

**Practical Rationality and Future Orientation Among
Intimate Partner Violence Offenders
Joe Ferguson – June, 2005**

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Introduction

About 600,000 distressed American families fall under the potential influence of mandatory intervention systems each year as a result of arrest for intimate partner violence (IPV) offenses (American Psychological Association., 1996). Partner violence is widespread in our society, and it signals a serious dysfunction at the heart of the many families that suffer from it. Over the last two decades increasingly substantial resources have been dedicated to this problem in every state through victim assistance, public education, legislation, law enforcement policy, and mandatory intervention treatment programs. Recent meta-analysis of the limited outcome research that has been conducted in the field of IPV intervention during the past decade indicates a modest, positive treatment effect across the programs that have been studied (Babcock *et al.*, 2004; Jackson, 2003).

These studies have been widely cited both to support the claim that IPV intervention is working and also that it is not working, depending upon the predisposition of the party invoking the citation. In any event these findings highlight the enormous opportunity that is still outstanding to leverage marginal improvements in the effectiveness of treatment. This author takes the view that the current generation of IPV treatment protocol represents only a starting point for ongoing research, education, and program development, and that mandatory IPV intervention represents one of the most potent opportunities for constructive social action that is currently available in the United States.

The heavy lifting has already been done in the breach of longstanding social and legislative barriers to the vast mandatory intervention system that now exists. The current challenge is to harness this potential to a practical and effective process of ongoing treatment program research, education, and development; within the existing institutional and legislative framework, and without the need for supplementary resources that are not likely to be forthcoming. Unfortunately, the vast majority of intervention in the United States proceeds entirely without the benefit of either ongoing outcome analysis or systematic research, much less systematic treatment program development. The enormous research bandwidth that is potentially available within the current system lies almost entirely fallow. In order to ensure that this latent opportunity is effectively harnessed going forward it is essential that systematic and permanent processes be instituted within at least a few important jurisdictions. Such leadership will certainly require substantial political will and weight that is not yet apparent at this writing, as well as significant reorientation in the posture and priorities of regulatory agencies, intervention treatment providers, and academic researchers.

It is the author's intention in this introduction to sketch a realistic model of the sort of jurisdictional system that is called for, and to suggest a productive reorientation in the approach that is taken to research, education, and program development for mandatory partner violence intervention. Within this framework, the substance of this dissertation is the elaboration of a theoretical model for one

treatment factor that may prove to be worthy of greater emphasis, *practical rationality*, and the assessment of one of its central constructs, *future orientation*. The associated questionnaire survey instrument is intended to be minimally invasive into the treatment programs to which it is administered, and also to demonstrate an approach to productive research that is not dependent upon random assignment of subjects to treatment conditions or control groups. The model and the research that addresses it are intended to illustrate a general approach to intervention program research that fits well within the operations of a progressive jurisdiction such as the one portrayed below.

The current state of intimate partner violence intervention systems

The sea change that has taken place in public policy related to intimate partner violence over the past 20 years has been driven almost entirely by feminist movements and organizations. The vast network of IPV intervention systems that now exist has been dominated by these same forces and in many cases has grown directly out of the women's shelter movement. Naturally, the current generation of IPV intervention protocols largely reflect the feminist perspective. Treatment content almost universally emphasizes the many manifestations of gender bias in our numerous cultures and subcultures, as well as the abuse of power and control that often follows within all of them. Unfortunately, this valid and productive perspective is sometimes extended to the opposition of any other content in treatment, as though the inclusion of such content were in some sense a denial of the feminist perspective which, of course, it is not.

Responsibility for the oversight of IPV intervention programs generally falls to local probation departments or to similar agencies within state or local penal systems. Personnel with direct oversight responsibility for intervention systems are generally from probation or law enforcement rather than clinical background, and their operating emphasis is generally on the enforcement of regulations that are either mandated by legislation or which they generate themselves. The author is not aware of any jurisdiction in which a mandate exists for the ongoing evaluation of treatment program outcome or for systematic research, education, and development of treatment protocol. This is not surprising since the regulatory agencies with responsibility for the intervention system do not have established traditions of research and they are not spontaneously enthusiastic about evaluating the efficacy of the programs for which they are responsible. It is not surprising that regulatory personnel are initially disturbed by the suggestion that they should do less regulation and more analysis.

Treatment providers are usually certified to provide mandatory intervention services by the local regulatory agency or by the courts. In most cases these services are funded by fees collected directly from offenders themselves. In some cases treatment programs are partially subsidized by women's shelters, other nonprofit organizations or, very rarely, by public funding. In many cases treatment certification does not require clinical or academic training, and there is

a high rate of turnover among intervention providers. Treatment protocols and intervention training are often quite skeletal and informal. Continuing education is haphazard and is rarely research oriented. Intervention treatment providers do not typically have established research traditions, and they have neither the spontaneous enthusiasm nor the independent capacity to evaluate the efficacy of their own treatment programs. Treatment effectiveness is dependent almost entirely upon the personal skill and experience of individual treatment providers, some of whom are undoubtedly very effective. There is currently no means of moving the discipline forward as a whole.

For decades a small cadre of capable academic researchers has overcome great resistance and animosity to produce the current body of research on IPV intervention systems and methods. Many of these researchers have personally practiced as intervention program providers, and in some cases they have established their own treatment programs under the auspices of the universities and other institutions that they represent. Prominent researchers in the field regularly speak of the metaphorical scars that they have suffered at the hands of their intended audience, who often regard their theories and research activities as threatening or antithetical to the conclusions that they regard as absolute.

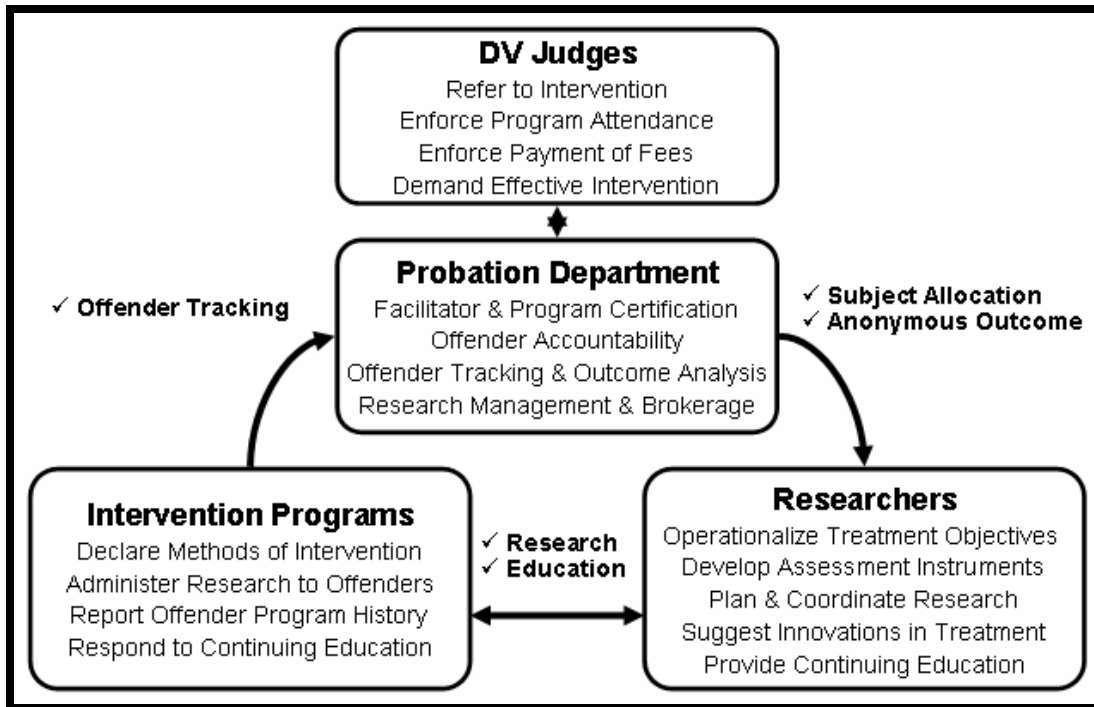
The ambitions of the academic research community seem to be depressed by a professional despair that the research process and its fruits will ever be integrated into the mainstream of mandatory intervention practice. The prospect of entire jurisdictions permanently engaged in coordinated systems of ongoing research, education, and program development seems beyond realistic reach to an academic community that has long felt marginalized by its intended audience. Surviving researchers have developed a thick skin over the last couple of decades, but they remain dedicated to the field and available to engage in such scientific research, education, and program development as the environment permits.

The net effect of the current intervention system is that *the vast majority of IPV treatment remains essentially frozen in place*, employing the same methods and objectives indefinitely from inception. The efficacy of treatment is currently dependent upon individual practitioners. The field has not yet found a way to benefit systematically from its own ongoing experience. This observation takes nothing away from the positive value and efficacy of the current approach. The social insights that inform the current approach to treatment are undoubtedly valid, and an emphasis on gender bias and power/control issues will certainly continue to constitute an important component of treatment going forward. Like all commercial, scientific, and professional disciplines however, effective IPV intervention is necessarily and forever a work in progress that can always benefit from the insights of research, education, and systematic protocol development.

A model of progressive jurisdiction

A systematic and progressive approach to IPV treatment research, education, and protocol development will require a significant shift in the emphasis and priorities of the agencies and programs that are responsible for the regulation and delivery of intervention services. It will also require a closer integration of research academia into the regular operations of the first jurisdictions that rise to leadership in the next generation of treatment. This will require some exceptional leadership and a cadre of strong and courageous change agents in each community. Each of the institutions that are necessarily involved manifests a natural resistance to the disturbance of its own particular *status quo*. Regulatory agencies and intervention program providers are not enthusiastic about the prospect of critical self-examination and performance accountability, to which they are not currently subject. They are also understandably uncomfortable with the suggestion that they should assume the management of a research process with which they are unfamiliar.

In fact, a coordinated system along the lines of the following model would not be particularly difficult to implement or administer, given the political will and authority to do so, and it would require no additional legislation, expertise, or resources beyond those already available. All that is lacking is recognition of the absolute need for systematic research, education, and program development, and the will to pursue it. As with any important undertaking, individuals who take on new roles will be awkward at first, but their performance will improve with experience, experiment, and education. The following figure illustrates the essential functions and interactions within a hypothetical model jurisdiction which could be the future Orange County, Pittsburgh, Cleveland, or elsewhere.



For example, at this writing the Orange County probation department has comprehensive statutory authority over about 23 independent intervention programs which employ about 116 group facilitators, and which treat thousands of IPV offenders annually. The Orange County probation department is in a position to implement a system like the one described here at any time, with existing personnel and under existing legislation. There are 58 such county jurisdictions in California alone, all of which hold the same opportunity. There is no natural limit on the size to which a coordinated network of such jurisdictions can profitably grow. A specific prospectus for such an initiative has been put forward by this author for consideration by California DV judges and county executives, and by the California State Attorney General (J. Ferguson, 2004b).

