready availability of work in an area necessitates hard choices. One interviewee asked the important question "Do you want to be the big fish in a small pond, or a small fish in a big pond who has a chance to become a big fish?" Overriding life ambitions do influence decisions about where to pursue employment, and the pursuit of excellence often leads to a somewhat nomadic lifestyle.

As was pointed out above, it is often necessary to move from one teacher or idol to the next in order to develop, whether that means a change of city or of one's circle of friends and coworkers. As several musicians noted, as one progresses through one's career, the

availability of musicians who are capable of playing at one's level decreases. It is important to play with musicians who are somewhat better while developing (for reasons detailed below), and this requires mobility. Mobility, of course, means that a day job with career-like overtones is not generally possible. Thus a job like teaching music privately not only keeps one immersed in music, but is portable to other locations, as performance employment permits. [Clarification: Differences exist between players from different areas. This is related to the strength of the cultural background and the extent of community support for the jazz musicians' craft. Canadian jazz musicians do not have the same sense of presentation as do black southern Americans who reflect the exuberance of (for example) the Southern Baptist churches. There is a sort of 'ethnic feedback' which reinforces such differences.]

{Clarification: there are three ways to make money in jazz: performing; teaching; and composing, arranging and transcribing. If you're good at any two of them, you'll do alright.}

Priority among Projects

Another determinant of success is the manner in which musical preparation is situated with respect to other activities. The professional jazz musician has dedicated much time to preparing for performances. This statement

appears rather obvious, however, the data indicate that it is tied in subtle ways to unsuspected dimensions. The price of excellence in performance includes the cost of having a coherent structure for day-to-day living. The lifestyle of the jazz musician must be arranged in such a way as to be conducive to the pursuit of excellence.

Many small things influence both physical and mental preparation for performance. Life-events which disrupt the flow of preparation - particularly mental preparation - are usually an important factor in sub-optimal performances. Life-events can, however, contribute to a good performance, depending on the interpretation which the musician places on such events (such as when life-events become too painful, and escape is obtained through total absorption in the music). [Clarification: if the intention is strong, it is much easier to "take the punch", and after much experience, one gets so conditioned to playing that dealing with such distractions becomes automatic.]

The priority which top players place on excellence reflects the strong desire and commitment which are necessary for persistent efforts in that direction. This desire and commitment lead not only to large sacrifices being made for the music in the personal and (notably) the economic dimensions of life. While many of the interviewees held day jobs, the most common jobs were music-related

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(ie., teaching music, or playing commercial music so as to finance unprofitable 'art music'). A number of the interviewees held teaching posts at universities, and many had taught or were teaching music on the side. Thus, outside of performance work, the sense of coherence arises in part from 'helping' activities: projects which, while not directly related to preparing for specific shows, nevertheless are facilitative both economically and in terms of the expansion of musical experiences.

Through Discipline to Freedom

Desire is not enough by itself. The need for discipline of some kind is necessary, despite the fact that such discipline may not always be apparent to people who have a narrow definition of the term. Jazz musicians may not see themselves as disciplined because of apparent disorder in their lives. However, such disorder is the result of organizing both one's job and one's personal life around the music, rather than vice-versa. This attention to priorities when structuring time reflects disciplined self-denial, and a knowledge of what is necessary for excellence in performance above and beyond mere practicing: mental preparation. [Clarification: "sacrifice" is perhaps a better word than "self-denial".]

Discipline leads to the kind of freedom which is needed onstage - the freedom to interpret music without having to focus on technical matters or life-events. (This idea will

be expanded below, in the section dealing with a quote from Charlie Parker which most of the interviewees were asked to interpret.)

Part of this onstage freedom is freedom from distractions. While some people are naturally able to concentrate intensely without effort, the ability to focus is one which may be developed. One of the lessons which may be obtained by playing under adverse conditions is how to tune out irrelevancies, so as to better focus on the music at hand. This sharpening of the focus of attention results in the superior players' ability to hear the whole sound which the band is producing, rather than merely one part.

Concentration vs. Distraction

The ability to concentrate is basic to any skilled performance, musical or otherwise. This ability can be developed through conscious attention, and recognition of the limits of one's ability to focus. As mentioned above, quality practice involves periodic breaks where the center of concentration is allowed to wander. Stretching oneself to the 10 or 15 minute limit is good practice, and helps to develop the this vital ability. Pushing beyond this limit is discouraging, because very few people can focus so intensely on one thing for much longer.

There are many kinds of distractions which annoy jazz players, and which contribute to less-than-perfect

performances. One of the greater complaints was about sound men. A band is at the mercy of the sound engineer whenever amplification is used. If the sound man doesn't know exactly what must be done, a good band can sound like a quartet of kazoos. When this happens, the anger which it inspires leads to unnecessary distraction, which in turn leads to errors. The errors feed back into the anger, and the entire performance can rapidly deteriorate.

[Clarification: good management is also a factor. A good agent reduces many distractions arising from business, the press and the public.]

[Clarification: On the other side of the coin, the joy of hearing crystal-clear, well-balanced sound can help to inspire a great performance.]

[Clarification: the anger becomes more controllable with a great deal of experience. It has to be understood and worked with.]

Assuming that the sound quality is acceptable, another major factor is what we may call the 'flat tire' phenomenon. One interviewee commented that "you can't drive a car with three good wheels and one flat tire." This refers to the fact that if one of the band members is working at a much lower level than the rest (for whatever reason), then the ability of the superior players to focus on the whole sound becomes a detriment. They become irritated with the off-key or uninspired playing of the 'flat tire', which they have no

choice but to hear. They are thus forced to either compensate for him and so be required to focus on his technical problems, or play at a lower level, risking boredom and irritation. {Clarification: they compensate as much as possible, and find a replacement as soon as possible.}

To an extent which is not always comfortable, life-events and self-esteem can influence concentration. Some musicians describe 'good voices' and 'bad voices'. The good voices are silent: they are the sounds of the music itself. The bad voices are the 'shoulds': the intrusions of thought which are not part of the process of making music. The bad voices repeat "You made a mistake....you're no good... the audience isn't listening" etc., and so distract from what must be done.

[Clarification: different people have different labels for the 'bad voice'. For example, it is also known as 'the critic'.]

One of the best aids to concentration is having a strong message. As will be seen below, the presence of a unifying thought in the music reduces greatly the need to patch together statements. This idea seems fundamental to the truly creative processes which occur onstage. In addition, if we think of the message as the 'good voice', then it is easy to see how a strong one drowns out the 'bad voice'.

Ultimately, the mature player recognizes that one must meet personal standards, and not feel compelled to live up to others' expectations. Nevertheless, it is hard to deny that the audience plays a role in determining the quality of the performance. Applause at the end of a tune is an obvious kind of feedback. However, the player who is able to focus effortlessly on the music can look for toe-tapping and heads bobbing in time with the music. This gives a sense of satisfaction, which arises from the recognition that the message being communicated has been received.

Not all forms of validation are valued equally: people who tap their swizzle sticks and otherwise try to 'play along' can be quite distracting (despite their obvious enjoyment), particularly if they are not good timekeepers. Some experienced jazz players are able to deter such tappers (for example) by introducing complex rhythmic variations, layering different beats among the different voices (instruments). This makes it impossible to keep the beat for anyone other than the musicians onstage (who know what's going on). Such methods require great skill and understanding between the band members. (Clarification: if a performance is going well, and all of the band members are highly developed musically and psychologically, then they are usually able to tune out such distractions or employ less complex strategies. For example, if the crowd is too

noisy, playing extremely softly will get their attention back.}

Practice

A maxim that has been passed down through generations of musicians over the years states that "The first day you don't practice, you know it. The second day you don't practice, the band knows it. But the third day you don't practice, everyone knows it!"

Practice is thus a daily part of a musician's life. It is not the whole of his life, but a rather large part of it. As has been seen, the fact of having done so much of it brings musicians together. The efficient use of time is therefore a desirable goal, particularly in view of the fact that jazz musicians tend to dislike routine (presumably for the lack of spontaneity which it implies). Those jazz players who do not dislike practice intensely are the ones who have invented ways of making it at least somewhat enjoyable. [Clarification: it is not so much routine which is disliked as activities in which self-expression is inhibited.]

{Clarification: those who enjoy practice have managed to evolve time management strategies which reflect an inspired creative linear approach to addressing consistent practice.}

{Clarification: one way of making practice enjoyable is to play pieces in a variety of different keys. On most instruments, this has the effect of forcing notes to fall

differently under the fingers, and new possibilities emerge. However, this adds the risk of getting bored with a piece.)

The recognition of several important practice factors will aid the novice in getting the most out of his or her time. We may distinguish between practice defined simply as "sitting down with the instrument and playing things," and *quality practice*.

Quality practice involves the use of psychological skills. For example, one must recognize the limits of the ability to concentrate. While working to extend these limits is valuable, at some point it is necessary to accept that these limits cannot be extended indefinitely. In addition, practice of mental skills involving imagery and mental rehearsal is carried out. Some mechanical devices are of great assistance, as well. [Clarification: personality factors play a role in concentration, and there are stages of development of this ability. Extended concentration is facilitated by recognition of the user which are currently available for the material being practiced.]

Mental rehearsal away from the instrument facilitates practice when one finally sits down to work on things. The way the music *should* sound has been worked out, and getting the fingers to create that sound is all that needs to be done.

Singing the thematic material which is being practiced aids in developing an image of what it *should* sound

like, so that comparison of what one plays to what one should be playing is automatic. A fairly well-developed voice is also helpful in that having an instrument in one's hand is not necessary in order to hear new ideas which come to mind in inconvenient places. While ideally, one would want to be able to imagine a solo without even having to sing it, all of this is part of development. Singing melodies can hasten the day when the "mind's ear" (detailed in the next section) becomes indistinguishable from live or taped performances. (This has been reported to happen.)

In addition, listening analytically to recordings of the great jazz players is invaluable, as is attending concerts. The stress here is on the *analytic* portion of listening. Some of the interviewees reported that when young, they listened to jazz with friends, and held discussions about the music. These activities qualify as a form of practice because the listening skills needed onstage are honed in these ways. Ultimately, once the critical capacity is sufficiently expanded, the musician typically becomes his own greatest critic (although the advice of knowledgeable friends is cherished by those who are willing to accept honest appraisals).

