

## On Human Capability

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... all he remembered of those jobs was that the men around him had never seemed to know what to do, while he had always known.<sup>1</sup> — Ayn Rand (1957, 30)

### Introduction

This paper compares work on the distribution of individual abilities by two writers reviled for their elitism: Ayn Rand and Elliott Jaques. Rand was a novelist philosopher who made excursions into psychology. Jaques is a psychoanalyst and researcher, turned management theorist and philosopher.

Rand created visions of the future. Jaques has concerned himself primarily with how such visions are realized. Rand appeals to those in search of a mission. Jaques appeals to those in search of a means to complete a mission. Rand insists on the moral imperative of a full use of rationality and logic. Jaques expresses the constitutional impulse behind, and the development of, different levels of logic.

Both Jaques and Rand are concerned with the nature of the relationships that exist between adults of varying abilities. For Jaques, these differences create the need for hierarchy in any and all organized social relationships. This idea is the centrepiece of Jaques's work. If individual ability were otherwise distributed, the case he makes for hierarchy would fall away. For Rand, the distribution of abilities plays not a central but a subordinate role. Thus, if all men were equally capable, no harm would befall her philosophy—as she wrote in preparation for *Atlas Shrugged*:

Man, at his highest potentiality, is realized and fulfilled with

each creator himself . . . Whether the creator is alone, or finds only a handful of others like him, or is among the majority of mankind, is of no importance or consequence whatever; numbers have nothing to do with it; he alone or he and a few others like him *are* mankind, in the proper sense of being the proof of what man actually is, man at his best, the essential man, man at his highest possibility. (The *rational* being, who acts according to his nature.) (1997, 425)

Differences in capability did however animate the plot lines of her fiction and the concepts she developed (such as the “sanction of the victim”) to explain social processes. For this reason if for no other, further investigation of Rand’s notion of ability is warranted and recognition of research supporting and illuminating her views is useful. As Sharon Presley neatly puts it: “Philosophy and ethics can be debated, but behavior can be tested” (1999, 257).

This paper considers, in turn, Rand and Jaques’s definition of ability, measure of ability, descriptions of reason and reasoning and finally the causes of differences in individual ability. As definition is logically prior to classification, our first task is to determine Rand’s and Jaques’s definitions of ability.

### Rand’s Definition of Ability

It is problematic that Rand does not define ability. What she offers, in her descriptions of the “men of the mind” and elsewhere, are a variety of clues to ability. Randian ability is similar to other global concepts in psychology, such as General Intelligence. For her, ability is a defining feature of the man, not of the relationship of the man to the exercise of a particular practice, i.e., the ability to do something in particular. Rand’s *men of the mind* are able to do everything they *rationaly* chose to do.

We observe (following Sciabarra 1995) Rand’s organicism in respect of ability. She seeks integration in the explanation of phenomena and if conventional language does not fulfill this criterion, she changes our understanding of the language. Thus,

Rand’s concept of ability combines what would normally constitute analytically distinct domains of cognition, physical prowess, ethics and aesthetics.

The *men of the mind* hold their reasoning mind as primary and their physical and emotional experiences as subordinate. Rand’s heroes are thus *men of ability* in both the full range of human attributes and in their proper ordering (an Aristotelian point). This ordering necessarily follows from Rand’s definition of man as “[a] rational animal” (Rand 1990, 58) whose reason is not automatic, but volitional (*passim*). The choice to employ reason consistently is the axiomatic ethical choice:

A rational process is a moral process. You may make an error at any step of it, with nothing to protect you but your own severity, or you may try to cheat, to fake the evidence and evade the effort of the quest—but if devotion to truth is the hallmark of morality, then there is no greater, nobler, more heroic form of devotion than the act of a man who assumes the responsibility of thinking. Thinking is man’s only basic virtue, from which all the others proceed. (1957, 1017)

In addition to cognitive and ethical domains, her heroes’ abilities include physical co-ordination (with the body rendered as the mind’s instrument). Hence, Francisco can race a powerboat the first time he sits at its controls (93). Rearden and Dagny enjoy a simultaneous orgasm in their first sexual encounter (252), and Roark can dive into water from the top of a cliff (1943, 1).

The question here is whether this is a matter of aesthetic taste or whether Rand was seeking to make a substantive point. We are not the first to note that her heroes share racial and physical characteristics, aesthetic style and personal manner, none of which would conventionally be described in terms of ability, but all of which may have relevance to subsequent discussions.<sup>2</sup>

Though we have no definition of ability in Rand, we have a wide range of illustrations. For Rand, the central domain of human activity

is productive work and the clearest manifestations of ability are found in descriptions of work. These are expressed in three separate, but internally related ways: First, competence in engaging in an existing productive practice (e.g., train driving)<sup>3</sup>; second, the extension of an existing productive practice (e.g., architectural design)<sup>4</sup>; and third, as a key discriminator, the invention of a new productive practice (e.g., Rearden and Galt in *Atlas Shrugged*).