Leadership opportunity for a progressive jurisdiction

The glacial pace of change within established bureaucracies and entitled service communities is infamous, and the shift that is required from the comfortable *status quo* to an unfamiliar and self-critical scientific model is not going to take place without the exercise of strong and visionary leadership, and probably the exercise of authority also. In this model jurisdiction the impetus for the establishment of an ongoing systematic R&D process comes from domestic violence court judges who demand to see at least an initial movement in this direction. Judges are trained in a rigorous intellectual discipline that naturally prepares them to appreciate the rationale for systematic research, education, and development, they have a clear vested interest in the effectiveness of intervention, they have influence and sometimes direct authority over regulatory agencies and treatment providers, and their own *status quo* remains undisturbed

by the necessary changes. Judges certainly must regard the intervention process as a black box to some extent, but they can insist that its effectiveness be demonstrated and systematically enhanced.

Regulatory agencies: Outcome analysis and research management

Comprehensive administrative and regulatory responsibility for intervention in this model jurisdiction falls to the county probation department, as it actually does in California and in many jurisdictions across the country. The probation department has explicit statutory and traditional responsibility for offender accountability. In our model jurisdiction the term accountability can be taken quite literally to mean that probation can account for the treatment history and subsequent record of every offender who passes through its jurisdiction. The probation department provides a simple software application to intervention program providers who report the progress of offenders throughout the intervention as a normal part of their operations.

Probation continues to record offender status at least throughout the statutory probation period, which is 3 years in California. Researchers should be attracted to collaborate with this progressive jurisdiction to refine the outcome assessment process, and to integrate arrest and other indicators of recidivism that can be extracted from law enforcement and other agency databases. In addition to the analysis of intervention program effectiveness that is immediately available from the model offender history database, probation makes this information available to qualified researchers for correlation with the results of research studies that are brokered by the probation department, as discussed below. Information and results associated with individual offenders is anonymously coded to address research ethics, privilege, and privacy issues.

In our progressive model jurisdiction probation requires intervention programs to satisfy a minimum annual requirement for participation in IRB approved research studies. Programs are free to satisfy this requirement in a wide variety of ways, so long as they are working with IRB approved projects. The probation department also offers intervention programs the opportunity to satisfy this requirement by participating in an annual "*Research Week*" during which each intervention group devotes one of its weekly sessions to the administration of questionnaire survey instruments that are provided by one or more participating research groups. These surveys are solicited from multiple researchers for this purpose and allocated randomly by probation among all individual offenders in all programs that choose to participate. This approach is minimally disruptive to intervention programs that choose to participate, and it also controls for many experimental variables that might otherwise confound research results. This is but a simple illustration of the many powerful benefits that can flow from effective economies of scale in program research and development.

The probation department is in a unique position to secure the participation of intervention programs in regular research activity. It can allocate access to subjects for research studies that cut across the many intervention programs, groups, and subjects within its jurisdiction, and it can broker the collection and use of research and outcome results for individual offenders. The probation department alone has clear legitimate access to this type of individual information over an extended period of time. By providing such results to researchers on an anonymous basis, coded to match individual research results with outcome information that may extend well beyond treatment program completion, many of the common procedural obstacles to research can be avoided. By establishing research as a regular and ongoing component of intervention system operations, the probation department can relieve many academic researchers from the substantial burden of locating and securing access to research subjects for each research study they conduct. By shifting their limited resources away from the enforcement of rigid treatment protocols and toward the tracking and analysis of treatment outcome for individual offenders they can promote the advancement of treatment effectiveness rather than stifle it by freezing the system in place.

Initially this process will be awkward for probation department personnel not trained in research methodology, and the outcome measures they collect will be relatively crude, but over time the process will improve with experience. It is important to bear in mind that any progress along these lines will constitute an improvement over the current baseline of essentially no outcome analysis at all.

Academia: Treatment program R&D and continuing education

Our progressive jurisdiction should attract the participation of a broad range of qualified researchers who can gain ready access, through the probation department, to research subjects as well as to anonymously coded offender outcome information that can be correlated with the results of their own research. Working from their own theoretical models of offense and intervention as well as in reciprocal relationship with treatment providers, researchers can identify, operationalize, and assess discrete treatment factors that reflect the declared objectives of treatment program providers. Robust instruments with established psychometric properties can then be developed and refined with benefit of the large subject population that is readily accessible within the model jurisdiction and its cousins. Measures of promising treatment factors can be correlated with the outcome information for individual offenders that is maintained in the probation department database.

Researchers in our model system provide practical feedback from their research directly to intervention program providers through continuing education seminars and workshops as well as through published articles in academic journals (which few intervention providers read). Because our model jurisdiction remains perpetually engaged in systematic research and program development, researchers have the opportunity to help program providers integrate the insights of their research into practical treatment protocol. The impact of these treatment changes can then be evaluated during the next research cycle in the same jurisdiction; benefiting once again from the random assignment of research subjects across program and group boundaries within the jurisdiction during the annual Research Week.

Our model probation department encourages treatment provider participation in continuing education that is tied directly into the research process by organizing periodic seminars that satisfy their CE requirements conveniently and at a reasonable cost, which provides compensation for qualified researchers who develop and deliver these continuing education seminars and workshops. In this manner the research community engages directly in development of the mandatory intervention programs which they had previously found themselves unable to influence.

Providers: Protocol declaration, research access, and education

Treatment providers in our model jurisdiction participate in ongoing research into treatment factors that, over time, tend to converge with their own declared treatment objectives. Treatment providers are not expected to conduct their own research or analyze the results of research themselves, but they are expected to declare the principle objectives that are reflected in their treatment protocol and to work with qualified researchers to operationalize them. Each of their intervention groups participates in at least one IRB approved research study every year. When other appropriate research opportunities are not available probation allocates that subject research bandwidth to the ongoing refinement and psychometric specification of selected research instruments that promise to bear upon the understanding or practice of successful intervention protocol.

Treatment providers are encouraged by probation department policy to satisfy their continuing education requirement by attending research oriented seminars and workshops such as those that are recommended and facilitated directly by the probation department. Treatment effectiveness is expected to evolve and adapt in response to research findings when they are demonstrated to be reliable and robust. Eventually, the effectiveness and certification of individual programs and treatment providers will be evaluated in terms of outcome information related to the offender population that they actually treat. Clearly, this sort of performance evaluation will not be possible for a number of years, until solid research instruments have been developed and validated which accurately assess treatment factors that demonstrably contribute to successful intervention outcome.

By tracking offender progress through treatment by means of the software that is provided by the probation department for that purpose, intervention programs relieve much of their former requirement for paper records from the previous generation system, which rarely found their way to any practical use. The consistent enforcement of treatment fee requirements by domestic violence court judges assures treatment providers of a predictable revenue stream and a stable operating environment. Of course, the greatest satisfaction for treatment providers comes from witnessing the clear and steady enhancement of treatment program effectiveness, which results from the jurisdiction's ongoing embrace of integrated and systematic research, education, and program development.

Once the first progressive jurisdictions have declared themselves clearly for systematic outcome analysis and program development, others will follow quickly. This is nothing more or less than the scientific method which, in full daylight, it will eventually become negligent not to embrace.

Identification of promising treatment factors

The principle theoretical construct of this dissertation, *practical rationality*, is intended to illustrate a class of treatment factors that can be grounded in theory, evaluated objectively, and adopted incrementally. Justification for the identification of practical rationality as a promising treatment factor is developed in the light of what are herein called *the fallacy of historical recapitulation*, *the principle of entanglement*, and *the principle of rivalry*.

The fallacy of historical recapitulation

Promising treatment factors must not only bear a demonstrated causal relationship to the object of intervention, they must also be shown to manifest their effects within a timeframe that is relevant to the object of intervention. Although the burning match has a clear causal relationship to the unfortunate explosion, there is no point in blowing it out once the fuse has been lit. Effective intervention must target some factor closer to the problematic event, such as the fuse, the blasting cap, or the number of paces separating the clinician from the site of the impending explosion.

There is a long and complex developmental sequence that follows from broad, culturally transmitted factors such as the attitude of male privilege. It is by no means clear that success in altering such attitudes, after years or decades of personal developmental history, will alter the tendency to partner violence that may have originally evolved from them. To target such factors in treatment may be to make the fallacious *assumption of historical recapitulation*. That is, the false assumption that some process equivalent to the actual history of the target factor will be recapitulated, yielding a different result this time. It is the wishful expectation that something like history will replay itself from different premises.

In some cases this assumption of historical recapitulation may be valid, depending in part upon whether the relevant reaction timeframe is long enough for an appropriate recapitulation to take place. For example, when you change your opinion of an opposing poker player's likely cards, you may immediately rethink (recapitulate) your poker strategy (algorithm) and alter the way that you actually play out your hand. But, in another context, even once you recognize that your research into IPV treatment factors is not being utilized in practice, it may yet require several intermediate insights, social developments, and organization changes before you actually alter your research strategy. Your reaction to the recognition of ineffectuality may happen to involve a protracted historical process, including public debate at academic conferences as well as scholarly reflection upon the philosophy of science and the history of applied research. In this case it may be more productive to focus on a more proximate treatment factor such as grant funding designated for the establishment of permanent relationships between academic research institutions and public regulatory agencies.

Reaction timeframe and the practical likelihood of historical recapitulation are relevant to the identification of promising treatment factors in intimate partner violence intervention. It is a conjecture of this dissertation that an emphasis on the constituent factors of practical rationality will have a more significant and durable influence on partner violence than will an emphasis on sociology. This conjecture, which is rooted in clinical experience as well as in theoretical reflection, has informed the identification of practical rationality as the treatment factor under examination here.

Two further principles bear upon the identification of promising treatment factors such as those that constitute the theoretical substance of this dissertation. These shall be referred to as the *principle of entanglement* and the *principle of rivalry*.

The principle of entanglement

The idea of entanglement makes common sense as well as it enhances network efficiency. Ideas clearly combine, support, and constitute one another in a variety of ways.

“All conceptual structure and logical process can be seen as organized within a single hierarchical framework that defines the relationships between parts and wholes. This hierarchical framework is implicit in all cognition, and its characteristics account for many of the observed properties of cognitive and logical systems.”

Richard Feynman - (Feynman, 1965)

For example, some people are apparently capable of learning both arithmetic and algebra. The ideas and operations of arithmetic are fundamental to those of algebra, and they are literally incorporated into the structure of algebra itself. Elementary arithmetic ideas like addition are directly involved in a great many aspects of algebra and of higher mathematics. Can a separate copy of “*the addition idea*” be said to exist “*within*” each of its applications, or does the addition idea remain in some sense singular despite its many instantiations?

It depends upon the implementation. In a single instance of SPSS running on a single-processor personal computer, all addition is accomplished entirely within a dedicated section of the physical CPU. In the global ATM network, addition is replicated many millions of times for efficiency. The global ATM network and the human brain are both said to be *massively parallel* in their architecture and operation. Parallel processes each require ready access to the critical resources on which they depend, and this often means massive replication of those resources. To illustrate this requirement, imagine every ATM in the world communicating with a central location (presumably in Redmond, Armonk, or Hyderabad) for the result of every addition they were required to perform. That might be good for the data carriers, but you would die of old age waiting for your cash. The addition idea has propagated extensively in the world, for efficiency.

Addition is *entangled* with something else in each of its many instantiations. It is necessarily replicated for efficiency in spite of the fact that it is identical everywhere.

