Class 9 - Problems with Rationality
Stich and Nisbett, "Justification and the Psychology of Human Reasoning"

I. Why reflective equilibrium is so wise

When we make inferences, we always balance a variety of factors: the strength of different beliefs, the veracity of testimony, environmental conditions during an observation, even our interests.
Because this process is so familiar, the claims we have examined in favor of reflective equilibrium may seem a bit like truisms.
Of course, we seek reflective equilibrium!
But, the method we have been examining is not merely a description of our actual behavior.
There is a normative claim being made by Rawls, and Goodman, and others.
Seeking reflective equilibrium (SRE) is a method of justifying one's beliefs, of determining which beliefs we are supposed to hold and which ones we are supposed to yield.
Reflective equilibrium is a point at which one's considered judgments about particular cases are balanced with one's judgments about a theory about those cases.
When one is in reflective equilibrium, according to defenders of SRE, one's beliefs are not merely described, but justified.

We have looked at SRE in linguistics, ethics, epistemology, and philosophy of science.
We have contrasted SRE with foundationalism.
In foundationalist approaches, we are given some fundamental truths from which we derive the rest of our knowledge.
Our particular beliefs (our judgments about particular cases) are justified if they follow from these foundational truths.
In ethics, we took moral theories like those of Kant and Mill as our fundamental truths.
In epistemology, we took either the positivists' sense data or Descartes's postulates and axioms.
The purported advantage of foundationalist justification would be that if one's starting principles were secure, and one's logic were secure, one could be quite certain about one's beliefs.
Against foundationalism, Sellars and the holists argued that no claim wears its justification on its surface.
The given is a myth; there are no secure fundamental principles.

Both foundational approaches and SRE rely, in some ways, on intuitions.
But it is important to distinguish SRE and foundationalism.
For the foundationalist, these intuitions concern the certainty of fundamental principles.
One has to have reasons to take sense data as unassailable, or to adopt the Greatest Happiness Principle.
The foundationalist must claim at least intuitive support for her principles.
Indeed, Descartes claimed that the cogito was not an inference, but a "pure intuition."

In SRE, intuitions are taken as fallible starting points.
When we looked at Rawls's work, we noted that we might start constructing a theory of justice by claiming intuitions about equality and liberty.
As we construct a theory of justice, we notice that naive notions of equality and liberty are in tension.
We thus give up our naive intuitions about equality.
In SRE, all general theories and all intuitions about particular cases are fallible, subject to revision.

II. Why reflective equilibrium is so clever

Here is an illustration of SRE.
When choosing inductive principles, we start with some intuitions about which rules for inductive inference are legitimate.
We might, for example, start with an intuition about the following case, from Kahneman and Tversky:

> The average heights of adult males and females in the U.S. are, respectively, 5' 10" and 5' 4".
> Both distributions are approximately normal, with a standard deviation of about 2.5". An
> investigator has selected one population by chance and has drawn from it a random sample.
> What do you think are the odds that he has selected the male population if:
>
> i. The sample consists of a single person whose height is 5' 10"?
> ii. The sample consists of six persons whose average height is 5' 8"?

Remember, our principles of inductive inference are exactly of this sort.
Statistical inference is just a kind of inductive process.
While deductive principles may be relatively easy to learn, inductive principles require just this kind of ability.
They are the tools of the scientist.

The subjects in the Kahneman and Tversky study were all University of Michigan students who had completed a course in statistics.
They gave median odds (favoring the male population) of 8:1 for i, and 2.5:1 for ii.
The actual odds are 16:1 for i, and 29:1 for ii.
The subjects' intuitions were erroneous.
Not only did they underestimate the odds for i, they thought that the odds for ii were less likely than those for i, when they are in fact almost twice as likely.

It seems plausible to conclude that when developing our statistical theories, we might start with an errant intuition or two.
Further research into probabilities, and the development and comprehension of a theory of probability, would disabuse us of such errors.
Eventually, our tutored judgments and our theory would be aligned, and we would have achieved reflective equilibrium.