Continuous practice is ineffective practice. One needs to take a break from time to time, and although the individual must decide for himself how often this should be, typical practice sessions seem to be broken into twenty

minute segments, with a 5 or 10 minute break in-between. Too much practice can lead to burn-out, and boredom with the material. Practicing unenthusiastically leads to a well-rehearsed lack of enthusiasm in performances. [Clarification: Again, seeing where a piece is going, and having an idea of how it will fit into one's current performance schedule helps. In short, having employment helps keep practicing focused.]

[Clarification: Taking vacations away from the instrument is valuable, also, in that it helps to "keep things fresh"]

{Disagreement: There is another school of thought which holds that continuous practice for long stretches of time is good for concentration, and allows one to better discern then nuances involved in variations, which might otherwise be forgotten. Musicians go through creative phases, and such practice is necessary at certain points for development of ideas as well as focus.}

{Clarification: practicing when you have a gig is decidedly different from practicing when you don't have a gig. You will put in many hours just to get the physical side in shape for the job, and in doing so, you can address other things, primary among which is the will to do it. You have to say to yourself "I will do this!"}

{Disagreement: If you're practicing for technique, it's like climbing a mountain; every day you get a few feet higher. There's nothing wrong with practicing for four hours at a

stretch in that case. You keep working at it and as you go, you're amazed at what you've developed; it's right there. You're not losing any focus; you're inspired by it. Eventually, you play something, and you say "Gee, was that me? Wow!". It's because you're continually practicing and moving upward. If you're working at the same time, and practicing to sharpen your concepts and improve your solos, it's a different kind of thing; you can't keep that up for extended periods of time. You have to have a break.}

Another valuable point concerns musicality. Insofar as is possible, one should try not only to execute the pieces, but to execute them musically, paying attention to as many musical values (tempo, dynamics, tone and intonation, etc.) as is possible. This kind of practice enhances the ability to focus on these aspects of the music when onstage as well. In addition, playing musically enhances the enjoyment of practice, as does the playful twisting around of ideas described above.

While the notes must be played in correct sequence, mechanical aspects of learning a piece are worked out more quickly by practicing thematic material slowly at first, then building speed once it can be played correctly. If material is learned too quickly, and errors creep in, then repetition of those errors virtually ensures that they will pop up in some performances. One method is to impose a restriction on speeding up. The rule might state that a

phrase must be played flawlessly a certain number of times at a slow tempo before the speed is moved up. Using this method, the speed can gradually be increased to performance levels.

Because of the improvisational nature of jazz, it is only the thematic materials {Clarification: such materials are also known as riffs, "the head", or "the top"} which are played the same way (more or less) every time. Improvised material cannot - by definition - be worked out ahead of time. However, there are ways of developing the skill of improvisation without having to prepare solos completely ahead of time. [Clarification: experienced players will work to obtain somewhat different interpretations of thematic material each time they go through it.]

One of the ways of practicing improvisation is to purchase special tapes or records which provide the background harmonic structures within which one can construct solos. Another, more personal method, is the the jam session. In the jam session, a performance situation is approximated (and sometimes valued friends are called in to be an 'audience', and to provide critical feedback. Another advantage of the jam session over tapes is that different methods can be employed. For example, bandleaders are able to insert musical surprises into a rehearsal. The band is left to cope with this novelty in the best way that they can. This method forces the musicians to think in creative

ways, and gives them a chance to practice 'emergency exits'. It is not unlike the familiar fire drill procedure, and has much the same effect. It permits the players to feel that they can cope with unexpected situations. This sense of control contributes to psychological well-being in performance situations, and so to good concentration.

{Clarification: an important element of style that must be acknowledged in improvisational work is the vertical vs. horizontal distinction. Vertical solos incorporate the elements of the chord. By going up and down the relevant notes, the player sketches the harmony. Sonny Rollins plays this way, and you can figure out the harmony based on his solos. Miles Davis on the other hand, is usually horizontal, playing long notes that are ornamental to the harmony, but if you take away the rhythm section, and just listen to him, you'd never know what harmonic structure he was playing inside. The balance of horizontal and vertical elements in solos is a big part of one's sound.}

Another key method is simply the use of mental imagery. Once a chordal structure has been learned to the point where it can be called into 'the mind's ear' without effort, then solos can be worked out mentally when away from the instrument. Many of the interviewees reported a constant presence of musical imagery, and some reported systematic use of it in this manner.

**imagery: Auditory, Visual and Kinesthetic*

Mental work such as that described above requires good mental imagery. Auditory, visual and kinesthetic (or body) imagery were reported in many of the interviews. As our focus is on music, let us look first at auditory imagery, and then the other two.

Some of the interviewees reported that auditory imagery had always been present, while others reported it as having developed. The good jazz musician has a well-developed 'mind's ear', or ability to imagine sounds. While not all interviewees reported systematic use of imagery as a practice technique, most reported the frequent presence of auditory images and the ability to imagine how something was going to sound before playing or singing it.

The ability to 'hear it before you play it', when coupled with an ability to execute technically without consciously thinking about it is very helpful in the evolution of coherent solos: "If you can hear it, you can play it, otherwise your fingers are just wiggling."

{Clarification: with experience, the time from inception of an idea to its' execution decreases.}

One interviewee uses the method of the "time in motion study" After a bad performance, he works mentally on the perceived problem areas and comes up with solutions. These solutions are tested on the keyboard for 10 minutes, and discarded if they cannot be made to work. (This is a highly

developed example of another point mentioned several times: that a bad performance contains important information about what needs to be improved. I infer that recognizing this fact aids in coping better with a bad performance; 'seeing the silver lining of the cloud', if you will, imparts some meaning to what could otherwise be construed as a disaster.)

Again, some native endowment is attributed in the area of being able to imagine the sounds. But even for those who have much native talent, there must be receptivity to the images. Receptivity can be developed by mental rehearsal and systematic use of imagery as a rehearsal technique, such as in the time in motion study.

The use of visual imagery was reported by several musicians, in several contexts. In one case, visual images of oscilloscope lines (as on a heart monitor) are used onstage as representations of the 'hills and valleys' of the music. This helped to keep a perspective where the music was at the moment, and where it was going in terms of dynamics and excitement level.

As well, visual imagery may be used to help maintain the coherence of the story that is told by a solo. When scat singing, one vocalist reported that the sequence of notes sung usually tells a story about how her cat bounces playfully around her apartment.

In the case of vocalists, visual images of certain scenes are used to evoke particular emotional states, which in turn influence the way that particular pieces are to be sung. Visualization of memorized images of written music was used in some cases, and in one instance, synesthesia was reported: while waking up in the morning, one interviewee saw an hallucination of a score, which she realized was the score to the piece that was playing on her alarm-clock radio. She had never seen the score before, but knew that the notes were correct. The image disappeared when awareness of what was happening entered into consciousness. This makes a point which will come up again in this paper: that conscious awareness of being in an unusual state can disrupt that state. {Clarification: "laying claim" to the performance feeds the ego, which can start a process whereby the "bad voices" begin to sound, interfering with concentration.}

Kinesthetic imagery is also needed, and is usually referred to as 'a feel for time.' While some people have a better natural sense of rhythm than others, this sense can be developed by practicing with a metronome. Like any skill, it needs continuous attention. Beyond a certain level, just rehearsing and performing with a superior band on a regular basis is enough to maintain the feeling.

[Clarification: it is imperative to have an awareness of

how kinesthetic imagery reflects one's emotional status as well.}

Determinants: a Summary

Even natural talent must be channelled in the proper direction if success is to be had in the field of jazz. It is necessary to focus one's activities in directions which will help to improve the ability to play well. This means that time spent practicing must be quality time, thus permitting optimal development of mechanical, mental and musical skills.

The activities which fertilize musical growth require sacrifices in other areas of life, and a great love of the music. In the words of one jazz musician, "...love is the whole thing. If you want to play jazz, you've gotta have a big heart. Forget about everything else, forget about the money. It might come. But if it doesn't, just say 'well, desirable results. These results feed back into the development process. {Clarification: one must be a citizen of the world, and express universal human experiences.}

{Clarification: it's sometimes wiser to put a little water in the wine, and take the wedding jobs and so on, and make the \$150 so to finance playing elsewhere. Sometimes the ones who take the tough route run the risk of winding up in a desperate position, having to take a job they don't want just to pay the rent, and they come out to play and don't do a good job because they don't know how to fit in.}

*Maturity: the Fusion of Musical
and Psychological Development*

While everyone is unique, everyone also has certain similarities to other people: particularly to those who share many common experiences. With this in mind, it is now possible to characterize important aspects of the mature jazz musician. Talented players who have worked successfully towards the goals which their teachers and idols provided arrive at a certain point where they are no longer troubled by minor details of execution (at least on a regular basis). A clarity of musical perception develops when conditions are right, along with good control of attentional focus and ability to imagine sounds. These elements in combination contribute to the peak performances described in the last section.

Among those conditions is the code of ethics and values which are adopted by professionals in their field. We must also consider the strong sense of community which arises out of the common background which they share with their peers. Another condition is that of having a message. Jazz artists value quality of self-expression above all else, in keeping with their strong sense of individuality.

Also worthy of note is the development of a perspective which lends itself to humor and improved concentration. The mature player does not consider himself a master. However,

at the end of this section, I will point out a sense of the word 'mastery' which does apply to such individuals.

Coherence, Common Sense and Charlie Parker

The mature jazz musician has a fine sense of musical coherence, which comes from a well-developed 'common sense' about what goes where, and when. This common sense can only be developed above a certain level of technical mastery of the instrument.

There is a great deal of technical information to acquire about the instrument to which one has dedicated oneself. There is a vast amount of theoretical knowledge which (ideally) must be learned and applied to the point of automaticity. Physical practice is most effective when psychological principles governing things such as slow practice and taking breaks are applied. The ability to focus on musical values is enhanced by the development and use of rich mental imagery, which permits focus on these things without concern for technical matters.

The need for coherence in the lifestyle has been described already. A parallel need for coherence develops out of musical development. Coherence in musical statements must arise out of a highly evolved musical 'common sense', which is the product of disciplined, high-quality practice. Such practice results in an intuitive sense for things which have been done many thousands of times. This intuitive

sense is the basis for the high-quality communication which takes place on the bandstand.

To expand the idea of musical coherence, let us reconsider economy of technique. The main idea of this economy lies in picking the few notes that say *something*. Doing this is the essence of the musical art. Many of the interviewees expressed that their solos must tell a story in a coherent fashion. The solo must have a clear beginning, development and conclusion, which are improvised over the harmonic changes of the tune. (Clarification: the basic cornerstone of jazz improvisation is the concept of telling a story which celebrates the special interactive performer/audience relationship.)