The expression of such abilities is realized in the creation of values. For Rand, a sentence such as "Hank Rearden is an effective industrial metallurgist" relates to the internal goods of metallurgy (i.e., those goods that are constitutive of our understanding of metallurgy—the production and appropriate deployment of metals), rather than to external goods—such as the money or prestige earned from metallurgy. Much less is it defined in relation to the metallurgical skills attributed to another character such as Orren Boyle.

### Jaques's Definition of Capability

As much as Rand's definition is organic, Jaques's is analytic. Capability relates to the specific activity of work: "Capability—the ability of a person to do work" (Jaques and Cason 1994, 149; glossary of terms). There is no suggestion that cognitive prowess is necessarily associated with physical prowess. It is certainly possible to apply Jaques's analysis to ethics and aesthetics (as in Kinston 1990), but this is primarily because they are complex issues to which refined logic may be applied. Jaques does not reject rationality, but being an analyst, unconscious forces have high significance. This is particularly the case in creative work:

Creative work is therefore wholly symbolic, and derives from the deepest layers of the mind unaided by any objective and concrete point of reference. In employment work there is always an external framework to guide and assess the symbolic work; hence symbolic work does not touch so deeply or so completely on unconscious processes. (Jaques 1990, 172)

Jaques was an analyst of a particular persuasion. He was an analyst, mentee and collaborator of Melanie Klein. Jaques takes Klein's position on basic human drivers "as read" (personal communication). It is futile here to attempt to abbreviate Kleinian thought. Klein's specialist terms fill a dictionary (Hinshelwood 1989). Within Klein is the notion that the anxiety generated by confusion creates the impulse to split the world into intelligible units of thought. This splitting may be quite arbitrary and spurious, and always generates some level of ambivalence. Work, for Jaques, is a way of dealing with both confusion and ambivalence: "Work, in short, is . . . the primary plane of reality. It enables the person-in-action to know himself and existence through his shared perceptions of his effects upon other things in accord with his intent" (Jaques 1976, 113).

Jaques's capability can therefore be described as primarily, but not solely cognitive; it entails the ability of an individual to deal effectively with complexities of work. For Jaques, as for Rand, the central domain of specifically human activity, is productive work, which Jaques defines as "the exercise of judgement and discretion in making decisions in carrying out goal directed activities" (Jaques and Cason 1994, 149). Goal directed activity begins "with a feeling of something lacking, something desired" (Jaques 1976, 101). Conscious analysis of the lacking is not implied. The lacking is sensed. Thus, a sense of inferiority may directly motivate strivings for a powerful position without any conscious analysis of the need. The position is imagined as capable of providing for a need, and the goal so imagined then focuses attention. Goals, in general, enter the realm of objective reality by the allocation of target completion times.

Value judgments are involved in the "balancing of pace of work against quality of output [which] is at the heart of the process of work" (103). Thus, feelings, imagination, attention, planning and value judgment all contribute to expression of capability. But over and above these factors is the emotional robustness needed to tolerate anxiety. This view is close to that of Register's (2000) in his recent criticism of Rand: "There are, I have argued, a number of concept-based abilities—perceptual judgment, ready to hand, and know-how—which do not involve words and are thus not accounted

for by Rand's theory" (240).

For Jaques, a central affective feature of intentions is uncertainty. The more remote the end-point the greater the uncertainty of outcome. There is risk associated with any action involving judgment and discretion. By definition, judgment is not involved where all the parameters of a situation are known in advance. When all parameters are known, decisions can be rationally made by calculation alone. A computer may happily make such decisions. In human decisions requiring judgment, uncertainty creates anxiety.

Capability thus implies the emotional strength necessary to handle anxiety. This is also clear in Rand, whose heroes are not so much able to handle anxiety as they are apparently immune from it,<sup>5</sup> and whose villains clearly display its symptoms. It is in discussion of anxiety that Jaques's personal history as a preeminent psychoanalyst is most obvious. For Jaques, cognitive power is necessary but not sufficient to determine capability. Reality demands the exercise of many other attributes. Feelings, imagination, attention, planning, value judgment, and anxiety tolerance are called into play if potential capability is to be fully realized in productive work. In this respect, the expansiveness of Jaques's notion of capability matches the expansiveness of Rand's notion of rationality in scope if not in content.

### Measures of Ability

We have seen that Rand and Jaques's definitions of ability relate to cognitive functioning, though this is associated with other domains of activity in Rand. But what is it to say that someone is able and, more specifically, how do we justify the extension of a notion of specific ability to perform some task to a notion of general ability to perform types of tasks? Both Rand and Jaques define people according to such general levels of ability—the question then is the criteria against which such assessment is made.

By definition, any general measure of ability must employ criteria against which all men and women may be assessed. In other words, a measure of individual ability may always be extended to compare

abilities. When Rand and Jaques do this, though their methods are completely different, their measures are within the same domain (cognition) and their conclusions are remarkably similar.<sup>6</sup>

Rand's sociology is undoubtedly subordinate to her philosophy. This may explain the limited attention Rand gives to the exposition of a measure to rate ability, but measures are certainly implied. To locate them requires us to work (backwards as it were) from her descriptions of ability (and critically about its distribution) towards her measure.