In a similar way, elements of an individual's personal history are incorporated into their sense of identity and purpose, their inventory of knowledge, and their repertoire of behavior. Since the cerebral encoding scheme is still largely unknown it must remain conjecture to say that important elements of an individual psyche must, over time, be independently encoded many times within the neural structure of the associated brain. It *is* safe to say, in general, that cognitive functions are constituted by the coordinated activity of multiple brain regions (neural subnetworks), which are subject to the same communication vs. replication tradeoffs as the global ATM network discussed above.

There is bound to be a lot of engram replication in a human being, regardless of the cerebral implementation. How many separate instances of the multiplication table, the sensation of your first kiss, or the principle constructs of your own dissertation are encoded in the neural structure of *your* brain? With which of your understandings have these structures become entangled? How do these understandings affect your behavior and in what forms are your dissertation constructs represented in your present world view?

The principle of entanglement suggests that psychic factors become more difficult to influence to the extent that they become entangled with other factors. Not only are there likely to be more physical replications of entangled factors, but each replication also has the potential to diverge from the original as a result of mutation, evolution, or psychological processes. Hopefully, every instance of the multiplication table in your head is identical, but that first kiss probably evolves a bit every time you recall it. Psychic factors are not only prone to replicate in the process of entanglement, they are prone to evolve as well. Their descendents may be arbitrarily different from themselves and each may have an independent reinforcement history and extinction pattern, both of which are dependent upon context. The extinction of entangled behavior does not generalize across contexts as readily as new learning does, partially because the first stage of extinction appears to be constituted by the active learning of a new context-dependent *inhibition*, rather than by some sort of memory erasure (Bouton, 2004).

Here there sometimes arises a variation on the fallacy of historical recapitulation. That is, the false assumption that some process equivalent to the actual *propagation* history of some targeted treatment factor will be recapitulated, retroactively altering every entangled replica and descendent of the target factor itself. This is as opposed to the *influence* that the original factor or its descendents might have on otherwise independent factors, which is the essence the fallacy of historical recapitulation. Again, it is the wishful expectation that something like history will replay itself from different premises. It is the illusion

that entangled factors have a singular constitution, changes to which are automatically propagated throughout the network of their historical influence, which is to say throughout the personality.

The technical expression of this idea as known in artificial intelligence as “the frame problem”; which is the problem of identifying which elements of a knowledge network need to be reevaluated when some other element (premise) is changed (Haselager *et al.*, 1998; Tawfik, 1999). The common sense expression of this essential idea is that deeply rooted personality factors are hard to change. It may be more productive to introduce desirable new attitudes, beliefs, and behaviors to compete for performance than it is to dwell upon those that are undesirable but well established, or entangled. It is a premise of this dissertation that it is more productive to introduce and promote novel factors, such as heuristic methods, in partner violence treatment than it is to dwell upon established social biases that have propagated throughout a personality over the course of many years.

The principle of rivalry

Rivalry is fundamental to creativity, to heuristic goal seeking, to perception, to cognition, and to operant conditioning. Elaborate neural mechanisms have evolved to arbitrate various cognitive processes efficiently, both in terms of decision criteria and also of cognitive resource management. Processes to which some form of rivalry is essential range from binocular vision to presidential elections. The course of a domestic conflict certainly involves rivalry among alternative cognitive and behavioral trains at many different points throughout the associated interpersonal exchange. Each of these rivalries represents a potential target of intervention.

For example, “time-out” is a treatment factor that targets a very late stage in the course of domestic conflict whereas resocialization reaches back to childhood, prior to the establishment of domestic relationships themselves. In general, there tends to be a tradeoff between the “depth” of prospective treatment factors and their accessibility. Selection for the most promising treatment targets is informed by a consideration of the specific rivalries that are likely to be involved at each stage, the manner in which prospective treatment factors might influence the arbitration among them, and the manner in which such rivalries are likely to play out. Treatment factors related to intentional rationality appear to be promising in this light, applying as they do to the early stages of interpersonal exchange but not reaching back so far into the etiology of partner violence that they are crippled by the fallacy of historical recapitulation.

Practical rationality

The principle construct of this dissertation is *practical rationality*. It is considered here as a promising factor in the etiology and treatment of partner violence, according to the criteria outlined above. In the light of these criteria, the clinical applications of practical rationality:

1. Emphasize current rather than historical factors, avoiding the fallacy of historical recapitulation.
2. Introduce and promote heuristic ideas and supporting elements, which tend to be novel material in this population, avoiding many entangled factors.
3. Compete for performance at multiple points in the cognitive-behavioral train that leads to intimate partner violence, seeking rivalries that will *eclipse* partner violence.
4. Encourage mastery experiences of practical rationality in multiple domains, maximizing reinforcement and encouraging the operant development of behavior that is inconsistent with partner violence.

The notion of practical rationality is developed first as a general foundation, which is then applied to the domain of intimate partner conflict. Practical rationality illustrates a *class* of potential treatment factors that can be grounded theoretically, evaluated objectively, and adopted incrementally by any established intervention program, without regard to ideology. Once they have been justified in theory and validated by research, such factors should be more readily adopted than those which challenge the existing approach more directly. Going forward, a focus on treatment factors, rather than on philosophy or politics, should lower the barrier to entry that has prevented some good research from finding its proper actual expression in mandatory intervention.

Rationality and reasoning

Rationality reflects the *quality* of the relationships among the totality of reasons and conclusions, or among the totality of means and ends, within any given system. This is a surprisingly fuzzy characterization of the attribute which is commonly held to most clearly distinguish human beings from other animals, but this is as precise as it is possible to be about rationality in general. On examination, neither reason nor rationality is as singular or straightforward as its use in common language might suggest. Reasoning and rationality are not clearly distinct from each other nor, outside the bounds of formal logic, does either term have any precise meaning at all.

The concept of rationality connotes a reasonable orientation toward the real world, and the ability to explain conclusions and actions to others in terms that they can understand. Rationality is ultimately a subjective judgment which appeals to some set of relatively primary values, which require no explicit rationale themselves (Mele & Rawling, 2004). Depending upon the context under evaluation, such primary motivators can range from innate or acquired physiological imperatives like hunger and drug addiction, through cultural artifacts like loyalty and patriotism, to formal systems like mathematics or economics. Rationality is a social phenomenon to the extent that a belief or an action must make “sense” to some observer in order to be rational (Tesser, 1994). A judgment regarding the rationality of any action, decision, or belief can be reached only by viewing it in the context of a particular network of relevant premises, values, and intentions; within what is referred to as its “*frame*” in that body of literature where cognitive psychology, economics, and computational theory intersect (Fillieule, 1996; Scherl & Levesque, 2003).

Substantive rationality

Before going any further it is important to distinguish between two quite distinct aspects of rationality which are often referred to as *substantive* versus *procedural*. Substantive rationality consists in the quality of the relations among the elements of a static system; as in a body of knowledge or a formal logical system. Procedural rationality consists in the quality of the relations among the elements of a dynamic system, without any necessary reference to the consequences of the procedure; as in the scientific method or in a bureaucracy (Hume *et al.*, 1978; Searle, 2001; H. A. Simon & Thaler, 1986).

In order to draw this distinction clearly it is important to note that the acquisition of a rational intentional state, or of a rational belief, does not necessarily require a rational process of deliberation, or indeed any antecedent process at all. It may be that when the curtain goes up on a particular epoch (and you *must* pick such a point in the consideration of any actual situation) a very specific fact or intentional state may already be firmly established in working memory, or

possibly even in “hardware” (i.e. cerebral anatomy, neural structure, or physiochemical condition). The history or rationale of such substantive states is, in a very important sense, irrelevant to whatever process or procedure might subsequently refer to it (Pinker, 1998).

To illustrate this idea, imagine a scene taken from a video of the party game, *Treasure Hunt*, where players solve riddles at successive locations in order to claim the prize at the end of the trail. At the opening of any particular scene the intention to find and solve a riddle is already firmly established for each player, and that overarching intention governs the rational process of solving each individual riddle. Within the frame of any particular scene the substantive intention to play the game is static and ahistorical. Looking forward, the riddle solving process will be rational to the extent that it effectively supports the governing intention to play the game. Looking *back*, however, it is impossible to judge the rationality of the same intention-to-play except in the light of a larger frame; meaning longer history, more information, and broader values. Note that each player has come to her intention-to-play by means of her own unique history, beliefs, and values. The same intention might be rational for some and not for others, depending on their respective larger objectives and contextual frames.

From a pragmatic perspective, the history that accounts for a substantive state is sometimes impossible to determine, and it is *always* irrelevant to the substantive quality of the system under evaluation. A rational state can come about entirely by chance, as is generally the case with developments in evolution by natural selection (Darwin, 1866; Dawkins, 1976; Gould, 2002). If you are prepared to tolerate enough failures in your rationalization procedure then there is no requirement for explicit rationale or for any at all, at the front end of the process; only for evaluative criteria going forward. The substantive rationality inherent in any system is independent of its history. Substantive rationality is, by definition, not procedural, historical, or temporal (Nozick, 1993; H. A. Simon, 1957; H. A. Simon & Thaler, 1986). These are precisely the attributes which differentiate *substantive premise* from *consequential state*. The substantive premise is *given* and the consequential state is the *product* of some historical process.

Reflex and instinctual behavior provide good examples of substantive rationality. In fact, genuine instincts are entirely derived from the interaction of truly innate reflex with some aspect of the environment (Gschwend, 1977). Insofar as they are truly innate (directly, genetically determined) there is no antecedent procedure by which they are produced; they are simply invoked. Their functional rationale is originally established by natural selection (or genetic engineering), but those processes are in no sense present within any given organism. The evolutionary history of the species is, in an immediate sense, irrelevant to the rationality of behavior in any particular circumstance. Only the substantive rationality of the instinct remains, and it is entirely ahistorical. The “reason” that the behavior takes place is, in the moment, just that the organism is wired for it. It

may be even more instructive in this regard to consider instinctual behavior that is currently *irrational*, such as the preference for high calorie food in an environment where the more significant threat to prolonged survival is obesity rather than starvation (Cosmides & Tooby, 1995; Kahneman *et al.*, 1982).

Substantive rationality, then, is a static attribute of some *given*, ahistorical network which manifests its consequential effects, if any, without regard to the process from which it arose, if any. The rationality of such a system must be evaluated in light of the circumstances and values of an observer, but the system itself does not change with time; it is simply judged to be more or less rational within different frames (H. A. Simon & Thaler, 1986). When a given set of premises constitute a formal system such as mathematics or neo-classical economics, then the rationality of a given state of affairs is entirely determined by the axioms and rules of that system, once and for all time within its *comprehensively articulated frame*. It is truly static rather than dynamic, even though some procedure (e.g. doing math) may be required to “discover” its elements. Only formal systems have this comprehensive and delimited character (Hofstadter, 1989; Searle, 2001; Sen, 1995).

In fact, any cross-sectional snapshot in the evolution of a dynamic system can be regarded as an independent network, effectively detached from its particular history or future and considered solely on its own account, all at once. From this view there may be many possible histories which could have led to the same result or even none at all, as in the case of truly random trial-and-error. The essence of substantive rationality is that it stands on its own account, and it is the constant temptation and the frequent mistake of common sense to confuse consequences with the procedures that yield them (Kahneman *et al.*, 1977; Mele & Rawling, 2004; Sen, 1995). This is equally true in matters of psychology and psychotherapy as it is in economics and political science, and this confusion is at the root of *the fallacy of historical recapitulation*, which was discussed in the introduction to this dissertation. Substantive rationality is constituted by a static and ahistorical state of affairs within some given frame, which gives it meaning.