Building that sense of coherence is no mean feat, and those who are capable of doing so can easily spot an amateur, even if that amateur has developed a technical expertise well beyond his or her years. It is not easy for even the talented novice to recognize the musical coherence of a solo. Years of listening to the jazz greats on tape and live wherever possible go into developing the ability to hear the musical logic of a good solo.

The bare bones of a solo are riffs and long notes. A riff is a run of musical notes with a particular rhythm which is organized around the harmonic skeleton of a chord. It may be difficult to execute, and spectacular to hear, but unless it is organized into a coherent pattern of riffs tied

together with *good* long notes, it is still merely a Grecian urn in an art-deco living room. {Disagreement: an essential aspect of the riff is its' more or less repetitive nature. This was missing in the definition given. Riffs are 'topic sentences', or motifs which are the germ of a larger composition.}

This last sentence introduces the issue of 'taste'. While everyone has the right to an opinion on matters of taste, a certain refinement occurs in any discipline so that, while conflicting opinions may still exist among senior experts, at least the experts are speaking the same language and using the same grammar. The image of the urn in the living room reflects the incoherence of a spectacular riff which bears no connection to the rest of the piece. It does not rule out the genius of a Charlie Parker, who might find a particular urn which *does* suit the deco room. But again, the genius finds *coherence* in unexpected places, thus identifying a previously unseen but clearly present unifying idea. Poor taste would hold that coherence exists where it truly does *not*.

The refinement of taste coincides with the development of what several interviewees referred to as 'common sense'. As before, those who need to speak a particular language (be it musical, psychological, anthropological or whatever), have a common background upon which to draw. At the most basic level, to the musician it is a knowledge of basic

scales and harmonies as well as the technical dimensions of his instrument. Beyond these, the jazz player should know about the jazz traditions and forms, as well as possess a memorized repertoire of standard tunes.

Musically, the common sense involves not only knowledge at a cognitive level, but at an intuitive level. While one may know theoretically that the usual resolution of a V7 chord is the tonic, there should be a compulsion to resolve a V7 chord to the tonic if it is merely left hanging. Beyond this simple example lies the sense of where dissonance is appropriate and where it is not, and intuitions about how to make mistakes 'sound right' by resolving them in a particular way.

Common sense is something that should not require thought when it is applied, and typically arouses ire when it is not applied. Developing elementary skills to the point of not having to think about them is a process familiar to anyone who can walk, ride a bike, or carry on a conversation. Most of us are capable of doing these things without having to focus on leg movements, or the grammar of our native tongue.

We therefore are able even to express ideas while walking. It is the ideas which are truly important, and which require conscious attention. The legs and the grammar can be left to take care of themselves, provided we have mastered the basic skills.

In the domain of jazz, Charlie Parker is often quoted on this topic. He was once questioned about the value of learning theory, scales, and so forth. His reply was "Learn all that stuff, then forget it". (Clarification: notable by its' absence was a direct analogy of musical development to linguistic development. Acquired musical knowledge and perception comes to be used as a functional language.)

This quote was repeated so frequently in my conversations with jazz musicians about mental factors, that it rapidly became a major point in the interview series. When asked to interpret that statement, the near-unanimous reply was to the effect that the rudiments of theory must be learned so well, and the scales must be played so frequently, that the execution of ideas on the instrument is automatic. "Once you've internalized it, then you can concentrate on doing what it is you want to do and expressing what you want to express, and your technical ability will be there to do it for you" This concentration is on higher-order dimensions of the music such as correct dynamics, proper intonation, and the coherent story that is to be told. Imperfect mastery of the rudiments impairs the ability to tell a story when trees are blocking the view of the forest that you wish to describe.

One example of "forgetting it" lies in what has been called "accomplishing a sound". The repetitive nature of this kind of practice enables one to focus on obtaining good

intonation and particular kinds of tones on the instrument. This focus comes easily, because the fingers learn to make the necessary movements quickly, thus freeing one up to focus on the sound the instrument is making. The best musicians have recognizable sounds, because they have "learned and forgotten" the basics and so freed themselves up to work on this area.

{Clarification: ..freed themselves up to be.}

{Clarification: not all things that have been learned this way come up naturally in performance. Some things are learned and never used, because the proper opportunity never seems to arise.}

The Concepts of Intonation, Tone and Sound

The concepts of tone, intonation and sound are crucial to high-quality, professional performances. Tone refers to the quality of the sounds produced by the instrument, and intonation refers to whether they are consistently in tune or not. Some have 'fat' sounds, other 'thin' or 'reedy'. Once one has the ability to focus on these dimensions, experimentation will, in conjunction with one's experiences, produce a personal tone. {Clarification: the personality of the sounds is the key to this; in the jazz tradition, the idea of 'voice' or personal identification is crucial.} Intonation is a must, as professionals view it as almost rude to play consistently out of tune.

One interviewee uses a unique method for teaching the supposedly tone deaf how to sing. Instead of the traditional method of trying to get them to sing on key, he allows them to sing any note they want to, and then he matches it with his own voice. Once the student hears what unity sounds like, then he has a concept around which to organize information about sound. It then becomes easy to lead him to sing a note that has been struck on a piano. The value of singing what you want to play was brought up several times in the interviews. 'Play what you hear' was an-often used phrase which referred to one's mental images.

Developing 'what you hear in your head' is closely tied to singing melodies, and follows learning rudiments via the normal practice routine. In the words of one bandleader, "Beginners don't have a concept of tone, because they have too much else to think about."

Sound, the last concept mentioned above, is the last to evolve. It was described as the 'personality' which the musician projects. It contains the concepts of intonation and tone, and so may only evolve after much attention to those dimensions. (Clarification: it also reflects his personality and state of being.)

All of these concepts may be known by looking them up in a dictionary. However, *understanding* them is a different matter. It is necessary to have experienced hands with poor intonation to have a true idea of how bad

it can sound. This idea, I argue, involves having a mental representation of tone, sound and intonation which goes beyond simple dictionary definitions. This idea requires not only the presence of mental imagery, but the ability to impart a unifying idea to a piece of improvised music. Top players have something to say with every note, and have a sense of urgency which makes them feel compelled to say it. [Clarification: One's sound will inevitably be the one that feels best and most natural to oneself, out of all the possible sounds which have been explored.]

The Message

To say that one has good intentions means not only that one is performing the music for its' own sake, but that something is being expressed in the music. The superior musician has a coherent message to express in each piece of music he plays. Such a message infuses the work with a singular meaning that is not present in the work of those who play without having anything to say through their art.

The importance of having a message to communicate cannot be understated. A sense of coherence is imparted when there is an unifying idea underlying a solo. It is a cliché to state that "Music is a universal language." It is psychology, however, to understand what goes into composing something in that language in a spontaneous, conversational way. Fundamental to the idea of 'conversational' is the presence of unifying ideas which hold solos together, thus

allowing them to make sense to people.

[Clarification: failing to see the ways in which music is an essential part of us leads to an illusion and a sense of disconnctedness which is reflected in the music. It is the human side of the music that counts. It is easy to get carried away in the process of expressing ourselves, thus losing sight of who we are communicating with.]

Key to communicating such ideas with the help of other musicians is the knowledge that a common set of experiences are shared, and that there are special ways of expressing them.

"The Brotherhood"

{Disagreement: the word "brotherhood" is sexist. Despite being set off in quotes, it would be better to substitute "kinship" or another gender-neutral term which does not exclude anyone in such a way. After all, inclusion of people by way of touching their common experiences is the whole point of jazz.}

The common discipline of extended practice gives rise to an important sense of community among musicians. It has been described as a 'brotherhood' of individuals who have all shared in the experience of spending thousands of hours sitting in a room alone with an instrument. As well, the members of this fraternity speak a common musical language, and share many values.

Recognition of this element is important to the mutual

respect and commitment to other players which is required onstage. Such respect is a hallmark of the mature player, who takes part in a community which has a particular set of values. [Clarification: The kinship felt does not rule out competitiveness, which is particularly notable in locales where limited work is available. Competitiveness, where it occurs in hostile forms, can have a negative effect on performance by setting up walls which block the necessary communication.]

The Code of Ethics and Values

The fact that the interpretation placed upon life-events can influence a performance underlines the importance of attitudes which are expressions of a particular set of values. Dedication and good intentions are the core of the set of values shared to top players.

The effort put into jazz is proportionate to the dedication felt to the music. If the desire is there, then it is easy for a good teacher to convince the budding jazz musician that no method should be left untried in the pursuit of excellence. The pattern of motivations, however, may not be entirely consistent at first.

In young players, there are still many competing motives for going up onstage and performing, and it appears that not all such intentions are compatible with optimal performance. It became apparent through the course of the interviews that some of the values which must be transmitted

include honesty and humility, economy of technique, and professional ethics. These personal values must drive the player, for a variety of reasons.

Honest self-appraisal can only happen after much exposure to good musicians in both performing and listening contexts. The developing musician must have sufficient musical knowledge to evaluate good vs. bad performances. Honesty enters the picture when personal performance is evaluated against recognized standards.

Humility suggests that his motivation is to help make the overall sound a good one by playing his part as defined by the music (or, in the words of one musician, 'not make anyone look stupid'). The social dimension is crucial, and arises in part out of the 'brotherhood' discussed above. Part of being a member of the jazz community is a respect for those with whom one plays, and a recognition of the extent to which it is possible to make someone else look bad. {Clarification: This entails a respect for and awareness of the musical, social, and political components of the jazz tradition.}

'Economy of technique' is a hallmark of the highly-developed player, who recognizes that a few good notes that *mean something* are to be preferred over many fast, rambling notes. The immature player will often try to impress the listener with technique, and overwhelm with notes. His judgement is based on 'quantity=quality', a

judgement not shared by top-level players. He will neglect the overall sound to make himself stand out, at the great risk of making the whole group sound mediocre or bad. This situation will not change until he takes an honest look at himself and his playing. Good intentions and economy of technique reflect a mature set of priorities. {This entirely depends on the skills and intention of communication of the performer: his or her concept.}

Professionalism enhances mutual respect and empathy. Being clean and dressed appropriately for a gig (performance job) is expected. The professional has a reputation to uphold, and that means that he or she will have enough self-knowledge to be able to judge when a challenge cannot be met, for whatever reason, and will act accordingly.