What are these descriptions? On some occasions, and most notably in *Atlas Shrugged*, Rand employs a nominal bifurcation between the *men of the mind* and everyone else. Indeed, at one point, Rand refers to the former as "a particular human species" (quoted in Binswanger 1986, 186). Given Rand's other views, the idea of a "separate species" could not have been meant literally.<sup>7</sup> Elsewhere in her writing, the distinctions are ordinal (i.e., rendered on a continuum in which varying levels of ability are ordered). As an example, consider the distinction Francisco D'Anconia draws when asking Hank Rearden which type of men he would have use his metal: "Did you want to see it used by men who could not equal the power of your mind, but who would equal your moral integrity—men such as Eddie Willers . . . ?" (Rand, 1957, 453).

The power of the mind is rendered here as a measure along which individuals vary. In this vein, Rand states: "The relationship works like this: a great cooperative enterprise of many men is like a pyramid, with the single best brain on the top, and then [at lower levels] the ability required is less and the number of men in that category greater" (1997, 421).

Francisco himself follows a long line of men of ability, but is "the climax of the D'Anconia's" (1957, 89–127). Even Stadler, a notorious Rand villain, is credited with having ability. What is notable here, however, is the specific definition this is given. Dagny refers to Stadler "in the manner of rendering exact justice" (354) as being "the only great mind left in this field." This literal description demonstrates that the concept of the power of the mind can apply to a villain. How can we reconcile these descriptions? Perhaps we should

check our premises.

When we do, we find that the two implied metrics measure different (though internally related) concepts. In the first case, “men of the mind” (emphasis added) combines domains of cognition and ethics that would not be commonly conjoined.<sup>8</sup> In the second, Rand is describing cognition alone and this definition includes villains whose nascent cognitive power is great.

Why? The answer lies in Rand’s notion of the integration of reality in which failure in any of the virtues undermines any claim to the rest. This is the lesson that Dominique Francon, Gail Wynand, Hank Rearden and Dagny Taggart all learn in their fictional journeys—and of course, we along with them.<sup>9</sup> Cognitive ability is not enough—reality demands exercise of all of the virtues for that ability to be fully realized in productive work. Hence, the central virtue of morality is required: “Moral perfection is an *unbreached rationality*—not the degree of your intelligence, but the full and relentless use of your mind, not the extent of your knowledge, but the acceptance of reason as an absolute” (1059).

It is this commitment to reason that is the axiomatic virtue and transforms a man *with* a mind into a man *of* the mind. In brief, ability is not coterminous with cognitive prowess. Ability is manifest in the creation of the man-made from the metaphysical, whereas the villains, however able, are trying and—by the nature of reality—failing to create the metaphysical from the man-made. Their error is ethical and even men with great minds (Stadler, Wynand) can make it.

Men *of* the mind are not, however, simply distinguished by their commitment to reason but by a particular type of cognitive ability. Potentially, we have a classificatory scheme in which individuals can be described as moral or immoral on one dimension and (though our metric may change) as possessing or not possessing high cognitive prowess. A distribution of well-known Rand characters along these lines suggests itself. (See Diagram 1.)

Cognition can therefore be separated from morality but it is only the moral that puts the characters’ cognitive powers to productive use. How are we to measure this cognitive ability? We have seen that nominal distinctions between types of productive work are readily

### Diagram 1

A tentative taxonomy of Rand characters’ cognitive and moral positions:

	Moral	Immoral (Second Handers)
<b>High Cognitive Prowess (Prime Movers)</b>	<i>Men of the mind</i> : Galt, D’Anconia, Hank Rearden, Dagny Taggart, Dominique, Roark, Kira	Wynand, Stadler, Andrei, Toohy
<b>Not High</b>	Willers, Cheryl, Logan, Wet Nurse	<i>Parasites</i> : Keating, James Taggart, Wesley Mouch

observable in Rand—but to use these as a measure would be to confuse the result with the cause. As Rand states:

Every type of productive work involves a combination of mental and physical effort: of thought and of physical action to translate that thought into material form. The proportion of these two elements varies in different types of work. At the lowest end of the scale, the mental effort required to perform unskilled manual labor is minimal. At the other end, what the patent and copyright laws acknowledge is the paramount role of mental effort in the production of material values . . . (1967, 130)

The idea that different tasks require different levels of the same mental commodity is clear. This definition moves us from a nominal to an ordinal scale of measurement in which tasks, and those capable of undertaking them, can be measured and compared; hence “to cheat your way into a job bigger than your mind can handle is to become a fear-corroded ape on borrowed motions and borrowed time” (1957, 1020). This should not surprise us given Rand’s view of reason as the singular human faculty “that identifies and integrates the

material provided by man's senses" (1964, 20). If reason is singular, then the ability to reason, if measurable, will exist on a single continuum. Rand describes reason most fully in her *Introduction to Objectivist Epistemology*, but as we shall see later there is little here to suggest a precise measure of reasoning.

By contrast, Jaques's philosophy is undoubtedly subordinate to his sociology. His theory is based on a social observation and analysis: "I have, however, always had a liking for seeking ideas and information from the observation and teasing out of real-life situations and from involvement in social change" (1976, vii). His key observation is that most productive work in industrial society is done within an organizational context, and that the structure of such organizations is predominantly hierarchical. He names such organizations Accountability Hierarchies (AcH). An Accountability Hierarchy is "a system of roles in which an individual in a higher role (manager) is held accountable for the outputs of persons in immediately lower roles (subordinates) and can be called to account for their actions" (1996, glossary).