Procedural rationality

The essence of procedural rationality, as opposed to substantive rationality, consists *directly* in some dynamic procedure rather than in any substantive state of affairs that might result from it; even in states that may have been intended by the authors of the procedure. Procedural rationality is inherently indirect, resulting from a sequence of steps in which some set of rules is applied without any necessary or immediate reference to intended results. When the sequence and rules of a procedure are formal and deterministic it is referred to as an “algorithm”. When the sequence and rules of a procedure are to some extent indeterminate, it is referred to as a “heuristic” (Kahneman *et al.*, 1982; Mele & Rawling, 2004; H. A. Simon, 1947). It is almost exclusively to the heuristic type of procedural rationality that the remainder of this discussion is addressed. The

specific clinical conjecture that rationalizes this dissertation is that rational heuristic procedure in the interpersonal domain mitigates intimate partner violence.

For example, the constitutional documents of the United States government institutionalize procedures that tend, in unpredictable circumstances, to yield consequences that *presumably would have been* preferred by the founding fathers. Amartya Sen argues, in the context of public policy, that a strong institutional preference always exists for procedural implementation *without any reference to resulting states of affairs* (Sen, 1995). In fact, Sen contends that this is precisely the essence of any institution whatever. He suggests that it is possible to abandon consequential analysis altogether in the understanding of institutional mechanics, in the implementation if not in the genesis of the procedures that constitute it. This is the essential rationale for bureaucracy (Weber *et al.*, 1947). Bureaucrats do not need to embrace, or even be aware of, the substantive consequences that their bureaucratic procedures tend to promote or suppress. Bureaucratic procedures can be inherently biased in favor of individual liberty, dictatorship, *status quo*, or anything else. No reference to these consequences need be incorporated into the bureaucratic procedures themselves. The rationale, if any, is inherent in the procedure itself.

Consider the scientific method, which is a procedure that tends to distinguish true hypotheses from false in the empirical domain, without reference to any substantive hypothesis at all (Fuller, 1989; Popper, 1959). In fact, the scientific method specifically abjures absolute postulates. Or consider the “time-out” procedure commonly promoted in domestic violence intervention programs, which makes no reference to the substance of any particular domestic conflict during which it might be invoked. These procedures do not refer, in themselves, to any of the specific consequences toward which they naturally tend, and this is the essence of procedural rationality.

Efficiency considerations of substantive and procedural rationality

For tractable problems, where all contingencies can be anticipated, efficiency generally favors substantive rationale over procedure (Cover & Thomas, 1991). Substantive rationale is like a static contingency table in this regard; reference is fast and cheap at the time it is required because correct answers have been calculated in advance. Established rules-of-thumb, conventions, generalizations, biases, and prior intentions, all substantive and static, save the time and effort of deliberation in situations where they are adequately effective (H. Simon & Newell, 1959; H. A. Simon, 1947; H. A. Simon & Thaler, 1986). Procedure is often expensive and time consuming. Once reliable conclusions have been drawn and validated in a particular situation, there is no need to reiterate the procedures that yielded those conclusions, at least to the extent that the situation remains stable. It is necessary only to remember and apply the appropriate rule in appropriate circumstances.

On the other hand, complexity favors dynamic procedure over static information, also for efficiency (Morowitz & Singer, 1995; Waldrop, 1994). The efficiency of predetermined conclusions lies in the reduction of time and energy that is required in typical situations, but as complexity increases it becomes computationally intractable to consider every alternative in advance. Complex situations must often be negotiated as they arise. Complex practical situations often require a heuristic procedural approach, both for efficiency and for flexibility.

Formal rationality

A further distinction must also be made between *formal* and *practical* rationality. This distinction applies both to substantive systems and also to procedures (Kincaid, 2000). Formal rationality is deterministic, comprehensive, and definite within the scope of its own terms; there is no uncertainty in formal systems. The expression of axioms and hypotheses in a formal system is limited to a common set of terms, and any such expression is definitely either true or false within the system (frame) itself, whether this can be proven or not (Gödel & Institute for Advanced Study (Princeton N.J.), 1934; Nagel, 1989; Turing, 1936). Formal rationality is the application of arbitrarily given axioms and rules to properly formulated hypotheses in order to establish their truth or falsity within a closed system. As far as it goes in any particular case, formal rationality is cut and dried.

When the object of formal rationality is substantive, the result is a static body of true and false propositions, as in mathematics. Substantive formal results are ahistorical and all possible results of formal systems can be said to, automatically and instantaneously, “already-exist” as the necessary consequence of system axioms and rules. Formal results are direct extensions of a formal logic, without uncertainty. The activity of *discovering* true or false formal states does not determine those states. The act of calculating π does not in any sense determine its infinite stream of random, but very definite, digits. Doing math does not create results, it merely articulates them (Brown, 1994).

When the object of formal rationality is procedural, it is known as an *algorithm* (Cover & Thomas, 1991; Davis, 2001). Algorithms are entirely deterministic. Formal procedures specify, definitely and comprehensively, the steps that are to be taken under any conceivable circumstance, without uncertainty. There is no freedom (or responsibility) in the execution of formal procedure. Perhaps this is why bureaucrats seem to be comforted by it.

Practical rationality: uncertainty and freedom

The essence of the practical process that constitutes most of human rationality is free will; at least relatively free (Jaspers, 1955; Searle, 2001). Practical rationality is non-deterministic in the sense that it routinely calls for judgments which cannot

be supported on the basis of any definite criteria. The crucial element of practical rationality, which necessarily eludes any formal system, is the ability to make choices under conditions of radical uncertainty (Isla, 2000). Radical uncertainty is distinguished from statistical uncertainty, which formal systems can interpret as a determinate probability distribution, as in social cooperation and gaming strategies (Colman, 2003; Skyrms, 2000). Radical uncertainty involves either purely qualitative judgment or unknown probability. People routinely employ a wide variety of shortcuts to help them resolve uncertainty, including rule-of-thumb, habit, convention, bias, generalization, heuristic exploration, and many others (Gowda, 1999; Kahneman et al., 1982). As a practical matter, people are quite prepared to make choices under all sorts of ambiguous circumstances; if necessary, even in the absence of *any* relevant diagnostic information at all (Bossert *et al.*, 1998). Practical judgments that people make under conditions of uncertainty are, by definition, inexplicable on the basis of criteria within the frame under consideration.

Cognitive psychologists and philosophers should be required to identify the miracles that occur within their schemata. Consider, for example, the scientific method itself. While it is appealing to regard science as more or less deterministic, there is no deterministic method for generating new hypotheses or experimental methods, although these are clearly essential to science. Of all the questions the scientist is free to ask, she chooses some and not others. From the perspective of the scientific method, the hypothesis is a miracle. This is not to say that the genesis of a new idea cannot be understood within some other framework, such as psychology, but only that it is inexplicable within the bounds of the scientific method itself (Jaspers, 1971; Jaspers *et al.*, 1986). The helical structure of DNA dawned upon Francis Crick in a dream (Chadarevian, 2003; Crick, 1990) and *then* he drew it into his scientific method.

Practical reasoning calls for indeterminate judgments all the time. Cognitive behavioral schemas are full of various geometric shapes which purport to represent them as determinate entities (Torny-Purta, 1991). Ironically, it is exactly an awareness of the opportunity to make inexplicable choices that constitutes the sense of freedom, without which rationalization would be pointless (Bandura, 1986; Kahneman, 2003; Kahneman et al., 1977; H. A. Simon, 1957). This is not to suggest that choice is ever absolutely arbitrary, but rather that criteria for choice are not always established as prior substantive conclusions. When they are not, then appropriate criteria must be discovered or formulated by means of some rational procedure, the consequences of which, by definition, cannot be foreseen at the outset.

In fact, no consideration of consequences *at all* is required to enable the procedural generation of rational results. The tendency to produce rational results can be inherent in a procedure itself, without any explicit reference to outcome (Laville, 2000; Lavoie, 1992; Sen, 1995). This is the essence of practical procedural rationality. If there is an attribute which distinguishes human

from other animals even more clearly than rationality, it is the capacity to imitate and learn elaborate methods and procedures (Blackmore, 2001; Dugatkin *et al.*, 2000; H. Simon & Newell, 1959).

Practical rationality is also non-deterministic in the sense that, in most cases, its range of potential conclusions and consequences is effectively unlimited. This is due both to the sheer complexity of most real-world situations, and also to the creative aspect of procedures such as the scientific method or of any heuristic search (Isla, 2000; Kahneman *et al.*, 1982; H. A. Simon & Thaler, 1986). There are many ways to skin any particular cat. Energetic and creative people will discover them all and invent more. In practical methods, criteria are frequently indeterminate and creativity is sometimes essential. A creative requirement is often embedded in otherwise formal procedures, like science or music.

	Substantive	Procedural
Formal	Census data Tide tables Mathematics	Launch sequence Algorithm Bureaucracy
Practical	Preference Belief Intention	Deliberation Judgment Trial and error

Fig 1. Two dimensions of rationality

Deliberation and judgment are the essence of practical rationality

It must first be granted that the indeterminacy of deliberation and judgment are the result of an artificial but essential boundary that must always be established in order for any tractable analysis of rationality to proceed (Hogarth & Reder, 1987). The actual train of causality reaches back from psychology through physiology, chemistry, and physics, but nobody seeks to understand art or anxiety in terms of particle physics (Gell-Mann, 1994; Hofstadter, 1989; Ramachandran & Hirstein, 1999). We must always be prepared to draw a box on our cognitive schematic that is labeled “for purposes of this analysis, a miracle occurs here”. This is what distinguishes deliberation and judgment from algorithm, and it is what provides for the unlimited refinement of solutions.

Recall that people are perfectly capable of making forced choices in the complete absence of diagnostic information (Bossert *et al.*, 1998), which is the indeterminate extreme of judgment. An objective of some forms of meditation

(Kapleau, 1966), and also of clinical phenomenology (J. Ferguson, 2004a), is a state of pure attention, devoid of any conscious analysis or interpretation, which is the indeterminate extreme of deliberation. At the deterministic extreme deliberation is a table lookup and judgment is a table entry. Between these extremes lie hybrid procedures, like science and the genetic algorithm, which provide a systematic formal structure for practical deliberation and judgment (Isla, 2000; Nozick, 1993). It is this special class of practical rationality that is of particular interest herein.

The Nobel Prize for Psychology in Economics

It is not coincidental that when the Nobel Prize has been awarded to psychologists, it has been for their contribution to economics rather than to medicine (Benjamin Jr, 2003). It is trivially true that rationality in economic decisions must be fundamentally determined by the nature of individual rationality (Sen, 1995). Economic theory therefore requires a model of the individual human agent whose aggregate behavior generates all observed institutional and market phenomena. Since economics apparently aspires more ardently to the status of a mathematical science than does psychology, it is not surprising that its initial model of *homo economicus* was perfectly rational in the formal, substantive sense; full knowledge, fully normative values, and perfect utility judgments. This is clearly not how actual *Homo sapiens* operate, nor do actual institutions and markets behave in this way, regardless of how convenient that would be for economists and psychologists (Katsenelinboigen, 1997 691). The fact of the matter is that economics and psychology have a fundamental interest in the very same actor; rational or otherwise. In the opening words of his groundbreaking and enormously influential *Principles of Economics*, Alfred Marshall proclaimed economics to be a psychological science (Marshall, 1890).