{Clarification: also important is the modern attitude of needing instant gratification. In the old days, records weren't coming out at a rate of 5,000 a week; there were maybe seven or eight of your chosen favorites. You'd buy one, and listen to it over and over, focusing on the different parts. In a few days, it would be memorized, and then there was always the B side to discover. Kids don't focus that way nowadays - they want it all written out on the computer screen; they want to be spoon-fed. So where's the fun of doing the work yourself? Where is the joy of discovery?}

A Sense of Humor

One common way of tuning out distractions is the adoption of a particular perspective which allows one to laugh at mistakes. The music does not stop when mistakes are made. If one cannot laugh off one's own occasional inadequacies, then the mind remains frozen in time on an error while the music passes on by. It is then very easy to make another mistake while trying to catch up. {Clarification: high-level players don't really make mistakes, because they know how to make off-sounding notes resolve. Some players - like Sonny Rollins - will occasionally throw one in to mislead the audience, and then work it into a novel motif that sounds correct after full development of the idea. The ability to execute flawlessly what one hears in one's head effectively circumvents errors. When difficulties arise, the masterful player can handle it because he or she has worked out ways of dealing with it. For example, running out of wind during a phrase is not a problem, because there's a way of running out of wind.}

{Clarification: the same point was made once again about not really making mistakes, because they can be made to sound correct.}

The sense of humor is an attitude which permits rationalization of mistakes and problems so that the 'bad voices' are silenced. It is a form of self-talk. Outside of

the context of having a sense of humor, self-talk was reported only once, by a player who thinks "Get back on top of it," as a cue to focus better when a problem arises.

Having a sense of humor also opens one up to better interpretation of pieces which are to be played humorously. Humor is itself an idea which can lend unity to a solo. Many jazz pieces require the ability to play humorously. [Clarification: humor is imperative for the creative process.]

One of the interviewees who mentioned the importance of humor described a performance where he was playing in a very tired state. One of the other musicians observed his visible signs of fatigue, and so started to play in a 'tired' sort of way, pushing notes from behind the beat, but not tampering with the tempo. The message came through clearly, and the interviewee nearly fell off his seat laughing. The mutual understanding of the mockery embedded into the music is a clear indication that at high levels, musicians communicate in truly human terms.

{Clarification: Notable by its' absence was reference to the witty use of musical quotations, such as appeared in the work of Charlie Parker. Parker would quote snippets of appropriate songs in his solos. For example, if a sailor walked into the room, he would fit a phrase from a tune like Anchors Aweigh into his solo.}

Mastery and the Sense of Challenge

Even jazz musicians with rather extraordinary backgrounds do not consider themselves to be masters. However, their discussions of where they stood with respect to fellow musicians led to a need for a different conception of mastery, one which has been out of use for some time.

The ancient Greek concept of a master was one of a person who had achieved a great deal in an area, but who did not focus on the finite number of things which he had achieved. Rather, his focus would be upon the infinite number of things which he had yet to achieve. This focus would lead to an eager self-challenging, where the thrill of discovery would be felt as new things were learned. This version of mastery logically implies a certain humility, and respect for those who can teach as-yet unlearned things. Such values are tied to the sense of brotherhood discussed above.

The forward-looking approach of such a master offers an infinitely large field of challenges. At the point when the view turns from backwards to forwards, however, this no longer matters. Each challenge is taken individually, and the same methods of quality practice and imagery and all the rest are applied. The musician at this stage knows he can handle challenges and looks forward to meeting them for the rest of his life.

[Clarification: one develops a certain objectivity as well, in that it is possible to work with one's passions without being affected by

Summary: Psychological and Musical Development

The musical side of development begins with practice, but evolves much more refined skills as time passes. The musician must begin to play with other musicians and acquire not only values and professional ethics, but novel ideas and methods for approaching the horn ('horn' being a generic term used for all musical instruments, frequently including the voice).

The use of mental imagery is a great aid to practicing, and is systematically put to use by a number of players. Once the scales have been learned, and hundreds of melodies have been memorized, more attention is played to *how* a piece should be played in order to be acceptable at a musical level, instead of a merely technical level. The more these elements become automatic in execution, the easier it is to focus on musical values which require attention in performance. With the development of technical skills, an evolution of mental skills occurs, and mental imagery plays an understated but important role in excellence.

The development of a jazz musician takes him or her through many phases. Many friends are made and lost along the way, as the level of skill increases. Bands come and

bands go, and each step brings new experiences from which to draw. Such experiences broaden the range of emotions which may be expressed in the music.

Ultimately, membership in an elite circle of performers is attained. These are individuals with whom one may interact musically, and who share a common language and a common set of values. Competitiveness is minimized, and at the highest levels, personal values of humility and respect combine with the musical and mental skills described above, and optimal performances become more common.

Pulling it all Together

The many threads which have been drawn out of the interviews combine to form a strong cloth. The values and professional ethics which the novice acquires through exposure to teachers and role models carry through to the practice and performance situations in which the jazz player develops musically.

When the conditions are right, and onstage focus is unhampered by distractions from the 'bad voices', unusual states of consciousness begin to accompany extraordinary performances. High-levels players are aware of the need for mental preparation. This preparation sets the stage for a clear focus during performance. This clear focus is associated with both a peculiar subjective state and superior execution of the music.

All of the work on psychological and musical development is done in the service of a good performance. Let us look at what happens when all of the lessons learned are applied in performance. We may begin by looking at preparations on the day of a show.

Pre-Performance Routines

The dislike of jazz musicians for excessive routine suggests that the rituals similar to those which many athletes go through before performing would be found distasteful. Indeed, such routines were described as 'a monkey on your back'. The implication of this is that if something prevents the ritual from being carried out, then the associated superstitious dread could damage the performance by raising anxiety levels to the point where they interfere with concentration.

Nevertheless, it seems that certain habits are conducive to getting into the right frame of mind. Visualization of loved ones has a calming influence, as do attending to personal hygiene, dressing oneself according to professional standards, and avoiding upsetting situations which could cause poor concentration onstage. As mentioned before, excessive chemical alteration of one's mental state is also acknowledged to be undesirable.

Many musicians warm up before a show. This is a requirement of the laws of physics in most cases: trumpets must be warm, or the intonation will change during the show

as the metal heats up; the bass player must get the feel of how high the strings are as a result of the room temperature; the piano player must often become familiar with the idiosyncracies of an instrument he may not have played before; saxophone players need to wet their reeds, lest they sound like kazoos, and vocalists must exercise their vocal cords. Some musicians recognize that there is also a psychological side to this process, in that a focusing occurs while warming up. While most jazz players deny having a 'ritual' (in so many words), being late for a show and not having time to warm up can be quite distracting. [Clarification: some musicians who are temperamentally calm will run deliberately behind schedule, as the lateness creates a 'nervous edge', which is important to performance.]

The keyword in all of this appears to be 'comfortable', and jazz musicians seem to have a idiosyncratic repertoires of comfort-giving activities, from which can be improvised relaxing pre-performance situations. The word 'improvised' describes the process well, because although getting comfortable is a necessary routine, excessive routine is avoided by having a variety of such activities instead of a set ritual. In short, the monkey is not on one's back.

The Ideal State: Onstage Focus

During performance, jazz musicians like to maintain a certain ideal mental state. on the whole sound of the band.

One interviewee observed that "young musicians listen to the parts; pros listen to the entire thing." Getting beyond a focus on one's own sound requires humility and maturity, and motives which value the music above self-glorification.

Concentration is necessary, and the ability to control distractions will help to sustain the ideal state. While the conscious focus is very much on feeling things of the moment, there is nevertheless a peripheral awareness of where one is within the structure of the piece. This appears to follow from having an image -either visual or auditory - of one's position within the whole 'story' which is unfolding.

This state does not rule out awareness of the audience. Indeed, a responsive audience can add greatly to the excitement of a show by stimulating the band to play with great intensity. Several of the interviewees noted that their awareness seems to shift from the audience to the music and back again. When a difficult passage is coming up, various methods are employed to maintain focus and block out the audience if necessary. Not least of these methods is closing of one's eyes. This appears to increase the capacity for concentration by blocking out a large number of things which otherwise crowd into a limited space of awareness.

{Clarification: especially in cases of extreme shyness.}

{Clarification: shared communication with the audience is

everything. It is the responsibility of the performer to engage his/her audience.)

Peak Performances

As the jazz musician develops to the higher levels, the phenomenon of the peak performance begins to occur spontaneously. This event is typically something of a revelation to the musician, because during the course of a particular performance, a peculiar mental state is sometimes obtained. In this state, the self is felt to be lost to a higher power of some sort, and the musician feels that the music is flowing through his body, which is connected in a strange way to the instrument (except for vocalists). A freedom from outer restrictions is felt, along with great absorption in the music.

The clarity of the inner processes gives a feeling of power, and the images which are appearing in the mind are executed flawlessly. These images appear spontaneously, and are of coherent, high-quality ideas which are expressive of the emotional state of the player.

The unusual nature of the state makes it hard to describe adequately in words. It has great personal meaning to the musician. There is a feeling of 'doing what I'm supposed to be doing', and often a spiritual or mystical sense surrounds the experience.

Such a performance can only follow a great deal of work. The technical material must be mastered to the point of

being automatic in order to allow for focus on the musical side of the performance. Communication between the members of the band must be empathetic, unmarred by conflicts arising from unprofessional attitudes and actions, lack of respect, poor playing and so forth.

The peak performance almost invariably occurs in a group. Because these experiences follow years of intense preparation, a certain level of maturity is present in the musicians to whom they occur. This explains the frequent references to the absolute importance of other individuals' contributions to the occurrence of such performances.

There is often an intense sense of interaction, and this feeling was described in sexual terms more than once, when pointing out the intense intimacy of the experience. Less commonly, this experience will occur in practice situations, where the player is alone. However, I infer that in the "mind's ear", images of the sounds that other players usually make are present in these cases.

[Disagreement: the use of sexual imagery impoverishes the experience of the total nature of the communication that is involved here. Those sensations are only a part of the feeling that players get when attuned to one another in a feedback situation like performing music.]

The state of mind of an individual during a peak performance is referred to psychologically as one of 'flow'. This term suggests nicely the sense of 'everything flowing

correctly and smoothly' which is felt when in that state. It is not a normal state, and so could well be described as an *altered* state, in which a loss of time and space is felt. In addition, a certain unity of the self and the environment arises. One interviewee described the 'clicking on' of the flow state as being 'the moment when the angels walked into the room', underscoring the religious intensity of such moments.