He claims that research reveals that "there exists a universally distributed depth-structure of levels. . . . This underlying system of organizational strata appears to be universal and constitutes one of the fundamental properties of bureaucratic<sup>10</sup> hierarchies" (1976, 127). Work is classified by Jaques in terms of Level, that is, "the weight of responsibility felt in roles as a result of the complexity of the work in role" (Jaques 1996, glossary). Individuals differ in their ability to effectively work at different levels. Work itself is defined as "the exercise of judgment and discretion in making decisions in carrying out goal directed activities" (glossary). It is central to Jaques's thesis that he finds an effective metric for work-level. He believes he has found it in his concept of the time-span of discretion.

The significance of time-span was also recognized by Rand: "Drifters and physical laborers live and plan by the range of a day. The better the mind, the longer the range. A man whose vision extends to a shanty, might continue to build on your quicksand, grab a quick profit, and run. A man who envisions skyscrapers, will not" (1957, 1063).

What is an illustration for Rand is the central measure to Jaques. His simple observation is that hierarchy always involves the progressive distribution of tasks according to completion times of ever decreasing volume. Jaques observes (and records) that work tasks are always given a time span. If there is no completion time, a task is not a task at all since it, in effect, need not be done. If there is a completion time, say of 1 January 2002, then completion or non-completion on that date is as objective a fact as can be ascertained by any measure.

Time-span of discretion is defined as the targeted completion time of the longest task or task sequence in a role. Jaques's research demonstrates that organizations are properly stratified according to: "natural lines of stratification at the 3-month time-span level, 12 month, 2-year, 5-year, 10-year, and at higher levels as well" (1976, 100).

Thus, at the production level, a car factory foreman might be expected to exercise judgment out to 12 months in scheduling work and annual leave, but middle-managers might exercise judgment out to 5 years in planning the integration of new models into the production system. The managerial work is two levels above that of the foreman.

Jaques gains massive advantages by going on from a key observation to make time-span his metric of level of work. Time is a precise measure. We can measure time down to millionths of a second or out to millions of years. Furthermore this is ratio level data. A 10-year time-span is unambiguously twice as long as a 5-year time-span. Once Jaques establishes his time-span measure of work-level, it is straightforward to assert that "the stratified depth structure of bureaucratic hierarchies [expressed as level and measured in time-span] is the reflection in social organization of the existence of discontinuity and stratification in the nature of human capacity [capacity and capability are used interchangeably by Jaques]. . . . A multi-modal distribution of capability is postulated, each person falling into one particular mode or level of abstraction" (100).

Jaques's central assertion is therefore that managerial hierarchy is a universal form of human organization because it is appropriate to

the natural inequality of the distribution of capability in human groups. The existence of the managerial hierarchy is a reflection in organizational life of discontinuous steps in the nature of human capability (1996, 1). Organizational hierarchy enables individuals capable of performing effectively across different time spans to work effectively together by allowing those of superior capability to direct the work of those less able. This does not imply that the distribution of managerial tasks and that of individual capabilities is always aligned. Indeed, organizational failure is often the result of misalignment of individuals and roles and/or superfluity or inadequacy of organizational roles. The logic of hierarchy is contained within the reality of inequality.

Jaques makes one more proposition, that capability improves over time, though the extent of that improvement differs between individuals. "The work capacity of individuals follows regular and predictable paths. Maturational shifts in the quality [rather than the quantity] of function of an individual's capacity occur as he moves across the boundary from one level of abstraction to another" (1976, 100).

Jaques's expression of his central ideas is remarkably succinct. His core propositions are laid out in around 300 words on one page of one book (100). Work is the defining characteristic of humankind. Work-level can be measured in time-span. Capability is expressed in the ability to work effectively at a particular level. Capability matures throughout life. However, 40 years passed before Jaques had puzzled out the dynamics involved in the shifts in level over time.

### Rand's Reason and Reasoning

For Rand, consciousness operates on three levels: that of physical sensation; that of perception, which recognizes physical sensations; and that of conception, which organizes perception and allows the distinctively human as opposed to merely organic or animal form of life. This is

an actively sustained process of identifying one's impressions

in conceptual terms, of integrating every event and every observation into a conceptual context, of grasping relationships, differences, similarities in one's perceptual material and of abstracting them into new concepts, of drawing inferences, of making deductions, of reaching conclusions, of asking new questions and discovering new answers and expanding one's knowledge into an ever-growing sum. The faculty that directs this process, the faculty that works by means of concepts, is: *reason*. The process is *thinking*. (1964, 20)

As Gladstein and Sciabarra (1999, 3) point out, this is a wide definition—one which describes the whole process: "Rand's concept of reason is profoundly expansive. It is the distinctive and defining element of the human, conceptual level of consciousness. It entails moments of perception, differentiation, identification, abstraction and integration. As an integrative faculty, it combines analysis with synthesis and applies logic to experience." Rand fails, however, to discriminate among cognitive processes in her description of varying levels of reasoning ability. Rather, she refers simply to the number of mental integrations as her measure, hence:

Abstract ideas are conceptual integrations which subsume an incalculable number of concretes—and . . . without abstract ideas you would not be able to deal with concrete, particular, real life problems. You would be in the position of a newborn infant, to whom every object is a unique, unprecedented phenomenon. The difference between his mental state and yours lies in the *number* of conceptual integrations your mind has performed. (1982, 5; emphasis added)

When this notion is combined with a definition of intelligence as "the ability to deal with a broad range of abstractions" (1975a, 193), we can see that Rand holds to a view of the mind that suggests that past use determines future performance. This idea of the number of mental integrations becomes then the measure of rationality but

herein lies difficulty. Conceptualization is itself a construct subsuming different types of mental processing, a point Rand recognizes elsewhere:

Since the definition of a concept is formulated in terms of other concepts, it enables man, not only to identify and retain a concept, but also to establish the relationships, the hierarchy, the *integration* of all his concepts and thus the integration of his knowledge. Definitions preserve, not the chronological order in which a given man may have learned concepts, but the logical order of their hierarchical interdependence. (1990, 40)

The process of reasoning raises us not only from one state of consciousness to another (e.g., from the perceptual to the conceptual) but also to different levels of conceptual integration themselves ordered hierarchically. A problem for Rand's position is its failure to relate the number of mental integrations to their type.<sup>11</sup> She is specific about reason but less specific about reasoning. While she notes that intelligence is "the ability to deal with a broad range of abstractions" (1975a, 193), she offers little by way of explanation as to the processes involved. She recognizes processing as central to concept-formation but fails to identify the process beyond broad categories of differentiation and integration:

if the process were identified in words, it would consist of the following: "length must exist in *some* quantity but may exist in any quantity. I shall identify as 'length' that attribute of any existent possessing it which can be quantitatively related to a unit of length, without specifying the quantity." The child does not think in such words (he has, as yet, no knowledge of words), but *that* is the nature of the process which his mind performs wordlessly. (1990, 12)

Once again, Register's (2000) criticism of Rand's linguistic theory of concepts is apposite. He argues that Rand defines concepts: "only

as the product of a certain process, without specifying anything about the product other than that it is the product of that process" (221).

Our argument is that although Rand clearly recognizes processing as prior to word-formation, she says too little about the nature of the processing. A final quotation may serve to illustrate the problem. Rand suggests that: "The only issue open to an individual's choice in this matter is how much knowledge he will seek to acquire and, *consequently*, what conceptual complexity he will be able to reach" (1990, 43; emphasis added).

This relationship between knowledge acquisition and cognitive processing is, to put it mildly, open to question. Jaques works with a far greater degree of precision in specifying cognitive processes and suggesting that an individual's ability to operate at particular cognitive processing levels is the measure of their capability to work.

### Jaques's Reason and Reasoning

Conception lies at the heart of Jaques's theory too, but he focuses on mental integration. Human cognition attenuates the natural complexity of the world. There are always more things going on in the world than can be attended to. Attenuation is most obvious in the workings of memory. A memory that recorded every aspect of reality would be practically useless. It would take as long to recall an event in full as the event took to run in the first place. Attenuation in memory is achieved by the detection of pattern and redundancy in sense data.

A similar process operates in habit formation. The subsuming of multiplicity of data into limited sets of representative general forms allows an exponential increase in the effective power of the mind without a corresponding increase in processing load. Thus far, the approach is the same as Rand's: "The process of measurement is a process of integrating an unlimited scale of knowledge to man's limited perceptual experience" (1990, 8).

Jaques proposes that the abstraction processes of higher cognition may be iterated at different levels (e.g., verbal concrete, symbolic, abstract). This formulation<sup>12</sup> is also consistent with

psychological orthodoxy and with Rand. However, Jaques discriminates the cognitive processes of attenuation from the logical processes of reasoning. The formulation of categories of any sort is essentially arbitrary. There may well be culturally specific or even species specific preferences in categorization. We may label this "figure" and this other "ground," but these preferences are preferences and so are mutable. Jaques argues the processes of logic are not mutable. There are, in his analysis, four distinct forms. These can be mapped onto both the forms of modern logic, and the nature of data.<sup>13</sup> (See Diagram 2.)

In Jaques's model, these four processes are re-iterated at three different levels of abstraction (verbal concrete, symbolic and abstract). Jaques is, of course, not alone in constructing a notion of repeated stages. It appears in the work of Levinson, Ericson, Jung, Maslow and Kohlberg. Case (1991, 345) describes a remarkably similar model where children's control structures "progress through a universal sequence of four recursive cycles in each problem domain." Jaques's originality is in the research finding that individuals, when exercising their full adult powers, typically verbalize propositions using one type of process at a particular level of abstraction. The additional finding that individuals progress over time from certain typical levels to other levels<sup>14</sup> suggests to him the operation of a hierarchy of propositional levels.