As it happened, the development of cognitive psychology was delayed for almost 50 years by a fixation on agentless behaviorism (Chomsky, 1967; Freedheim *et al.*, 1992). At the beginning of that period Thomas Carver argued that behaviorism fit well into economic thinking and that it was necessary to adopt it if economics was to be called a science (Carver, 1918). Economic theory thereby adopted psychology, albeit initially in a very formalistic and determinate variety. It was during this period that economists invented and adopted the formalisms of *homo economicus* (Gintis). Formal deterministic models are always preferable where they properly describe empirical reality. Psychology and economics properly cling to these where they can. Determinate models have the ring of truth about them when they stand the tests of theoretical criticism and of empirical experience. They are so much more manageable than the fuzzy indeterminacy of practical judgment.

Thus, psychology and economics reinforced each other in their paralyzing attachment to a model of man that appeared to be both rational and computable. During that time a great deal was learned about reinforcement and extinction,

and about the implications of the learning curve for the rational economic actor. During that time very little was learned about cognition or practical rationality because, for a time, these did not appear to be necessary in order to account for human behavior. While behaviorism maintained the hopeful illusion for 50 years that it was developing into a complete psychology, practical problems with *homo economicus* began to arise almost immediately.

In many respects the values, judgment, and behavior of *homo economicus* was inferred from the observed and theoretical behavior of institutions and markets rather than from any considerations of individual actions or from psychological theory. Formal models of the economic actor are greatly simplified by the assumption that she has access to all relevant information, unlimited capacity to deliberate upon it, and that she does perfect math. Economists clung desperately to this assumption as long as possible, but embarrassing discrepancies between theory and observation began to emerge during the first half of the 20th century (Anderson, 2000; Thaler, 2000; Tucker & Tucker, 2004). At the macroeconomic level *homo economicus* cannot account for irrational market phenomena, such as stock bubbles and cyclical recession. At the microeconomic level, numerous studies highlight regular judgments and behaviors which violate any formal standard of rationality, such as over-discounting of future utility and casino gambling (Tversky & Fox, 1995). Such problems, and the greater tendency of economics toward formalization, apparently account for the fact that many of the major treatments of rationality are to be found in the literature of economics rather than of psychology (Hogarth & Reder, 1987; Katona *et al.*, 1980).

Herbert Simon: bounded rationality

In 1947 Herbert Simon finally pointed out the elephant in the room by introducing his notion of *bounded rationality* (H. A. Simon, 1947), for which he was awarded the Nobel Prize in Economics in 1978. Simon's intimate involvement with the first generation of electronic computers and their applications sensitized him to the practical constraints of partial information, uncertainty, and limited computational capacity. Simon's analysis of administrative organization dynamics sensitized him to the explanatory limitations of the perfectly rational actor and prompted him to articulate a more practical model (Gintis; H. A. Simon & Thaler, 1986). With bounded rationality Simon introduced the concept of heuristics simultaneously to cognitive psychology and to economics. He rigorously demonstrated a wide variety of common biases, rules-of-thumb, shortcuts, and systematic errors that people routinely employ to make economic, social, and theoretical decisions (H. A. Simon, 1957).

I claim that Simon was already a cognitive psychologist by 1947, although his training and work to that point had been in computer science, political science, and economics (H. A. Simon, 1996). To Simon, the expected utility concept looked more like a formal and ideal specification of human desire than a realistic rational process. Bounded rationality reframed *homo economicus* in practical terms. In contrast with the objective factors of the classical economic model of rationality, he declared that this psychological perspective seeks:

1. To determine empirically the nature and origin of values
2. To determine the processes whereby selected aspects of reality are noticed and taken as the bases of reasoning about action
3. To determine the cognitive strategies that are used in reasoning, so that very limited information processing capabilities can cope with complex situations
4. To determine the ways in which non-rational processes (e.g. motivations, emotions, sensory stimuli) influence the focus of attention and the context of rational processes

Simon initiated a new type of analytic thinking about rationality in psychology and a new type of psychological thinking about rationality in economics. Since the publication of *Administrative Behavior* in 1947, the systematic consideration of human rationality has been a common project of economics and of cognitive psychology. Simon's declared lifelong mission was to "harden" the social sciences, particularly psychology, by means of analytic rigor and scientific method (H. A. Simon, 1996). Regarding human rationality, this hardening involved *pushing psychology* in a more formal direction and in *pulling economics back* from an excessive formalization of the very same human agent. Bounded rationality subordinates formalism to the subjective agent acting intuitively in a context of limited information, time, and computational capacity. Simon turned the discussion of rationality toward a clearly psychological emphasis by drawing attention clearly to the non-rational (i.e. practical, psychological) elements of human judgment and rationality.

Daniel Kahneman: procedural heuristics & deliberate reasoning

In 1977, with *prospect theory*, Daniel Kahneman and Amos Tversky advanced Simon's concept of bounded rationality with the proposition that most human judgment is based upon subjective utility, which bears an *idiosyncratic but regular and specific* relationship to objective utility (Kahneman & Tversky, 1977). They and others have subsequently demonstrated the regular nature of these relationships by establishing that something very much like the "psychophysical laws" of perception also apply to many intuitive judgments that are related to even quite abstract concepts (Kahneman et al., 1982). For example, people exhibit a much greater sensitivity to change than to the absolute level of a stimulus, even when it involves abstractions like money. Further, intuitive judgments tend to reflect a concave utility function similar to the response curve

for sensory stimulus (Caginalp *et al.*, 2003). Most people intuitively place a much higher value on the difference between \$1.00 and \$2.00 than on the difference between \$100.00 and \$103.00, although the latter is triple the former (Kahneman, 2003).

Many other regular relationships between subjective and objective utility have also been demonstrated, including framing effects (LeBoeuf & Shafir, 2003), reference dependence (Schmidt, 2003), information accessibility (Schwarz, 1998; Van Harreveld *et al.*, 2000), and attribute substitution (Tversky & Fox, 1995). The idiosyncratic but specific relationship of subjective to objective utility (perhaps not a bad definition of psychology generally!) is demonstrated by the many idiosyncratic heuristics that people use in everyday as well as extraordinary situations. More fundamentally, subjective utility is reflected directly in preferences, values, and feelings about things (Finucane *et al.*, 2000). Where Herbert Simon's heuristics were essentially objective utility functions that happened to reflect the practical limitations of available information, skill, and computational capacity (H. A. Simon, 1996), Kahneman and Tversky's heuristics are fundamentally subjective and psychological in nature. Psychological and economic theory are finally united.

In 2002, Daniel Kahneman was awarded the Nobel Prize in Economics *“for having integrated insights from psychological research into economic science, especially concerning human judgment and decision-making under uncertainty”* (Frankfurter, 2003). Finally a credentialed psychologist gets a Nobel Prize! In addition to his contributions to the heuristics of judgment under uncertainty, Kahneman also recognized the essentially procedural nature of practical rationality in the dynamic relationship between intuitive and deliberate thinking (Kahneman *et al.*, 1982).

Prospect theory is guided by the principle that intuitive judgment holds an intermediate position between the automatic operation of perception and the deliberate operations of effortful intentional reasoning, and that there is an ongoing dynamic interchange among these systems. The operations of perception and intuition (System 1) are typically very fast, automatic, effortless, largely unconscious, and emotionally charged. In contrast, the operations of deliberate reasoning (System 2) are slower, sequential, and effortful. Deliberate reasoning is generally more flexible than intuitive reasoning, and it may be governed to a greater or lesser extent by formal rules. Kahneman's illustration of this dynamic reasoning system appears as figure 2 (Kahneman, 2003).

The multiple stage (and therefore procedural) nature of practical rationality was perhaps most clearly illustrated in Kahneman and Tversky's investigation of probability heuristics in the general population versus those among professional statisticians (Tversky *et al.*, 1983). Not surprisingly, they found a wide variety of systematic errors in the intuition of probability questions among the general population. Surprisingly, they also found these same error tendencies in a sample of professional statisticians; *sometimes*. On closer examination it turned out that statisticians make the same sorts of probability errors as everyone else when they are denied the opportunity to engage in deliberate System 2 reasoning by means of distraction with another task that also required deliberate attention. If statisticians were permitted the time and attention to "do the math" they were capable of *correcting* their faulty intuition in a multi-stage editorial procedure. This effect has since been established experimentally in a wide variety of judgment domains, and there is good reason to believe that individuals vary significantly in their proclivity for this sort of cognitive correction (Smith & Levin, 1996).

The general mechanism of rationality in System 2 reasoning is *deliberation* (Kahneman et al., 1982; Nozick, 1993; Sen, 1995; H. A. Simon & Thaler, 1986). Practical rationality is the heuristic process of deliberating upon the various reasons that support or oppose alternative actions or conclusions. In formal (theoretical) reasoning the end product is generally a belief or the acceptance of a proposition. In practical reasoning the end product is generally an intention, which may or may not result in action (Searle, 2001). Practical rationality is the activity of selecting means that will enable ends by deliberating upon the various reasons that support or contradict one course of action versus another. Kahneman conceives of procedural rationality as any systematic process that brings potentially relevant information to attention for purposes of deliberation and/or the application of previously formulated heuristics (Kahneman, 2003).

From *Homo economicus* to *Homo sapiens*

The course of thinking about rationality from *homo economicus* to heuristic deliberation can be thought of as an advance in perspective from formal substantive rationality to a truly psychological understanding of practical procedural rationality.

	Substantive	Procedural
Formal	Thomas Carver B. F. Skinner <i>Homo economicus</i>	Herbert Simon Artificial Intelligence
Practical	Herbert Simon Bounded Rationality	Daniel Kahneman Heuristic Procedure

Fig 3. Models of rationality

Practical procedural rationality and the genetic algorithm

The essential flexibility of a special class of practical rationality is attributable, in the terminology of evolutionary and computational theory, to the *genetic algorithm*. The genetic algorithm is the most fundamental possible teleological mechanism, and all practical goal-seeking procedures incorporate it to some extent (Bäck *et al.*, 1997; Gould, 2002). At this level of abstraction, there is an essential commonality to all practical rationality that cuts across all domains and applications. The genetic algorithm is a hybrid in which a formal procedure incorporates one or more fundamentally practical elements, or heuristics (Bäck, 1996; Wolfram, 2002). Heuristics are non-deterministic methods of generating possible approaches to a given problem or goal. The generation of potential solutions in any particular situation can reflect an arbitrary level of domain expertise and the fitness function by which they are evaluated can be arbitrarily subjective. In other words, practical procedural rationality accommodates and utilizes human expertise, creativity, and judgment in a systematic way.

I am tempted to call practical procedural rationality the *General Actualization Procedure* but that would constitute a descent into jargon mongering, which I have tried to confine to the introduction. However, the appellation does capture the essence of the basic genetic algorithm quite nicely. It is a generic method for making progress in any domain. It is a method of actualizing an intention.