[Clarification: there is a feeling of being a 'channel', and a recognition of temporary possession of things not completely one's own.]

{Clarification: the 'clicking on' can occur as a result of something in the environment. For example, an obnoxious drunk in the audience once infused a solo with a charge of energy that had not previously been there. You can't stay in that kind of state forever, but while it lasts, it's something. The song was *It's Alright With Me*.}

This state has been described as 'clicking off', as well. This seems to happen when the musician "lays claim to it". By this is meant a conscious identification of the state as "mine". The "loss of self in something greater" is itself lost when thoughts of the self intrude. This explains the disdain that is felt for musicians who are motivated less by the music than by narcissistic, egotistical goals.

Another problem with describing the state of flow is that while it does not without a great deal of perfection of

musical and personal development, its' occurrence is not predictable. This study does not clear up the matter by perfectly predicting when it will or won't occur. It merely specifies that it will not happen without the personal discipline, the commitment to intensive work, and values which set the importance of overall sound above personal motives.

In addition, when flow starts to happen more frequently, the musician often tries to obtain it through conscious effort. It is not unlike the dilemma "don't think about polka-dotted elephants." The more that conscious effort is applied, the less able the unconscious functions are to be maximally effective. The same thing goes for new ideas: when one is trying consciously to apply a new method, it tends not to work out very well. This ties in with the need to "learn it, then forget it."

The peak performance becomes more common as one progresses. The occurrence of one of these "magic moments" is acknowledged by the community of top players as a sort of initiation into a special group. Eventually, the states associated with peak performance are looked for as a starting point when a group of masters gets together to play. [Clarification: there are different levels of "magic moments". One can have one when picking up an instrument for the first time. This experience is different, however, from the feeling of playing an instrument which one knows well,

and with which communication of ideas and emotions is possible.)

After the Show

After such a performance, a performer will often experience a continuation of the altered mental state, sometimes referred to as a 'buzz' which lasts for some time. Depending on the intensity and duration of the performance, however, a 'blank' or 'drained' sort of feeling may occur. The methods of coping with this phenomenon are diverse, and no generalization can be made. Some like it to continue, and others engage in various activities to try to 'come down'. Yet others try to maintain it for as long as possible, so long as it does not interfere with the next days' performance (if there is one).

[Clarification: for many players, the feeling only goes away the next day if one is obliged to play with lower-level players and so be forced to compensate, or if playing a more constrictive form of music. Some carryover can happen even in those situations, however.]

Psychological Phenomena and Drugs

The euphoria associated with optimal performance was compared several times to the use of psychoactive drugs. Those musicians who have never experienced a drug-induced state feel that such a state must be similar to the 'high' associated with peak performances, because of the addictive nature of flow. While describing one of these special

moments, one interviewee observed that "I just lit up...I was caught. Once the bug is in a musician, the guy is doomed!"

When the topic of drugs came up, several interviewees asserted in some cases a beer or two could help calm jangled nerves before a show. However, it was noted that strict limitations must be observed because of the known effects of such drugs on physical performance. Top players tend to avoid excessive drugs and alcohol, especially prior to a show, since they value the quality of the music over the personal feelings of ecstasy. The hangovers associated with alcohol in particular are recognized as a waste of time and energy that would be better put into practice time. This recognition reflects a mature set of priorities.

{Clarification: hallucinogenic drugs tend to stifle creativity. One has more access to all of one's experiences when straight, and so can be more creative.}

{Clarification: drugs really compromise one's willingness to engage the audience, and engagement is the objective.}

The Human Side

To understand something, as has been pointed out, that thing must correspond with some aspect of our experience. Thus an intense awareness of oneself as a human being can evolve out of the intimate sharing with other musicians and

the audience that occurs in the course of musical and personal development. This awareness is the source of the messages which are communicated, and is what must be drawn upon when inventing music. The best players communicate in a truly universal language which can express the full range of human attributes which lie between the two poles of the ancient Greek symbol of the theatre: the mask of tragedy, and the mask of humor.

In Retrospect

The jazz musician is an artist who possess remarkable technical skills, and has a broad range of experiences. The economics of jazz ensure that not all of these experiences are pleasant. Such experiences heighten the need to release both pleasant and unpleasant feelings. However, all of the personal sacrifices pay off in the end. Levels of technical and psychological skills are reached, at which peak performances begin to occur, and membership in a most remarkable brotherhood of masters -in the Greek sense -is attained. [Clarification: jazz musicians tend to be intense people who live life intensely, and the sacrifices sometimes pay off in the end only if one feels a meaningfulness which arises from fulfilling the original sense of avocation.]

{Clarification: this section focuses too narrowly on the economic and experiential dimension, and would be better combined with *The Human Side*. After all, it is the

human elements which must be accessed and communicated. It is the community surrounding the musician which nurtures the musician, and it is to this community that he or she must connect when performing. Musicians and nonmusicians alike are important, and contribute to development by giving feedback. This ties in to the idea of mentoring expressed above, and along with humility, contributes to the idea of the unity of humankind which is felt when a performer connects. This is especially true in African-descended forms of music (like jazz), all of which come from a tradition of celebrating kinship. The embeddedness of an art form in such a community makes its' expression subject to all the elements which influence that community, including social and political ideas.

Remarkable by its' absence was a comparison of the acquisition of spoken language. When you come from a tradition which acknowledges text and the primacy of the voice, you have a remarkable resource base to draw upon as cornerstones of your music. If you really understand text, then you understand, for instance, the song *Stormy Weather*, because it also comes from a tradition which recognizes the primacy of the voice and so, text. You a lot more to relate to emotionally. There is an ability to translate matters of text into matters of music.}

Secondary Analysis: Tabulation of Collaborators'

Comments on the Model

This subsection presents a brief summary of the frequency of clarification and disagreements made by the research collaborators with respect to the model presented above.

Nineteen clarifications and one disagreement were made by the previously interviewed collaborators. Thirty-one clarifications and four disagreements were made by the uninterviewed collaborators. No association was apparent using Fisher's Exact Test for small samples ($p = .394$). Thus, no bias on the part of the previously interviewed collaborators is apparent.

Discussion of Secondary Analyses

This discussion examines the model and the critical responses to it made by the research collaborators. The ultimate validity of this *argumentum ad vericundum* is affirmed with replies to the remaining two critical questions propounded by Walton (1986).

The Critical Questions

We may now return to two questions that were left hanging above:

4. Are each expert's statements consistent with the statements of the other experts? The model was built upon recurring themes in the interview transcripts. Thus some measure of consistency was obviously attained. The best

response to this question, however, lies in the validation of the model by the research collaborators. The extent of the disagreements was very narrow, and no clarification changed any essential feature of the model. As well, the research collaborators did not differ in extent of clarification and disagreement as a function of whether or not they had previously been interviewed. Thus Walton's Critical Question 4 has been answered in the affirmative.

5. Are each expert's statements consistent with known evidence in the field?

The currents of thought which ran through the preliminary review of the literature flow through the grounded model as well. Olin's (1977a,b) view of imagery came out in the model, particularly with reference to tone quality and an expressible musical idea. Gallwey's Self 1 and Self 2 model was stated in the 'bad voices/ good voices' portion. The 'time in motion study' is a prime example of the value of systematic use of imagery in practice, just as Reubart (1985, p.211) suggests. Wagner's (1978, p.19) suggestion that concentration training helps by "leaving scant room for self-indulgent thought" is in harmony with the emphasis on proper motives and good focus, as well as Blankenship's (1970) observations on narcissism.

Reubart's discussion of focusing attention on musical values in practice and performance is summed up neatly by

Parker's comment "Learn all that stuff, then forget it," the interpretations of which were entirely consistent with it.

Wagner's (1978) discussion of attitudes and the value of unsuccessful performances as sources of information also came out in the model, as did Reubart's (1985) observation about playing material slowly at first, then building speed. Another aspect of planning that came out was the need to focus on the whole sound.

Also important were pre-performance procedures which facilitated obtaining an 'ideal state'. Jazz musicians seem to differ from athletes in that, except for purely mechanical routines, no set pattern is generally established. Rather, a repertoire of methods for getting comfortable is developed, and drawn upon. The ideal state is one where distractions are easily blocked, and strategies which have been developed over much time are easily invoked to facilitate concentration.

Interestingly, self-talk is not common or elaborate. If the bad voice/good voice distinction holds, then this makes sense. Even self-talk gets in the way of the music, and cannot, when it is used, be an admonishment or complex idea. The complexity of the ideas in the music demands too much attention to permit extensive thought about anything else. Thus, this method must be used sparingly.

Self-talk differs from the sense of humor in an important way. The sense of humor is really a way of

looking at things, rather than a way of thinking about things. This implies that it is tied in an immediate way to perceptions, serving as a filter of sorts which prevents the need for self-talk from arising.

Thus, while self-talk may not be an optimal strategy for the jazz musician, most of the approaches which athletes take to their sports are used by elite performers. Development of imagery and the ability to concentrate rather intensely on the present moment without distraction are important, and quality practice is the best way to develop these skills.

While some difference of opinion exists as to the usefulness of extended practice, the need for these skills is not in question. However, a full psychology of jazz performance must go beyond the individual, and look at the social dimensions.

GENERAL DISCUSSION

Success in jazz is not defined by the dollars to be earned playing. It is less clear-cut than Olympic gold medals. It is rather a state in which one has gained the respect of senior members of a community. The selection process of this study in fact assumes this. At a deeper level, satisfaction with oneself and one's progress is tied in with the ability to assess accurately how well-played a piece is, and to play up to one's own high standards on a

regular basis. This latter definition of success is linked to the first in that the respect of the community is an outgrowth of these skills.

The modified model presented above suggests several things. First, that some personality factors may be related to the development of the mental factors with which we are concerned. Shyness implies a lack of confidence. A lack of confidence can lead to the 'bad voices', or the 'critic' entering an otherwise clear cognitive space and upsetting the fine balance required for skilled performance. Processes which counteract this effect must evolve. Teachers can help with this by giving encouragement and accurate feedback, and by being sensitive to what is required psychologically by the student.