In principle, the levels might be extended indefinitely, but Jaques is only able to discern the twelve levels of capability this model suggests. Jaques has aligned four of his stages with Piagetian stages of childhood development (Jaques and Cason 1994, 97).<sup>15</sup> We shall not attempt to assess the appropriateness of this alignment here. For Jaques, there are eight adult stages of development maturation through which individuals move over time (but at differing rates). It is probable that stages in childhood are dependent on changes in the brain, which itself matures in discontinuous psychophysiological stages. These changes appear to be synchronous across regions of the brain until age 10½; they then diverge (Hudspeth and Pribram 1992) but throughout are in close correspondence with the cognitive (Piaget), emotional (Freud), psychosocial adaptation (Erikson), and

moral judgment (Kohlberg) stages of development.

## Diagram 2

Forms of Cognitive Processes (after Jaques):

Process	Logic	Data	Understanding	Example
<b>Disjunctive</b>	or-or	Nominal	Arbitrary class membership	Their names are Jack, James and John
<b>Conjunctive</b>	and-and	Ordinal	Each is defined by another	Jack is older than James and John is younger than James
<b>Conditional</b>	if-then-then	Interval	Relationship is understood	Jack is 6 years older than James and 9 years older
<b>Bi-Conditional</b>	if-and-only-if	Ratio	Consequences are understood	Jack is 12 years old James is 6 years old

Rand also alludes to maturation processes: "By the time he reaches adolescence, a man's knowledge is sufficient to deal with broad fundamentals; this is the period when he becomes aware of the need to translate his incoherent sense of life into conscious terms" (1975b, 29). She also acknowledges her own lack of knowledge in this area: "The body has its own timetable of development, and so, *perhaps*, has the mind" (1975a, 204; emphasis added).

The psychophysiological evidence is that maturation is complete around the age of eighteen. Jaques's structure suggests the existence of individuals of markedly different capability maturing at varying rates in adulthood with only a tiny proportion of individuals reaching the highest levels. Beyond eighteen, the mind is never building on a greenfield site and transformations are the only possibility. Jaques argues for transformations in the propositional levels that an individual is capable of handling and the range of time over which they are capable of planning. It is this connection that provides the relationship between propositional level and managerial level.

Jaques and Cason's research (1994) provides strong evidence that the level of work at which an individual can operate can be predicted by establishing the level of propositional logic they use. This research involved an experiment with 72 subject individuals working for companies in the United States and Australia. Both companies use Jaques's structuring principles in their organizational hierarchies. Jaques and his co-worker interviewed subjects on a range of issues and judged the level of propositional logic each deployed. On this basis, Jaques and his co-worker estimated the level of work each individual was capable of handling (researchers' estimate). Independently of this, the subject, their manager and their manager once removed estimated the level of work in their organization at which they could operate (insiders' estimate). The correlation between the averages of the researchers and insiders' estimates was 0.97 (Pearson product-moment correlation). The correlation between the average of the researchers' estimate and the subject's evaluation was 0.96. The correlation between the actual level of work undertaken by the subject and the researcher's estimate was 0.91.<sup>16</sup>

In making judgments as to propositional logic using this method, Jaques categorizes arguments according to the highest level of logic employed by the subject. An indication that subjects are able to connect arguments through a series of conditions and bi-conditions (e.g., event (a) was caused by a combination of events (b) (c) (d) which combine into process (e) and so on) is their repeated references to time. For Jaques, this is a clue to the connection between propositional level and the time spans over which individuals can

operate.

Jaques would, for example, see Rand's statement as a young woman that "I know what I want up to the age of two hundred" (quoted in Peikoff 1994, xii) as early evidence of significant capability. It is not the content of the ambition that is indicative or even the consistency with which it is held but rather the time period over which planning is undertaken.

Time therefore lies at the heart of Jaques's theorizing. His book, *The Form of Time* (1982), must be read by any serious student of his work. We all have noticed the short time-span of a small child. A treat today is worth more than any number of rewards next year. As development proceeds, the child gradually learns to suspend instant gratification in favor of more substantial rewards later. Such development presupposes an expanding time horizon. To imagine the worth of rewards a month hence, we must first have a sense of ourselves existing in one month. It is interesting to note here that Hunt's (2000, 108) discussion of that which is morally evil centers on an agent who is unable to project forward in time beyond the objects of his immanent experience.

When should we consider the extension of the time horizon complete—when as an adult we can think ahead two years?, five years?, fifty years?, a lifetime? Albert Einstein, it is said, declined the presidency of Israel with the words, "Politics is for today: a formula is for eternity." Eternity is not a concept readily appreciated by the ordinary human mind. Jaques sees the maturation of time horizons as occurring at different rates and involving different end-points at full maturation. He suggests that the capacity to think, organizationally, both ahead and historically, is the criterion for determining who should lead an enterprise. The leaders must have long term vision. The ability to reason at high levels of abstraction creates this potential to manage over the long term.

The distinctions in this model (Diagram 3 below) are not absolute. Adults are not necessarily capable of fully consolidated formal operational thinking. It is the proposed order of development that is invariant. Bi-conditional verbal reasoning is a prerequisite of symbolic reasoning. Jaques's time-spans relate to work-related

judgments. A person of lesser capability can make generalized life plans, as when a young person might determine to be a millionaire by forty or retire at fifty.