The genetic algorithm is defined by:

- ∅ Goal, G
- ∅ Solution generator $S = f(G)$
- ∅ Fitness function of solution to Goal, $FG(s)$

The genetic algorithm proceeds as:

Generate a set of solutions, $S_0 = [s_{01}, s_{02}, \dots]$.
While minimum termination condition not met;
 [Evaluate the solutions with respect to the goal.
 Select the "best" solutions and ignore others.
 Replenish the population of solutions in S_0 .]
Output the best solution found.

Genetic algorithms are based on a biological metaphor. They treat learning as a competition among a population of evolving candidate problem solutions. A fitness function evaluates each solution to decide whether it will contribute to the next generation of solutions *more than others already considered* (Luger & Stubblefield, 1993). The genetic algorithm relies upon a heuristic process of progressive refinement, which can be a hybrid of formal and practical procedure. The formal component provides a vehicle for goal seeking of any kind and the practical creativity and judgment embedded within it ensure that forward progress can always be made, regardless of novelty or uncertainty in any particular circumstance. A heuristic is any exploratory technique that evaluates feedback to improve performance relative to some goal or objective. Heuristics can be arbitrarily efficient or inefficient. Persistence can compensate for any inefficiency barring death or resignation from the effort.

The essential teleological mechanism of heuristic procedure is in the evaluation of outcome rather than in the generation of potential solutions (Bäck et al., 1997). It is only the efficiency of a heuristic that is dependent upon the quality of the solution generation mechanism, not its effectiveness. The genetic algorithm works perfectly well with random solutions; assuming that there is sufficient time and energy available to cull the less satisfactory candidates. For example, it has required about 4 billion years for *Homo sapiens* to evolve from blue algae by means of natural selection (Gould, 2002), presumably without intentional design at any stage. Efficiency in biological evolution should improve greatly with the development of expertise in the domain of genetic engineering, just as the effectiveness of interpersonal negotiation should among intimate partner violence offenders with the development of expertise in *that* domain.

Note that many practical procedures do not appear to exhibit the heuristic property common to all genetic algorithms because good solutions to their common applications have already been found and memorized. On inspection, in

many such cases there is an iterative heuristic lurking just beneath the routine solution. For example, the procedure that my son Paul follows for getting to work is to drive his car there. After a couple of years his get-to-work algorithm was performed automatically, until his car didn't start on the morning of his salary review. He considered calling a cab, stealing a car, and asking his roommate to drive him to work, $S_0 = [s_01, s_02, S_03]$. Paul decided, $FG(S_03)$, to ask his roommate for a ride but was denied. He then decided, $FG(S_01)$, to call a cab, which terminated the procedure because it worked.

Heuristics can be arbitrarily generic or domain-specific. Practical procedural rationality is generally quite specific to some particular domain. In one limiting condition, progress can be made by means of the genetic algorithm even when candidate solutions are generated literally at random, which has presumably been the case with biological evolution to date. At the other limit experts can often generate satisfactory solutions, based upon theory and experience, on their first trial. A further discussion of domain specificity is undertaken below.

The operational framework of practical procedural rationality

Practical procedural rationality consists of concrete behavior, both overt and covert, and is consequently the object of reinforcement and progressive development by operant conditioning. Exercise should tend to bring its component factors into systematic correlation with one another (Catania *et al.*, 1988). Practical procedural rationality should therefore have some characteristic performance signature(s), which would be visible in the light of appropriate assessment instruments. The operational components of practical rationality must include at least the following elements:

1. Diagnostic factor awareness
2. Future orientation
3. Rational procedure

These elements will first be discussed in their general sense, although in practice they are certainly all heavily dependent upon the specific domain in which they are actually applied.

Diagnostic factor awareness

In order to draw the right conclusion about what to do, it is generally necessary to proceed on the basis of an adequate description of the situation. The quality of any rational procedure is largely constrained by the quality of the information that is available to it. In the terminology of social psychology, environmental information that is relevant to a particular situation is called "diagnostic" (Tesser, 1994). What information is available in a particular situation, what people attend to, and how they interpret it, has a great deal to do with the conclusions that they come to. Practical rationality is dependent upon the overall quality of the

environmental information that the human actor apprehends, whether consciously and explicitly or otherwise. Diagnostic factor awareness constitutes the cognitive aspect of the model upon which judgment and action are based. It is the determinant aspect of a cognitive schema (Beck, 1976).

Affective and motivational factors also influence practical procedure directly (Frijda, 1986, 1993; Lazarus, 1991; Loewenstein, 2000). Substantive affective factors are manifested in the emotional valence that is attached to any cognitive element or schema, which amounts to a qualitative bias. Procedural affective factors include emotional states and their systematic biases, such as the negative memory bias of depression (Barry *et al.*, 2004) or more generally, reticular activation/inhibition (Lazarus, 1991). Since affective factors clearly influence the course of many rational procedures, they can be distinguished from diagnostic factors only by virtue of the fact that they are internal rather than environmental.

Cognitive *awareness of* affective factors, on the other hand, does constitute a further distinct category of diagnostic information, which can be symbolized and manipulated by a practical procedure. In this sense the personality and its status are treated as a part of the environment. Explicit awareness of affective factors provides the *potential* for systematic correction of the biases inherent in the underlying affective factors themselves (Frijda, 1993; Lazarus, 1991). For example, a psychologist might suggest to her client, “When you *become aware* that you are angry, put your hands in your pockets.”

Finally, it should be noted that among the many peculiarities of human heuristics, judgment can also be diluted or distorted by the consideration of extraneous, non-diagnostic factors, either cognitive or affective (Nisbett, 1981; Tetlock *et al.*, 1996). This sort of cognitive influence is illustrated by the fact that someone with “*a rotten childhood and deviant sexual fantasies*” is regularly judged more likely to be a child molester than someone with “*a rotten childhood, a liking for pizza, a job managing your local hardware store, and deviant sexual fantasies*” (Tesser, 1994). Mood congruent memory bias illustrates how non-diagnostic affective information can influence rational processes (Barry *et al.*, 2004). For this reason non-diagnostic environmental factors that influence a rational procedure must be treated as though they were diagnostic, even though they can only degrade the rational quality of the result.

While the tendency toward affective awareness is sometimes considered as a global personality trait that is independent of context (Goleman, 1996), the specific factors that are diagnostic in particular situations obviously vary greatly from one domain to another. Relevance depends upon the nature of the immediate objective. For this reason any general assessment of the “diagnostic factor awareness” factor should probably restrict itself to the affective realm, or to very general measures of intelligence and cognitive function. This issue is considered further under the heading of “domain specificity”, below.

Future orientation

The nature and scope of the plans and projects that can be undertaken, and the manner in which they are approached, has a great deal to do with an individual's orientation toward time, especially toward the future (McGrath & Tschan, 2004). *Future time is the terrain on which all action unfolds and on which all intentions are either actualized or not.* Major decisions like where to live, what kind of family to have, what sort of career to pursue, or when to retire often involve the allocation of time prior to death. Death is the horizon of most practical rationality, even for practical religious purposes (Jaspers, 1955; Searle, 2001). Within that ultimate horizon, each domain of behavior has its own characteristic horizon and timescale, which both enable and constrain the operation of practical rationality.

A great deal of cerebral architecture is dedicated to the temporal organization of cognition by means of episodic and semantic memory, and by means of auto-noetic consciousness (Goldberg, 2001; Schore, 1994; Wheeler *et al.*, 1997). Episodic memory is identified with auto-noetic consciousness, which is memory or imagination from a first person perspective, as though one were actually present in an unfolding mental "scene" (Gardiner, 2001). Auto-noetic consciousness enables a sort of mental time travel in which an individual can experience herself in hypothetical future circumstances and ponder alternative scenarios as though *in situ*, with her ordinary phenomenological context at least largely intact. Auto-noetic consciousness enables a robust imagination.

Auto-noetic consciousness is distinguished from noetic consciousness, which is limited to feelings of familiarity or knowing (Wheeler *et al.*, 1997). Noetic consciousness, which includes third person knowledge of the past or future, is identified with semantic memory. Noetic consciousness and semantic memory deal with general, abstract information. It is important to distinguish between noetic and auto-noetic consciousness because they are subserved by largely separate cognitive systems and because individuals appear to differ substantially in the prominence of one system or the other (Gardiner, 2001). Auto-noetic consciousness seems to be, literally, the subjective perspective on memory. Unfortunately, assessment of auto-noetic consciousness to date has focused on the evaluation of neurological damage rather than on individual tendencies to engage or employ it (Natsoulas, 2003).

Time preference is a term used in economic theory to designate the human tendency to *disproportionately* discount future objective utility relative to current objective utility (Loewenstein *et al.*, 2002). The current utility of receiving a future reward is less than the reward's utility will be when it occurs, and the more distant that reward the less is its current utility. In economic theory, it is assumed that all factors related to the temporal influence on utility can be summarized in a single parameter known as the "discount rate". Time preference goes beyond the objective discount rate to reflect an absolute and objectively irrational preference that people have for present rewards. This reflects the natural human tendency

to emphasize the present over the future, which may be an evolutionary adaptation (Cosmides & Tooby, 1995). An obvious selection bias in this direction is the fact that present consumption is sometimes necessary for survival until the expected future payoff.

Individuals seem to differ markedly in their tendency to emphasize a particular temporal frame, and to exhibit a consistent temporal bias toward past, present, or future (Zaleski, 1994; P.G. Zimbardo, 1994). Most of the research on time perspective has focused on future orientation because this is the temporal dimension in which cognitive processes manifest themselves in affect and behavior, and because it is the dimension of greatest concern to most psychotherapy. Future orientation has been characterized in a number of different ways, including:

1. General orientation toward past, present, and future (P.G. Zimbardo, 1994; Philip G. Zimbardo & Boyd, 1999)
2. Consideration of the future consequences of actions taken by self or others in the present (Strathman *et al.*, 1994)
3. Time preference future utility discounting (Loewenstein *et al.*, 2002)
4. Duration of time covered by future considerations (Nurmi, 1991)
5. Content of thoughts about the past, present, and future (Nurmi, 1989; Pulkkinen & Ronka, 1994)
6. Optimism versus pessimism about the future (Achamamba)

The most comprehensive conception of temporal orientation is the general measure reflected in the Zimbardo Time Perspective Inventory, which was originally developed on the basis of a reader survey in *Psychology Today* in which about 12,000 people participated (Gonzales, 1985). Since then the instrument has been extensively evaluated and refined, and good psychometric properties have been established for it (Philip G. Zimbardo & Boyd, 1999).

Generally, regarding the correlations that have been done among the various measures of future orientation, individuals with higher scores tend to exhibit more considered behavior across domains, whereas individuals with higher present orientation scores tend to engage in more risky and unhealthy behaviors. Correlates have been established between future orientation and college performance (Murrell & Mingrone, 1994), general well-being (McCabe *et al.*, 2000), HIV preventive behaviors (Strathman *et al.*, 1994), smoking, alcohol use (Agnew & Loving, 1998), and risky driving practices (P. G. Zimbardo *et al.*, 1997). A correlation has also been established between future orientation and sensitivity to future public issues like environmental policy (Strathman *et al.*, 1994). A central conjecture of this dissertation is that future orientation is also a moderator of intimate partner violence.

The influence of future orientation in such a wide range of domains suggests that it is fundamentally involved with executive function and planning processes.

From the perspective of this dissertation, this is due to the fact that future orientation defines the effective horizon of all practical procedural rationality.