As well, optimal performance appears to be tied very closely to mental factors, which are themselves linked to broader contextual elements. Mental factors include the abilities of imagining things which are not present, concentrating intensely, and becoming deeply absorbed in an activity. While the evolution of these factors is linked closely to ecological factors, it is the development of imagery and concentration skills via high-quality preparation which precedes the experience of peak performance. The present work indicates that the well-documented value of these elements for athletes does indeed generalize to the area of music.

Nevertheless, the linkage of mental factors to ecological ones indicates that a more systemic approach to understanding the phenomenon of excellence in performance is needed.

Breaking New Ground

A collection of quotes culled from various works on jazz musicians is presented in Appendix D, suggesting that some of the basic findings of this study are ideas which have been present for some time. However, an explicitly psychological approach to that material which nevertheless employs the interview method has been lacking. Mortgaged understanding, as described above, adds rigour to the method of the psychologist. Thus new ground has been broken in both the jazz field as well as the area of psychological methodology.

Study of ecological elements has traditionally been the domain of anthropologists and sociologists. However, the findings of the present study indicate that the psychological - and ultimately, motor - effects of socially-defined attitudes and values are quite real.

The musician is very much a part of a system both onstage and off: communication only takes place between at least two people. Feedback about progress is possible only in a social context, because it is only others who can validate the message; who can affirm that it has been received.

We may recall here a few more words from Gracian: "The fool fails by behaving without regard to his condition, position, origin, or friendships." In modern terms, we risk failure if we attempt to study something without regard for the system in which it is embedded.

The jazz musician onstage must be open to new ideas and inspirations from other players. Focusing on ideas requires that technical problems do not occupy the attentional focus. In a sense, then the musician is a partially open system. Validation from the audience must be allowed in, but distractions from the crowd, from other less able players, and from one's Self 2, or Critic, must be filtered out. A sense of humor is part of that filter.

At another level, however, the social system is a key part of development. The present findings can be linked to current psychological research which acknowledges this element.

The Ties to Social Ecological Research

The study of attitudes as determinants of behavior is as old as psychology itself. The social cognitive revolution of the late 1960s brought this into sharper focus, as we began to value mental processes once again. This, coupled with the call for ecologically valid methods (Brunswik, 1956; Harre, Clarke and DeCarlo, 1985) aided in the evolution of an emphasis on this type of validity, even in the traditionalist area of psychometrics (Little, 1983).

As the present study evolved, ideas current in the social ecological paradigm started becoming visible in the data. Though they were not recognized as such at the time, they became topics for the ever-expanding interviews.

As the study passed through the transcription phase, these ideas became linked to the social ecology paradigm, partly as a result of concurrent research in which I was engaged. This permitted more coherent interpretation of the ecological elements which bear upon mental factors. The research programme of Little (see Little, 1983, 1987) provides five convenient factors which relate to much of what was said: Meaning, Structure, Community, Stress, and Efficacy. These five factors reflect key components of the ways in which we construe the projects that we engage in.

Meaning

To the jazz musician, the meaning of the music is paramount. If the values of the jazz community at large are not adopted, then performance can suffer. Meaning must infuse every note in a solo, and strong intentions facilitate concentration. In the face of often small economic remuneration, a feeling of fulfillment of one's avocation is a prime motivator.

For practice purposes, it has been seen that it is easier to engage in monotonous practice so long as the usefulness of the material is kept in mind. Ultimately, the intensity of the peak performances feeds into the

meaningfulness, particularly when one feels 'at one' with the environment and - especially - the audience and other musicians.

Structure

In *The Priority Project*, we see how the other activities of the musician are sacrificed in order to facilitate musical development. Time management skills involve the structuring of projects to obtain one's goals. "Negative impact" describes the effect of a major project suppressing minor projects, and "positive impact" refers to the projects which directly or indirectly facilitate others. We have seen in the employment patterns of the interviewees such facilitation: music-related jobs.

Community

The clarifications at the end of the model bring home the importance of the sense of community. This came out somewhat in *"The Brotherhood"*, but is really highlighted by a recognition of the community-based learning processes. The community at large is an important factor, determining the strength of the market for jazz, and hence the availability of work.

Community support and feedback from musicians and non-musicians alike is vital for the development of the budding jazz musician. The mentoring which occurs within the sub-community of musicians provides important technical feedback, and imparts the attitudes and values which are

vital in that moment onstage when a note is produced. Few jobs are more visible to others than performing music, and yet even fewer have such a large amount of 'invisible' time (alone practicing 'in the woodshed') put into them. "Paying your dues" practicing is part of being a visible member of an ethereal community of woodshedders. For the jazz musician, individuality and spontaneity are what really counts, and the ability to express oneself in a universal language more than makes up for the time spent alone. Musical identity is very much tied to personal identity, and identity can only be defined with reference to a community.

Stress

Well thought-out stress management contributes to optimal performance. Surprises in rehearsal facilitate the development of strategies for coping with the unexpected. Having a sense of humor, and working out anger over sound men, poor players, and rude audience members contributes to maintenance of the ideal state for performing. Quality practice and the confidence which flows from it help to cope with novel, stressful situations as well.

Efficacy

This dimension amounts to plain old confidence. If one feels that one's skills are up to a challenge, then it will not (as noted above) be difficult to remain calm. However,

the mastery dimension of the model puts a new light on it, and can be tied to related research.

Using *Personal Projects Dimensions* (Little, 1983), Gee (1991) found that when highly absorbed students feel that a challenge is

- a) not too great,
- b) not too small, and
- c) just within their ability to conquer it,

optimal academic performance can be predicted with a high degree of accuracy. This relates to the concept of mastery as defined in *Mastery and the Sense of Challenge*. The master has deep absorption in his subject. His or her forward-looking perspective and willingness to take on one challenge at a time keeps him or her from being overwhelmed by the vast number of things remaining to be learned. This perspective does not look at things already mastered, thus keeping small challenges out of focus. And lastly, being in a position of having conquered many challenges gives a feeling of confidence about surmounting the next.

Implications for Other Research

The preceding five dimensions form content categories which may be used in structuring future interview studies. These studies could explore the ecological bases of mental factors in other types of performance, both musical and athletic. As well, there is no theoretical reason why Little's approach in its original quantitative manifestation

could not be successfully combined with qualitative methods. The convergent validity of such a study would bode well for a psychology which pays our epistemological debts to those whom we study, while remaining theoretically viable.

CONCLUSIONS

It is time to step back and look at where we are in our methodology, in our understanding of top-flight jazz performance, and what lies ahead.

Where We Stand

The present study has served several key functions. For one, methodological refinements to qualitative data collection were explored. These refinements enhance the validity and generalizability of conclusions drawn from data gathered using a grounded-theory approach. In addition, an in-depth understanding of the psychology of excellence in jazz performance has been achieved, and the results link closely with findings from the area of social ecology.

Future Directions

Using a sounder methodology, we may be more certain of the conclusions that

- a) many of the findings from the sport psychology area may be exported to the area of music,
- b) a full understanding of mental factors in jazz performance must ultimately examine the systemic factors in which the musician's development occurs, and

c) extrapolating from a) and b), more systemic research is needed in the sport psychology field, to determine the extent to which such outside elements affect the developing athlete.

Future research in these areas must adopt ecologically valid procedures. The present methodology is one such procedure. Ultimately, however, science requires a convergence of findings. As Kulpe (1921) has noted, "All these methods, the subjective and the objective, can be best employed in combination, each serving to supplement and check the others," (p. 15).

The close ties of the present findings to to social ecological results indicates that the two approaches are complementary. Further exploration of this possibility with different areas of performance - athletic, artistic and otherwise - promises rich rewards through the enhancement of many human endeavours.

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APPENDIX A

Consent Form

Pre-interview Consent:

I, _____, agree to participate in the study *Mental Factors in Jazz Performance*. I understand that I will be asked questions about my thoughts and feelings about my music, and about the mental techniques that I have developed to improve my performance. I understand that I may refuse to answer any question, and that the contents of this interview will be held in strict confidentiality, using my name and direct quotes only if I agree to it. The interviewer has explained to me that this information is being gathered only for non-profit educational purposes, and I consent to the use of this interview material by the interviewer for such purposes in the future.

Signed,

Post-interview Addenda:

I agree to the use of direct quotes, so long as my name is kept confidential. (Initial) _____

I agree to the use of direct quotes with the use of my name. (Initial) _____

APPENDIX B

Original Interview Guide

Stage 1: Introduce Study

Psychologists have something of a reputation for studying what is wrong with people. This study, however, is aimed at finding out what's right with people. That is to say, we want to know how top musicians like yourself excel at what you do. We hope to find out what kind of psychological techniques have been developed by pros to enable them to play at their best.

Stage 2: Describe a Peak Performance

Why don't we start by having you recall the best performance you've ever given - one where you and the audience were really moved. Could you describe that experience for me?

- prompts during lulls - was it recent/ a long time ago?
- was it an *important* show for you, career-wise?
 - were kind of performance were the other members of the group having?
 - what was the communication like on stage that night/day?
 - what did you do just before the show?
 - what were you thinking about most or focusing on during the show?
 - how would you describe your moods during the different parts of that show?
 - how would you describe the music you played?
 - how did the audience respond, or did you notice?
 - how did you feel and what did you do after that performance?

Stage 3: The Worst Performance

Next, could you please recall the worst performance you've ever given. Could you describe that experience for me?

- prompts during lulls - was it recent/ a long time ago?
- was it an *important* show for you, career-wise?
 - were kind of performance were the other members of the group having?
 - what was the communication like on stage that night/day?
 - what did you do just before the show?
 - what were you thinking about most or focusing on during the show?
 - how would you describe your moods during the different parts of that show?
 - how would you describe the music you played?
 - how did the audience respond, or did you notice?
 - how did you feel and what did you do after that performance?

Stage 4: Comparison

The next question is a little trickier. Could you please compare the two performances you've just described and tell me what you think the important differences were between your best and your worst performances are?

***** no prompts *****

Stage 5: Pre-performance Routines

Next, I'd like to ask about some of the rehearsal and pre-show warm-ups techniques that you have developed. Do you do anything or think about anything during or between practices that you find helps your performance?

(if interviewee describes mental imagery techniques or other cognitions then continue, else go to attentional focus questions).

Stage 6: Mental Representation

Does it help you to think about or somehow imagine the music that you are going to perform?

How real do the images seem to you when you are doing this?

Have you worked systematically on this skill or has it always been there for you?

Do you do this regularly, eg., to learn to practice, between practices, or before the show?

Can you connect this to the best and worst performances that you've told me about?