### Diagram 3

The cognitive worlds of adults and children (following Jaques):

Maturity	Level of abstraction	Processes	Piaget (stage)	Jaques (work-level)	Time-span
	Abstract	Bi-conditional		VIII	50 - 100 yrs
		Conditional		VII	20 - 50 yrs
		Conjunctive		VI	10 - 20 yrs
		Disjunctive		V	5 - 10 yrs
		Bi-conditional		IV	2 - 5 yrs
		Conditional		III	1-2 yrs
Adult's world	Symbolic	Conjunctive		II	3 mos - 1 yr.
		Disjunctive		I	1 day - 3 mos
Child's world	Verbal Concrete	Bi-conditional	Formal operations		
		Conditional	Concrete operations		
		Conjunctive	Sensori-motor		
		Disjunctive	Sub-stage six		
	Pre-verbal Gestural				

Now that we have articulated the essentials of Jaques's position, it is possible to demonstrate the power of attenuative processes of maturing logic. A young child might be hard-pushed to understand why he is mocked at school. He experiences the verbal abuse as concrete in the extreme. The child might meet abuse with abuse or cower. A more mature person might see such mockery as symbolic of the weakness of the mocker. In our locale, children retort to name-calling with the riposte "what you say is what you are." An adult might interpret this retort as expressing an intuitive awareness of the abstract concept of projection.

The capable adult is able to cast the individual relationship problems of children within a more general frame and manage the situation. However the adult's advice or instructions to the children in question will necessarily be re-cast at a level those children can understand.

"If you continue to call Matthew nasty names then I will ask your mother to take you away from this school" (Verbal concrete—conditional). More sophisticated arguments, invoking relational concepts such as "the common good" may work later, when the capability of the child is sufficiently mature to appreciate it. Rand would recognize the "common good" as an abstraction but reject it as a false concept.

### Rand: The Unlikely Egalitarian?

Like Rand, Jaques argues that adult capability is distributed unevenly. Unlike Rand, he suggests that varying rates of maturation generates this distribution (personal communication). Rand holds to an entirely different notion of the unfolding of latent human capability. Her view, stated on different occasions, is that: "At birth, a child's mind is tabula rasa; he has the potential of awareness—the mechanism of a human consciousness—but no content. Speaking metaphorically, he has a camera, with an extremely sensitive, unexposed film (his conscious mind), and an extremely complex computer waiting to be programmed. Both are blank" (1975a, 190). "The enormously powerful integrating mechanism of man's con-

sciousness is there at birth; his only choice is to drive it or be driven by it" (1975b, 27).

There are two distinct but related points here. The first is that man has no innate concepts.<sup>17</sup> Though this is open to contest the point has no criticality here. But the second is critical. Rand asserts that all men have the same innate processing capability. In describing the Romantic approach to the hero, we can once again see her exalted view of man's potential: "The Romantics did not present a hero as a statistical average, but as an abstraction of man's best and highest potentiality, applicable to and achievable by *all* men, in varying degrees, according to their individual *choices*" (1975b, 126; emphasis added).

This is indeed the way in which their fictional professor Hugh Akston describes the heroic trinity of Galt, D'Anconia and Danneskjöld in *Atlas Shrugged*:

... don't make the mistake of thinking that these three pupils of mine are some sort of superhuman creatures. They're something much greater and more astounding than that: they're *normal men*—a thing the world has never seen—and their feat is that they managed to survive as such. It does take an exceptional mind and a still more exceptional integrity to remain untouched by the brain destroying influences of the world's doctrines, the accumulated evil of centuries—to remain *human*, since the human is the rational. (1957, 786)

It follows from this that *effort* is the key determinant of performance and we would agree with Bissell's (2000, 223) description of this as a Pro-Effort Premise. But it is also egalitarian, speculative, and ill at ease with the Rand who states: "[T]he achievement (or production) of the able man will be in proportion to and the result of his *ability and effort*, the equal effort of a man of lesser ability will *not* [result in equal] achievement regardless of how the lesser one feels about it" (1997, 411).

We hear, in this regard, the voice of the Rand of popular

understanding, looking down on the masses and denying them the chance for self-improvement through effort. How can this be reconciled to her view that ability is the result of choices? We may argue that the lesser ability referred to in the latter quote is the result of a history of prior poor effort. In this case, we have a notion of development operating that prevents the poorer starter from catching up. More likely is a genuine conflict between the Nietzschean Rand's elitism and the mature Rand's radical individualism.

Sciabarra's (1995, 100–6) discussion of Rand's Nietzschean phase provides significant evidence of the contradictions in her attitude towards the masses. One way of reconciling outrage at the state of mankind with a romantic notion of man's true nature is precisely to believe that all men could be heroes if only they tried hard enough. As Rand wrote at the age of thirty one: "I worship individuals for their highest possibilities as individuals, and I loathe humanity, for its failure to live up to these possibilities" (quoted in Peikoff 1994, xii).