Semantic Rationality

Awareness of the relevant diagnostic factors in any particular situation provides the basis for rationality, and future orientation defines the horizon within which it can operate. The tendency to actually engage in rational procedure both enables and constrains the extent to which an individual can exploit this potential. Rational procedure can be entirely unconscious, as in the case of automatic driving or walking (Schneider & Chein, 2003). Rational procedure can also be entirely lacking in particulars, as in the case of evolution by natural selection (Gould, 2002) or silent meditation (Jones; Nightingale, 1995). The focus here is on procedural rationality that is practical within a formal framework, adaptive, and explicit. I will call this *semantic rationality*. Semantic rationality is similar to Kahneman's "System 2" deliberate reasoning except that it requires an explicit awareness of formal procedure that embodies the basic genetic algorithm, which Kahneman does not (Kahneman, 2003).

Semantic rationality is practical within a formal framework. Anything that a human being can learn to do is a more or less rational procedure, depending upon how well the procedure fits its purpose (Blackmore, 2001; Mele, 2002). The essence of formal rationality is that it is entirely defined by an explicit set of axioms and logical operations. Practical rationality is distinguished from formal rationality precisely by the extent to which it is unspecific and indeterminate, although it operates almost invariably within some formal procedural framework (H. A. Simon & Thaler, 1986), such as the basic genetic algorithm or the scientific method.

The psychological agents of practical rationality are deliberation and judgment which, in the final analysis, are essentially unspecific and indeterminate (Mele & Rawling, 2004; Searle, 2001). Practical procedures bring deliberation and judgment systematically to bear on specific situations, resulting in higher quality solutions in those domains. Individuals with a predilection for this type of practical rationality should exhibit superior judgment and performance in most domains where it is applied. A predilection for this type of practical rationality should mitigate intimate partner violence because higher quality solutions to conflicts do not tend to include violence.

Semantic rationality is adaptive. A special class of rational procedure incorporates an iterative heuristic mechanism, the genetic algorithm, which provides the possibility of unlimited evolution and improvement in the solution of any problem or in the actualization of any project (Gould, 2002; Kahneman et al., 1982).

'Tis a lesson you should heed,

*Try, try again.
If at first you don't succeed,
Try, try again.*

Thomas H. Palmer (1782-1861) (Palmer, 1840)

The great advantage of iterative heuristics is that they do not depend upon the quality of any particular approach to a problem. In particular, they do not depend upon the *first and only* approach to a problem. Persistence and flexibility are, eventually, the mothers of great invention. Depending upon the tolerance of the environment and the persistence of the individual, adaptive procedures of this type can eventually find any possible solution to any particular problem.

People regularly execute extremely complex procedures without realizing what they are doing or how they are doing it (Schneider & Chein, 2003). There is probably no natural limit to the scope or sophistication that such unconscious behavior can manifest. In his professional memoir, Francis Crick claims that his version of the scientific method eventually became so familiar to him that he no longer explicitly planned even complex laboratory procedures (Crick, 1988). Undoubtedly, Crick *could* have articulated most of the general and specific principles and procedures that he followed in the lab had he been asked to do so. He could even have written most of them down for someone else to follow, as he often did.

Semantic rationality is explicit in the sense that its essence must be capable of articulation. This makes it the sort of rationality that can be specified, recorded, assessed, and imparted by teaching, intervention, and socialization. Of course, the requirement for explicitness would also prove to be very handy for any research on semantic rationality that the author or others might wish to carry out in the future.

Finally, two important constraints on the effectiveness of any form of rationality are an individual's tendency to respond to rational conclusions and their discipline in carrying out their own established intentions (Bratman, 1999; Heidegger, 1968; Kahneman et al., 1982). In 1950 (just prior to my birth) my father wrote a letter to his mentor, Carl Rogers, which highlighted this issue in the psychotherapeutic context as follows:

"The aspect of the therapeutic puzzle that currently most occupies my attention centers around those clients who seem to achieve intellectual insight but little significant modification of behavior." (C. K. Ferguson, 1950)

Individual tendencies toward compliance, persistence and commitment vary dramatically. At one end of this spectrum lies the *akratic* who intentionally acts, or fails to act, in some way contrary to his better judgment and interest *without reason*, simply as a failure of will (Aristotle & Ostwald, 1962; Heidegger, 1962;

Mele, 2002). At the other end of this spectrum lies the (hypothetical) *perfect agent*, who executes authentic instructions exactly and with total resolve (Bandura, 1986). Not only does the perfect agent execute authentic instructions issued by external authorities, but he also follows the rational conclusions that he comes to in support of those instructions with equal fidelity and discipline, like Spock on Star Trek. Although the author cannot identify any promising methods of assessing the tendency toward rational compliance and intentional discipline, individuals clearly do vary substantially on this dimension and the effectiveness of any sort of rationality is thereby constrained or enabled.

Executive IQ

Construing practical rationality in these terms, individuals each must have some specific potential for rational process and action that tends to emerge from the ongoing interplay of: 1) diagnostic factor awareness, 2) future orientation, and 3) proclivity for semantic rationality. I will call this potential *Executive IQ*, which is $EQ = f(DFA, FO, SR)$. Given a reasonable scalar assessment of its three factors, it would be possible to construct a score analogous to the Wechsler IQ, calibrated to a mean of 100 and a standard deviation of 15 if you like. Since no valid and reliable instruments are currently available to assess many of these constructs this will have to await further foundational research beyond the scope of this dissertation.

Domain specificity

It must be noted that beneath this entire discussion lurks the crucial question of domain specificity. Can the factors of Executive IQ claim some generalized existence across a broad range of contexts, or can they be legitimately considered only in the context of some particular class of situations? This is essentially the question of construct validity and scope (Kazdin, 1998). In the process of arguing for the validity of a distinct functional “module” that is responsible for language acquisition Jerry Fodor offers a useful list of five distinct levels at which a claim of domain specificity can be made (Fodor, 1983):

- (1) A particular situation or task at hand
- (2) The skills that are employed to address a class of situations
- (3) The information that must be assumed in an individual who can produce a rational result in a class of situations
- (4) The neural mechanisms or processors that are required to sustain these skills and knowledge
- (5) The genetic substrate that makes 1-4 possible, or even that dictates 1-4

The factors of Executive IQ discussed herein are undoubtedly constituted of elements at all these levels, although the focus of this dissertation is primarily at the functional domain level (level 2 in Fodor’s list). While the constructs proposed

herein as factors of Executive IQ are sufficiently abstract, broad, and subtle that they will support a wide range of applications, it is clear that there are some domains in which they are more directly applicable than in others. For example, mathematical problem solving is commonly taken to be entirely atemporal and future orientation would not seem to play much of a role in rationality within that domain. But consider the case in which the problem at hand must be solved in multiple stages over a long period of time, as often characterizes the projects of professional mathematicians and scientists. Certainly an awareness of relevant diagnostic factors is universally relevant to any type of problem solving, almost trivially, and it is hard to imagine a domain of practical rationality in which persistence and adaptive heuristics would not be useful.

There is probably a good case to be made for the validity of a very general sense of Executive IQ and its constituent factors. Of course, such a claim would have to be defended by means of convergent and discriminant analysis across multiple domains in combination with a broad range of other measures. Since no robust assessment instruments currently exist for many of the factors proposed as constitutive of Executive IQ, an analysis of domain generality lies somewhat further down the path of research into these constructs. I will therefore leave the question of generalized Executive IQ aside and I will assume here that the constructs under discussion are always bound to some relatively specific domain context. Certainly it is always in the context of some particular situation that they actually manifest themselves, and in which they can be assessed.

Domain skills and knowledge

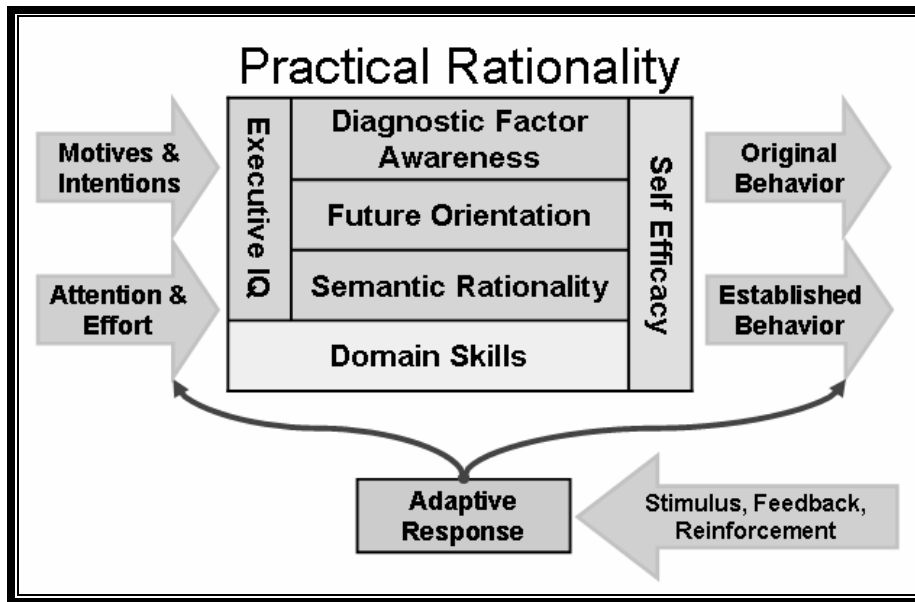
Certainly there is always some essential set of domain specific skills and knowledge that is required in order to produce rational results within any particular domain. At a bare minimum there must be some knowledge of what diagnostic factors in the environment are relevant to the rational objective, and some pre-established skill for operating on these in some way. In the case of entirely formal domains this set is entirely given by the explicit axioms and operations that define the domain itself. In all practical domains there must be some corresponding set of essential skills and knowledge which designate the objects of interest within that domain, the pertinent relationships among them, and the range of methods that can be used to operate upon them. The quality of this set both enables and constrains the effectiveness of practical rationality.

For present purposes the principal domain of interest is conflict resolution between intimate partners, and the role of practical rationality in that domain. While there are undoubtedly many domain-specific factors that influence conflict resolution, certainly negotiation skills and an attunement to reciprocal emotional presentation are essential to successful (rational) results in the domain of intimate partner conflict resolution (Cattaneo *et al.*, 2005).

Domain self-efficacy

Finally, a sense of self-efficacy has been shown to be an important moderator of a wide range of behaviors across many domains (Bandura, 1986, 1997), including interpersonal aggression (Bandura, 1973). It is postulated herein that self-efficacy in the domain of interpersonal negotiation is an important moderator of practical procedural rationality in intimate partner conflict resolution, and consequently that it moderates the incidence of intimate partner violence. It is further postulated that in this particular domain, self-efficacy not only moderates interpersonal negotiation, but that it predicts both the strength and the inter-correlation of the Executive IQ factors discussed above. The rationale for this hypothesis is presented below under the discussion of operant conditioning effects on the factors of practical rationality within a particular domain.

An illustration of the general model of practical rationality that is being put forward herein appears below as figure 4.



Practical rationality is a an operant network of factors

To the extent that the model of practical rationality put forward herein is accurate, valid scales for the essential factors of practical rationality in any *active* domain should tend to synchronize with one another in one or more characteristic patterns, or signatures. This prediction is based upon the claim that practical rationality in any particular domain is the product of operant conditioning operating upon the network of factors that constitute it. These factors are taken to be: 1) diagnostic factor awareness, 2) future orientation, 3) semantic rationality, 4) essential domain skills, and 5) domain self-efficacy.