(if Attentional Focus has been done, go to Stage 9)

Stage 6: Attentional Focus

Let's turn to the way you get and keep yourself in the right state to perform. Would you say that you have particular techniques that help you to be in the right state when you practice, rehearse and perform?

Would you describe your ability to get to that state as not very good, good, above-average or excellent?

Has your ability to get into that state improved over the years since you first started playing, and how important would you say this ability is to good performances?

Would you say the ideal state for performance involves really letting go?

What do you try to concentrate on when playing a show?

What kind of things can get you off track, or out of the groove, and how do you get back into the performance?

What do you find yourself concentrating on during your best performances?

(if mental representation has not been done, go to Stage 5, else continue)

Stage 8: Other

We've talked about mental images and focusing your attention. Are there any other things that you or others do which affect your performance?

Stage 9: Addenda

If my questions, or the way I asked them missed the point or got you off track, do you have anything else to add or change that you think is important?

(note comments)

We know that words can't describe everything, but is what you have told me over the past (time in minutes) a pretty accurate description of the mental side of how you perform?

Do you have any questions for me about the research that you would like answered?

(reply to queries, if any)

Stage 10: Close

Thank you very much for this information. I will be transcribing this interview, among a dozen or so others, and will send you a typed copy of the transcript as soon as possible, hopefully in the next couple of months. I'll be including a letter which will ask you if you want to add, change or drop anything. The letter will also ask you how well, in hindsight, the statements you made reflect how you really think. A couple of weeks after the transcript is mailed, I'll give you a phone call so I can document any changes you'd like to make. Could I get a forwarding address and a couple of phone numbers where I could reach you for the next few months?

(get information)

Thanks again for your help (farewell).

Revisions to Form of Guide

The difficulty of obtaining information with the first guide led to the evolution of a better approach. This approach suited the interview style of the musicians, which appeared to be rather improvisational in manner. Ideas would come up, be tied to another idea, and then occur as a theme, making it difficult to stick to a highly structured form. Thus the following modifications were made:

Introduction: as before

First topic: I'd like you to think of three musicians whose work you know personally. Pick one whom you consider to be truly an outstanding player, and two who still have a way to go in their development. Tell me what you think are the key differences between the top player and the other two.

Subsequent topics: Non-leading probes were used to explore each of the dimensions which had been defined to that point. (A full list of these dimensions is provided in part II of Appendix D.) The core topics were those of the original guide, but the sequence was allowed to vary. Blank sheets of paper with areas marked off for each of the dimensions in use at the time were used to make notes about the relevant discussion, and to ensure that all areas were covered.

APPENDIX C

Follow-up Guide

Targets: 1) document changes to typed transcript
2) ensure that an accurate and complete
representation of the interviewees'
views had been obtained.
Means: mail and telephone

Procedure: The copy-edited typed transcripts were mailed with
a cover letter which asked the interviewees to pencil in any
changes which they felt were necessary to ensure an accurate
and complete representation of their views had been obtained.
A self-addressed stamped envelope was enclosed with the
document so it could be easily returned. Interviewees whose
documents were not returned were contacted by telephone and
asked if any changes were to be made. These changes were
noted by the researcher during the telephone conversation.

APPENDIX D

CODING MANUALS FOR PEAK PERFORMANCE

AND MENTAL FACTORS

Coding Manual

This is the coding manual for determining which interviewees have had genuine peak performances and for identifying mental factors involved in these experiences. The elements of peak performance (Part I) are those described by Privette (1986, pp. 238-240), and they fall into the nine factors described in that work. The elements are arrayed below in descending order of importance as determined by the factor loadings. The mental factors (Part II) are based primarily on Reubart's (1985) model of consciousness in musical performance. Following the description of the dimensions are a number of sample statements culled from biographical works on jazz musicians which have been coded according to the criteria of this manual. In addition, quotes drawn from the interviews conducted as part of this study are included in the final section of this appendix.

Part I: Peak Performances

Dimension 1: Clear Process

element

- inner process clear
- felt all together
- awareness of power
- clear focus
- strong sense of self
- free from outer restrictions
- intentions strong
- absorption
- spontaneity

Dimension 2: Significance
element

- great meaning
- senses and thoughts overwhelmed
- significance
- personal value
- experience was beyond words
- personal expression/understanding
- intensity
- spiritual or mystic quality
- personal responsibility

Dimension 3: Fun
element

- event was playful (in the sense of a lighthearted and humorous mood)
- event was fun

Dimension 4: Other People
element

- enjoyed other persons
- encounter with person/thing
- interaction (ie., felt a connection with others)
- others influenced outcome
- contribution of others

Dimension 5: Altered States
element

- loss of time/ space
- unity/fusion of self/environment
- brevity

Dimension 6: Feeling (Emotion)

element

- feelings afterward
- feelings
- joy, fulfillment
- performance
- intrinsic reward

Dimension 7: Passivity

element

- perceptual, not behavioral
- receptive and passive
- differences were resolved

Dimension 8: Unpreparedness

element

- spontaneous
- actions/thoughts new, not habitual
- event was nonmotivated

Dimension 9: Functional Goal Drive

element

- rules, motivation and goals

- built into situation
- felt need to continue to

- completion
- practiced
- involved action/behavior
- had had prior related involvement
- a process seemed to 'click on'

Coding

Based on item scores for the Fun dimension, Privette (1986) found that fun is not a necessary component of peak performance. Also, among the Clear Process items, freedom from outer restrictions was not scored differently for peak performance than for an average event. The same is true for "enjoyed other persons", "contribution of others", "loss of time/space", "brevity", and "had prior related involvement". Along the Passivity dimension, "receptive and passive" scored (on average) lower than for an average event. "perceptual, not behavioral" and "differences were resolved" did not differ from average events for peak performance. For unpreparedness, only "actions/thoughts new, not habitual" was more typical of peak performance. For these reasons, occurrence of these codings was not taken as support for the validity of the peak experiences described.

Privette (1986) describes peak performance as being most commonly associated with

clear process and sense of power, followed by clear focus, sense of self, absorption, intention,, and spontaneity...a need for closure and the experience of a 'click'...[it] is seen as personally significant, and other people are viewed primarily as interactive.
(p. 241)

However,

Loss of self, passivity, playfulness, and lack of preparation are denied in peak performance,"
(p. 241).

Thus, musicians' descriptions of peak performances which are coded as containing elements named in at least three different dimensions (which have not been excluded for the reasons outlined above) were deemed to have been validated. However, because a specific subpopulation has been targeted in this study, the phenomenological dimensions of peak performance may differ somewhat from the norm in detail. For example, loss of self and playfulness were present in many of the descriptions elicited. The presence of such elements should not be construed in such a way as to refute the validity of the descriptions, but rather, as an indication that peak performance may be qualitatively unique for subgroups such as jazz musicians.

Part II: Mental Factors

Quotations concerning the mental factors employed by the interviewees were grouped under the following headings as part of the secondary content analysis. The first five dimensions comprise the original areas which were to be explored. All subsequent dimensions arose out of the additional information which had to be sorted, due to the grounded approach that was adopted.

Dimensions

Dimension 1: Mental Imagery

-include statements describing use of mental imagery as a practice/ rehearsal or performance technique, as well as remarks about imagery training.

Dimension 2: Attentional Focus

-include statements about degree and object(s) of attentional focus/ state of mind in practice/ rehearsal and performance, as well as remarks about attentional focus training (ie., through Zen, etc.).

Dimension 3: Recovery from Distraction

-include statements about techniques used to recover lost attention/concentration in any musical situation.

Dimension 4: Pre-performance Routines

-include statements concerning psyching-up rituals, as well as other less obviously psychological rituals which help in attaining an ideal performance state of mind.

Dimension 5: Quality of Practice

-include statements about focusing on musical values,
slowing tempo so as not to rehearse mistakes,
structuring practice time

Dimension 6: Early Experience

-include statements concerning perceptions of the
relationship of early experience to musical progress.

Dimension 7: Teachers and Role Models

-include statements about the impact of senior
musicians on development.

Dimension 8: Status among Other Projects

-include statements about how music fits in with the
other areas of life.

Dimension 9: Discipline

-include statements concerning discipline

Dimension 10: Sense of Coherence

-include statements concerning unity of thought in
musical expression.

Dimension 11: Community

-include statements which refer to broader
social elements of the jazz community and
society at large, and their impact upon musical
development.

Dimension 12: Ethics and Values

-include statements regarding the importance of ethics
and values for musical development.

Dimension 13: Sense of humor

-worth distinguishing from dimension 12 because of the uniqueness of the individual perspective implied.

Dimension 14: Maturity

-include references to the sum of long-term developments which cannot happen overnight.

Dimension 15: Mastery

-include statements which allude to the Greek concept of master, as developed in Holland (1980)

Dimension 16: Drug use

-include statements about drug use, but not statements comparing the effects of peak performance to drug effects.