If this is believed, then cognitive limitations are the outward signs of moral failure and the ignorant masses deserve the opprobrium that Rand places in Kira's voice:

What *are* your masses but millions of dull, shrivelled, stagnant souls that have no thoughts of their own, no dreams of their own, no will of their own, who eat and sleep and chew helplessly at the words others put into their brains? (Rand 1959, 80)

By contrast, should innate potential differ from birth, no moral failure can be inferred from cognitive limitations. This might be seen as Rand's ethical problem with capability.

A second, empirical, problem arises for Rand however. Her view of man's potential renders inapplicable the distinction we observed earlier between "men of the mind" and other moral men. A single example should demonstrate the point. If at birth all men have the same innate ability, then a fully moral man can only fail to become a productive genius through the maliciously used power of others. Where then does this leave a character such as Eddie Willers—who

(as we have seen D'Anconia remark) shares the integrity of the productive genius but not his ability? Rand cannot have this both ways. If her position on capability is correct, then a character such as Willers is an absurdity.

## Conclusion

The ideas of Jaques and Rand are largely complementary. Differences in individual ability to work are observable facts of reality. Jaques adds depth to Rand's notion of mental processing but both treat the mechanism itself as being largely content-free. The hardware is determined; the software run is optional. Jaques provides measures both of the difficulty of work and of the processing abilities of those who undertake it. Rand makes frequent references to the ability to deal with time as a discriminator of ability, hence "[i]t is only conceptual awareness that can grasp and hold the total of experience—extrospectively, the continuity of existence; introspectively, the continuity of consciousness—and thus enable its possessor to project his course long range" (1990, 57).

Jaques provides the best case (and the best research evidence) we know for why time is so critical, though other significant contributions exist (see Gallistel 1993). While their conclusions and premises are shared, they differ in their evaluation of the reasons for differences in individual capability. Jaques regards capability as constitutional. The development of individual capability is either determined at conception or extremely early in life, by biology, the environment or some combination of both. A man might fail to achieve his potential, but by no effort of will could he exceed it. For Rand, failure to achieve potential is determined by nothing other than a lack moral integrity.

This paper has been written with assumptions about the level of knowledge and interest readers of *The Journal of Ayn Rand Studies* bring with them in relation to Rand and Jaques. It has therefore been more critical of the former than the latter. If we have given readers pause to consider what a theory of individual capability should contain (and Jaques has been used to illustrate this), then we will have been

successful in our attempts to consider whether Rand's theory of individual capability is sufficient, even if we take the view that its major propositions are correct.

We conclude that Rand's work may be correct, but inadequate in its specificity. Her admirers have some work to do to support her propositions in this area and Jaques presents at the very least, a place to begin.

## Notes

1. From the first description of Rearden in *Atlas Shrugged*.
2. This theme is taken up in Harrison 1999 and Sciabarra 1995, 372.
3. For example, Rand (1957, 598) says of Pat Logan and the road foreman in *Atlas Shrugged*: "he had never been afraid of losing his job; with the confidence of a competent man, he had known that if he quarreled with one employer, he would always be able to find another."
4. Roark is the exemplar in *The Fountainhead*; Dagny and, to some extent, Wyatt, are the exemplars in *Atlas Shrugged*.
5. A possible exception being Rearden, though whether his conflicts could be described as anxiety inducing may be open to question.
6. Nathaniel Branden (in personal correspondence, 11 August 2000) has confirmed to us that Rand did not read Jaques's work, and we know of no direct influence in the other direction.
7. We would like to thank an anonymous referee for highlighting this.
8. But see Presley's (1999) discussion of evidence on this, especially 257–60.
9. Gladstein (2000, 125–26) makes some fascinating points regarding the central protagonists of Rand's novels as "learning" from the "Code Heroes."
10. Jaques's argument is in fact exclusively focused on ACHs. It is important to point out that Jaques abandoned the use of the term "bureaucracy" by the 1980s, perhaps aware of its pejorative use in reference to state, rather than profit maximizing, enterprises. In terms of accountability hierarchy, Jaques makes no distinction between the state and private sectors and he rigorously separates the purposes of organization from his area of concern, namely how organizations set about achieving their purposes.
11. An anonymous reviewer has helpfully pointed out to us that Rand (1990) suggested a development in which children formed concepts before defining them explicitly, thus implying a sequence of knowing, followed by knowing about knowing. But this is nowhere made explicit in her theory of concepts, which concentrates instead on a hierarchy, moving from specific (differentiated) knowledge of concepts to their general (integrated) definition.
12. His earliest expression of this is in "Levels of Abstraction and Stratification of Mental Activity," in Jaques 1976, 139.

13. We are grateful to an anonymous reviewer for pointing out that there is no hierarchy of connectives in the propositional calculus within modern logic. Jaques's findings, however (summarized above), would suggest that in practice the ability to operate with a particular level of propositional logic is aligned with the capability to work effectively at a particular level within managerial hierarchies.

14. The research supporting this assertion is found in Jaques and Cason 1994.

15. Also see Jaques 1986 for discussion.

16. Examples of the interviews and how the judgments were made can be found in Jaques and Cason 1994.

17. Campbell (2000, 216) has advised readers of this journal of his paper on this entitled "The divided legacy of Noam Chomsky," and presented at The Objectivist Center's Summer School in July 2000.

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