The synchronization effect is a consequence of the fact that all the performance factors involved in any operant network tend to be reinforced or extinguished together, by definition. Theoretical support for this effect can be drawn both from the literature of operant conditioning (Skinner, 1938, 1974; Tighe, 1982) and also from the theory of self-organizing complex adaptive systems (Gell-Mann, 1994; Waldrop, 1994; Yates, 1987), which has interpreted operant conditioning in terms of neural network operations (Schmajuk, 1997).

Practical rationality in intimate partner violence

I assume that intimate partner violence usually reflects a neglect of more rational alternatives to the resolution of interpersonal conflict. Recall that rationality refers to the quality of the relationships among the totality of means and ends within any given system. In the case of interpersonal conflict these include not only the immediate factors present in some particular situation, but also future interpersonal, social, emotional, legal, and financial consequences of any particular approach. Partner violence can be regarded as one possible response to be evaluated among many.

Approach	Desirability	Confidence	Weight
Negotiation (socially competent)	100	0%	0
Coercion (socially incompetent)	1	100%	1

Although there are many other factors involved in both interpersonal conflict resolution and in partner violence, practical rationality certainly has the potential to systematically enhance the quality of response in sensitive situations, to the extent that it is effectively employed. This perspective suggests a close examination of those factors that can be expected to underlie the rational approach that has presumably been neglected when resort to partner violence is taken. If the construct of practical rationality developed herein can be validated and operationalized, it may suggest a productive shift in emphasis for many of the IPV court mandated intervention programs that are now prevalent throughout the United States, as discussed in the introduction.

Statement of the Problem

The broad conjecture of this dissertation is that practical rationality, as defined above, acts as a moderator of intimate partner violence. The central thesis of this dissertation is that practical rationality can:

1. Be operationalized as either a general or a domain-specific trait, which I have called Executive IQ, in terms of three factors:
 - a. *Diagnostic Factor Awareness*
 - b. *Future Orientation*
 - c. *Semantic Rationality*
2. Be operationalized as a domain-specific trait in any domain where two further factors can be established and assessed:
 - a. *Domain Specific Skills*
 - b. *Domain Self-Efficacy*

Confirmation of these conjectures will require the construction and validation of appropriate scales and reliable assessment instruments for each of these five factors, as well as the analysis of their interaction and the establishment of convergent and discriminant validity. This suggests an ongoing research agenda that will require a large number of subjects over an extended period of time.

Such a program will fit very well into the type of IPV intervention jurisdiction that is recommended in the introduction to this dissertation. It is the author's intention to carry this program and its cousins forward in that context. In the context of this dissertation, it is the author's intention to initiate this program with a straightforward research project that can be supported by the current availability of subjects in Pittsburgh, and that relies upon a proven instrument. Among the five factors that constitute practical rationality, future orientation is the only one for which a valid and reliable assessment instrument currently exists.

The research hypothesis of this dissertation is that a sample of offenders in the court mandated intervention program in Pittsburgh will score significantly lower than the normative population on the future orientation scale of the Zimbardo Time Perspective Inventory (Philip G. Zimbardo & Boyd, 1999). If this hypothesis is verified, then it will encourage operationalization of the other factors in the model, and the development of valid instruments to assess them.

Method

Approval has been granted by the board of directors of the Domestic Abuse Counseling Center of Pittsburgh (DACC) to conduct questionnaire survey research upon the offenders enrolled in their mandatory IPV intervention program during the latter part of 2005. In the normal course of their program DACC facilitators routinely administer questionnaires which they feel are instructive or supportive of their psycho-educational curriculum. These questionnaires are often taken from popular periodicals (such as the issue of People magazine in which the Zimbardo Time Perspective Inventory originally appeared), and from other formal and informal sources.

DACC also periodically invites guest facilitators to present elements of their curriculum. The principle investigator proposes to facilitate group sessions of the DACC program with a focus on the topic of future orientation and its relationship to interpersonal relations and partner violence. This would be a normal subject for such groups. At the beginning of the group session the Zimbardo Time Perspective Inventory will be administered to the group members and collected without personal identifying information. This will constitute the data collection aspect of this research. Following the administration of the ZTPI the principle investigator will facilitate a discussion of the issues surrounding future orientation and possibly guide the group members through a scoring of their individual ZTPI protocols. A number of questionnaires, to be determined, will be administered and anonymously collected in this way in Pittsburgh.

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From: "Anthony \"Agee\" Greene" <afgreene@fielding.edu>
To: "Joseph G. Ferguson" <Fergi@cox.net>
Subject: RE: Completion of Violence Prevention Track
Date: Wed, 15 Jun 2005 05:25:13 -0700

Joe,

I'm in a bit of a rush right now, so I didn't check the requirements, but I think that the requirement is that you need to attend at least 3 of the 4. However, I would be glad to co-teach with you at WS, as that would be the next iteration of the Etiology of Anger and Violence seminar, which I am doing solo at SS '05. I have begun reviewing your dissertation. I'm not yet far enough into it to know if I like it, but it is definitely scholarly and of doctoral scope.

Anthony F. Greene, Ph.D.
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P.O. Box 357220
Gainesville, FL 32635-7220
Ofc: (352) 392-1161, ext. 4278
FAX: (352) 846-1030

"It ain't easy being Greene."

From: Joe Ferguson [mailto:fergidotcom@hotmail.com]
Sent: Tue 6/14/2005 4:13 PM
To: Anthony "Agee" Greene
Subject: Completion of Violence Prevention Track

AGee;

I believe that I have scheduled all of my remaining Fielding requirements so that I can graduate at the coming Winter Session. Everything, that is, except for one of the four required seminars in the Violence Prevention Track, and I would very much like to have that entry on my transcript. I have already completed Psych Assessment, Cognitive Bases, and Legal & Ethical with a Violence Track orientation, and I am currently under contract with David Blustein to complete Social Bases with a VT orientation. I posted my intervention protocol on the Violence forum long ago, and my dissertation is fundamentally motivated by a violence prevention orientation. I completed my practicum in IPV intervention and I will be maintaining a focus on work and research in this area for a long time to come after graduation. I am a violence prevention kind of guy.

All that I am missing is my fourth in the national session seminar series that you and Dick Stuart have been putting on at the national sessions. I guess Dick is retired?

That leaves me only this coming Winter Session to complete my final seminar requirement, so I would like to petition you for one of the following options, or for another suggestion:

- 1) Waive the requirement for the fourth seminar for me, or
- 2) Let's do a workshop at Winter Session together and I will take Dick's place.

I look forward to your feedback on my dissertation draft. I really hope you like it.

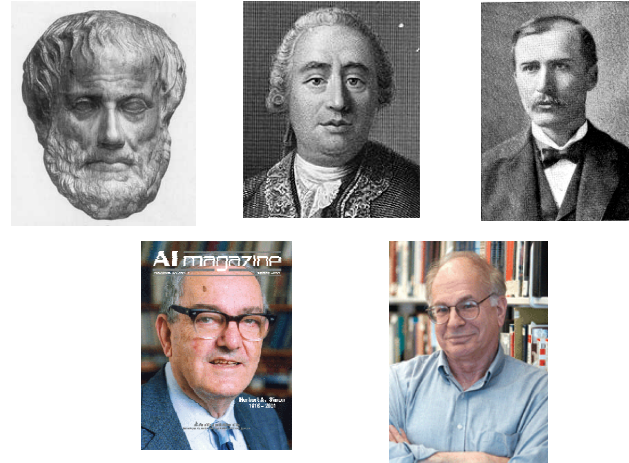
Warmly,

Joe Ferguson ☺

Practical Procedural Rationality

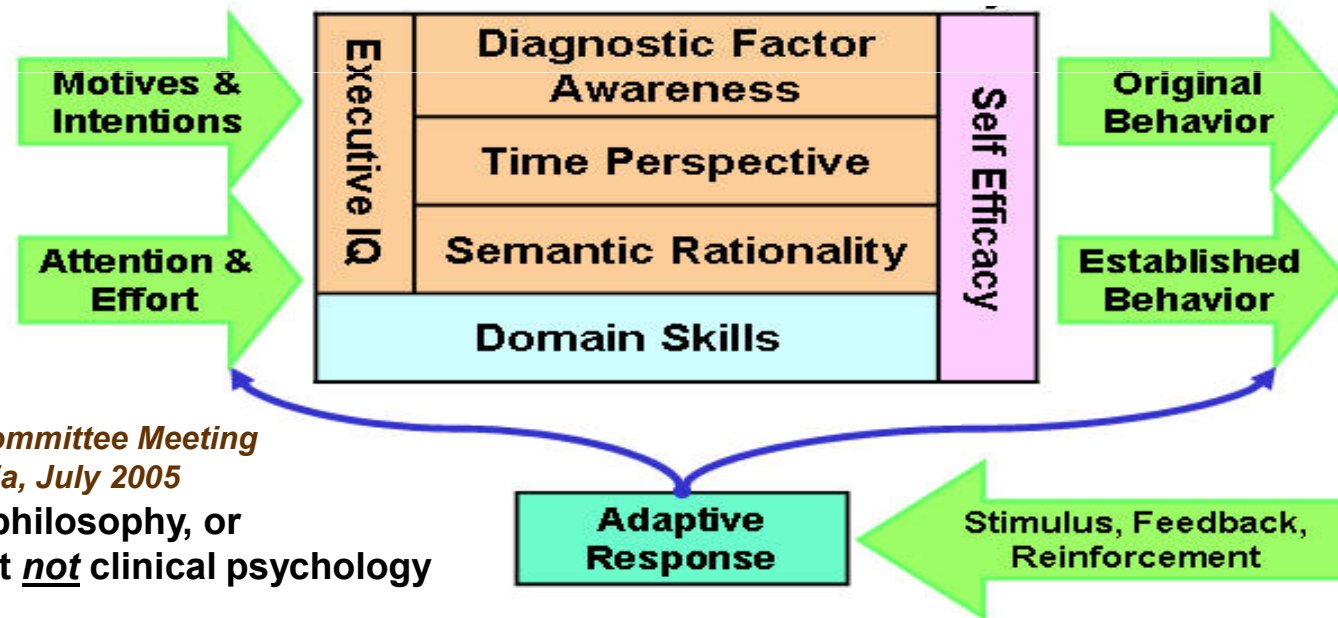
	Substantive	Procedural
Formal	Census data Tide tables Mathematics	Launch sequence Algorithm Bureaucracy
Practical	Preference Belief Intention	Deliberation Science Trial and error

Fig 1. Two dimensions of rationality



	Substantive	Procedural
Formal	Thomas Carver B. F. Skinner <i>Homo economicus</i>	Herbert Simon Artificial Intelligence
Practical	Herbert Simon Bounded Rationality	Daniel Kahneman Heuristic Process

Fig 2. Models of rationality



*Dissertation Committee Meeting
Alexandria, July 2005*
Economics, philosophy, or
maybe AI, but not clinical psychology

*"I'm not yet far enough into it to know if I like it, but it is definitely
scholarly and of doctoral scope." - Early feedback from AGee*