Examples from the Literature:

Clear process:

"The object of the game is to take the inner pieces that I have and fit them with what's going on outside, so that it makes a whole or a unity."
(Eric Kloss, quoted in Knauss, 1977, p. 81)

Other people:

"If the musicians are good - and they have to be for me to feel good - I'm going to do my best for the audience; so it's really a combination of musicians, myself and audience..." (Carmen McRae, quoted in Taylor, 1982, p. 136)

Significance:

"Sometimes when I'm playing hard and really involved in a deep solo, at the end of it - and this happens a lot - the people are clapping and I'm thinking about something else. I'm thinking about God. I think that music is an expression of what you have inside and when you give so much in your music, and if you stretch to your fullest you have come to God." (Sonny Greenwich, quoted in Miller, 1982, pp. 197-198)

Altered State:

"This one time, it was the most incredible thing, I must have been singing to myself, and all of a sudden I looked up and I'm the only one playing!...I so closed myself out that I didn't hear twenty-two other girls stop playing...[the bandleader] said 'What happened?' I said I do not know. I was out of it, that's all.'" (Fagie Liebman, quoted in Placksin, 1985, p. 158)

Emotion

"My love life, my marriage, was being stormy as hell just then. I felt I was working my heart out and getting no happiness..." "Stormy Weather" was the perfect expression of my mood, and I found release in singing it each evening." (Ethel Waters, quoted in Placksin, 1985)

Functional Goal Drive:

"I was on a record date with [Erroll Garner] when he said something very important. The red light went on and he started to play. the red light went off and he kept on playing. Everybody waved to him from the booth, and when he eventually finished he they said, 'Erroll, we turned off the light. You were supposed to stop.' He looked at them and said, 'I couldn't stop. I wanted to find out how it would come out...I'm sure that's how it was with the great musicians...The sat down and improvised to the point of no return. I'm sure that Duke Ellington had the same feeling on certain occasions. (Nat Pierce, quoted in Dance, 1980, p. 241)

Mental Imagery

"I developed by learning how to practice the instrument. I would be practicing before I even saw the bass, because my mind would be on it. I would wipe everything out of my mind except the instrument. I almost felt as if I were playing even when I was walking down the street...I could visualize it on the instrument. When I got to the instrument it was just a matter of applying the physical to the mental...It's very difficult to play the bass in tune, because you've got so much space between notes. You have to hear it and think about measurement before you even play a note. So if you have all that in your head, you've got a better chance of playing in tune." (Richard Davis, quoted in Taylor, 1982, p. 210)

Attentional Focus

"I tore up one number...I was playing that one for Lorraine and in a sense, for Mario. It made no difference that my hand was hurting, still sore as hell from where I'd cut it in a fight a couple of nights before." (Dizzy Gillespie, quoted in Gillespie & Fraser, 1979, p. 72)

Pre-performance Routines

"At each concert, each television show, each performance, I psych out the situation. Every room is different, the people in it are different, their mood is different, the time of day is different; all that goes through me before I perform...Sometimes I go to the concert hall earlier than usual, and I've done things like count the seats, try to get into the mood of the place." (Nina Simone, quoted in Taylor, 1982, p. 152)

Drugs:

"I haven't had a drink in about twelve years...I swim as much as possible at home and I exercise - do sitting up exercises. I actually just really devote myself all the time to the horn. You have to: it's like an athlete being in training." (Jimmy McPartland, quoted in Knauss, 1977, p. 99)

Further examples of categories of Peak Performance and
Mental Factors, Drawn from the Interview Data.

Clear process

...you're not playing math when you're playing music, then you're playing people. You don't have time to be measuring numbers: what fraction, what mathematical figure that you might be depicting. The math is going to automatically happen any time any human being carries out any action at all there is some form of math involved, from the standpoint of physics or whatever. So we don't want to have to be worrying about that. The main thing is that you're holding together.

-Billy Robinson

One time on a coffee break [a fellow musician] said "You make the hair stand up on the back of my neck. There's something religious about what you do. I think that was probably the highest compliment I've ever had in my life. I don't belong to any denomination and I'm not sure if there's a God, but I'm aware that I have a spiritual component like everybody else, and...yeah (looking out across the river).

-Hugh O'Connor

Other People:

A really good performance happens when the group is right, and the other musicians are all observing your nuances and dynamics. For example, it just doesn't do if your diminuendo is out there against all the others crescendoing! That kind of night is one where you can pull off everything you want to play and then even step outside of that. You know you can climb out to the end of the branch and come back in. Empathy - empathy of everybody is what really contributes to a great performance.

-anonymous

Altered State:

When I'm soloing, I sort of get out on a cloud. Sometimes I'll close my eyes, because it helps me to focus on feeds from the other guys. It helps me be more aware of the trio as opposed to the audience.

-anonymous

Clear Process/ Altered State/ Functional Goal Drive/ Emotion

It's like I was up and over myself, looking down at myself play, and the most fantastic, phenomenal ideas were coming out. It didn't matter what I thought, the execution was there. And then it's like I got back into myself, and the tears started to roll down the side of my face. It was kind of frightening, but it didn't scare me. I didn't know how to control it. And it was like I got out of control. I sat back and consciously pulled my hands off the keys, and I said "I can't, I just can't anymore." I just sat there and cried, and they kept playing....the bass player said "Are you OK?" I said "Yeah." And he laughed and I laughed, and I said "Man, that's outta sight!" And unfortunately for me, as far as I'm personally concerned, the rest of the performance that night, for the next two sets just went phhhht!

-Wray Downes

Imagery:

So I just try to stay there and ventilate...let it flow out. It's sort of a meditative state, and you hold it together, it comes out...just play what you hear and draw on it right quick. It's coming out, but you hear it even before it comes out, in your head and in your feelings also.

-Billy Robinson

The day of a gig, say, when I'm taking a shower, I'll do a form of meditation. Almost always, but certainly before an important gig. Sort of a creative visualization thing. That's what I mean by 'psych myself up'. I tell myself that if I visualize myself where I'm going to be playing, or visualize myself playing well, doing the things I know I have to do to do well, this is an important part of the way I prepare for a gig. I do that for a lot of things in life, and for music... that's just my approach to doing things in general.

-Art Katona

Also, at school, we had choirs, but we never sang jazz; we always sang folk songs - French folk songs, which are kind of pretty but, again, don't make use of the two and four strong beats. So we have to develop that and the best way is to be aware that we have to develop this triplet feeling and start feeling it throughout our whole body. Once you achieve that, then you're in business.

-Rene Lavoie

Distractions:

In the case of a really poor performance, there are distractions, things that throw you off; that break your concentration. In general, you'll get a better performance in a concert setting than in a club, because there's less extraneous noise. The people are there to hear you, and are more respectful. Playing a noisy club can be disheartening, especially if the acoustics are bad.

-Dave Hildinger

Quality Practice:

...I've had moments where I've sat down at the piano at home and everything is just working. To most people I was just practicing, but what I was really doing was making music, and that's the goal that I strive for every time I do it. Sometimes it works, sometimes it doesn't.

-anonymous

Early Experience

Ever since I can remember, that's (ie., listening to music) all I did. I was very much a loner, and I find a lot of musicians tend to be very insecure people. A lot of the good ones tend to be very shy and insecure. I'm thinking especially of myself. I got solace from it...what gave me pleasure and took away the sadness was listening to music. So I think...whenever you want to get away or escape, you listen to music.

-Laurie Nelson

Teachers:

... you learn how to practise. That's where a teacher comes in handy. A good teacher can save you a lot of time. That's what a teacher does, he saves you time. You can learn it by yourself, but it'll take a long time, because it's all trial and error. A teacher saves you the time because he's done it already. A poor teacher will almost take you as long as if you were learning it yourself, because they give you so much material but so much of it is superfluous. A good teacher shows you how and what to practise. That's why musicians in big cities do better than musicians in small places; for the most part there's a really big pool of good teachers to choose from.

-Pete Magadini

Project Status

You want to play jazz, you've gotta have a big heart. Forget about everything else, forget about the money...it might come. But if it don't come, just say, "well, fuck it"....pardon my language....I never made a living playing jazz until I was fifty-four years old. Four kids to raise, and I sold cars in Montreal. I sold cars and played everywhere I could get a chance to play for nothing. I never made any money playing jazz. It's just since I've been at Biddle's that I've considered that I make a living at it. And I didn't get too rich at it here.

-Charlie Biddle

Coherence

The best players don't play in fragments; their message has a feeling of wholeness, of unity...there's a feeling of sentence and paragraph, direction and denouement; literary terms seem to apply here. It's something I try to have happen. I'm rarely extremely pleased with something that I do, but I know a lot of very fine players who have the same feeling, so I take comfort in that. I like the word "striving", and perfectionism is a part of it.

-Hugh O'Connor

I know that good musicians have one thing in common. It's a sort of brotherhood in that you realize that we've all spent hours and hours and hours and hours alone in a room.

-Art Katona

Values:

You have been *deprived* of something. We're all victims of our environments. More victims than products. And because of that fact, that's what creates this urgency. And And besides that urgency, there is a tenaciousness that other people don't have. It's a sheer....pure stupidity, but on such a marvellous level. I mean, you've gotta be *dumb* to be a composer. Your whole sense of values has to be cockeyed. You can't go to the bank and borrow some money. They won't give it to you. You won't own property, because you never got the thing in the first place.

-Vic Vogel

Sense of Humor:

...one of the things that really helps me to relax onstage

is when I try to just enjoy myself and not take it too seriously. We're getting back to *balance* again: when you take something not at all seriously, it won't be very good. If you take something too seriously, that's not good either, but I find that psychologically, if I'm onstage.....well, last night for example. There were these two women there from out-of-town. I just looked at one of them and crossed my eyes and made this face, and he

started cracking up. I started laughing too, and it was like, I probably did it more for myself just so I could laugh and loosen up. I think that having a sense of humor on and off the stage helps, and I learned that probably mostly from Dizzy Gillespie. It's not just for mistakes, but [a sense of humor] definitely would help, because if you're very serious about everything you do and you're a perfectionist, you will focus too much on it. "It's gone man, it's a mistake: so what? Who cares? Laugh it off," but if you're too serious, you'll say "Oh! I made a mistake!" and meanwhile the music's moving on and your mind is in the past on that mistake.

-anonymous

Maturity:

You always want to show how good you can play, how fast you can play, how good you are. And that's not music. The technique is just a tool. You should use it as required, but not make it a focus. "Look at my chops. I've got great chops!" Some friends are there, some people you want to impress. But some maturity has to go in there, with the years. Over the years, you stop doing that. Miles Davis only plays three notes, but they sound good. You might be mature at 20, but it's rare. You have to little space, and you have to hear yourself play, and be tough. You know what you're good at, you know what you're not good at.

-Michel Donato

Values:

I try to be simple in what I do and to play my role....I've got the word for that! Try to be honest. The honesty is the best. Period. That's solved that!

-Michel Donato

Mastery:

(Do you practice in all different keys?) Not anymore. But you have to do that (as part of development). You have to swallow your instrument or it becomes your enemy, and you're frightened of it. You have to kick it, and show it who's boss. It's like sitting on a horse. You have to master it, and the bad part of that is that you never do master it. But you do attain this level and you keep going, and you say, "Tomorrow, I'm going to whip the crap out of it and chew it up and make it bend!"

-Vic Vogel

Drugs:

I like to relax. I like to have a couple of beers before the show if my nerves are really bad. If you're nervous, then everything goes against you. You can't breathe, your throat tightens up, and everything goes wrong. The pitch goes, everthing goes sharp, and it's just a vicious circle. Things start to sound bad, so you get more nervous and it compounds itself.... Not to the point of collapse, or anything.....drinking sort of gets in the way after a while. If you have too much to drink you lose your coordination, and....there's a point which, if you cross it, you can still play in tune, but forget about dexterity. But it helps to be relaxed in that you're not worried about things.

-anonymous

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