III. Why reflective equilibrium is a destiny

We have examined two kinds of arguments for SRE: a negative argument and a positive one.
The negative argument is that we lack an ability to account for knowledge of fundamental principles.
The negative argument is clearly seen in the linguistics case: we have no way of directly apprehending the structure of UG.
Even if we were given absolute truths, we could not know that they were absolute truths.
Our knowledge of any first truths presupposes a wider range of knowledge, as Sellars argued.

The positive argument, from Goodman, was that SRE underlies even our most sure beliefs, those of deductive inference.

Consider the following earlier comment about justifications in mathematics, foreshadowing SRE, from Bertrand Russell:

> When pure mathematics is organized as a deductive system - i.e. as the set of all those propositions that can be deduced from an assigned set of premises - it becomes obvious that, if we are to believe in the truth of pure mathematics, it cannot be solely because we believe in the truth of the set of premises. Some of the premises are much less obvious than some of their consequences and are believed chiefly because of their consequences. This will be found to be always the case when a science is arranged as a deductive system. It is not the logically simplest propositions of the system that are the most obvious, or that provide the chief part of our reasons for believing in the system. With the empirical sciences this is evident. Electro-dynamics, for example, can be concentrated into Maxwell's equations, but these equations are believed because of the observed truth of certain of their logical consequences. Exactly the same happens in the realm of pure logic. ("Logical Atomism" (1924); cited in Paolo Mancosu, "Mathematical Explanation: Problems and Prospects," *Topoi* 20: 97-117, 2001.)

Russell is anticipating Goodman's claim: our justification of the general principles derives from our belief in the particular statements they entail or imply, rather than from any immediate apprehension of those principles.
Once we accept that neither our observations and intuitions about specific cases nor our apprehension of general principles are infallible, we have no choice but to pick (perhaps arbitrarily) some starting points and work toward a coherent theory.

The net result of the positive and negative arguments is that it seems as if we have no choice whether to use the method of reflective equilibrium.

> The suggestion left tacit is that the alternative to the reflective equilibrium test is skepticism (Stich and Nisbett, 198).

IV. Why reflective equilibrium writes such good books

According to SRE, the intuitions we have regarding our inferential practices, ethical judgments, and grammaticality, as well as any claim we have to knowing general principles of science, ethics and language, are all data, to be assimilated in the most coherent way possible.
Once we have achieved coherence, we have a system of justified beliefs.
We have solved the eternal problem of justification, and avoided skepticism.
Goodman's observations about SRE lead naturally to a solution of the problem of induction.

> Hume asked what justification we have for believing that bread will continue to nourish us. The answer is that we have inferred this belief from true premises *via* valid inductive rules. And if Hume were to ask what justification we have for the rules, the reply would be that they are in reflective equilibrium with our inductive practice (Stich and Nisbett, 191).

SRE is not magic; instructions concerning how to reach reflective equilibrium are not immediately forthcoming.

> Goodman's counsel is that we resort to the "delicate" process of making mutual adjustments between rules and accepted inferences, though he gives us no guidance on how to resolve the competing claims of an irresistible inference and an immovable rule (ibid).

But, as we saw, the development of precise rules of inference is a broad topic, for the philosophy of science, generally.
There are various guiding virtues that we seek to optimize, as Quine noted.
And, Goodman's goal was not really to specify the whole process.
We can work out the details later.
The problem of how we justify our beliefs has been transferred from the foundationalist framework, in which we worry about skepticism and realism, to the framework of SRE, in which we merely have to figure out the methodology of good science.

V. Not so fast, buster

Stich and Nisbett are not convinced of the virtues of SRE.

> What we propose to show is that *pace* Goodman, being in reflective equilibrium with inductive practice is neither necessary nor sufficient for a rule of inductive inference to be justified (192).

Their strategy is to show that people can be in reflective equilibrium while holding false beliefs.
SRE is supposed to provide a method of justifying beliefs, of providing security, if not certainty, for our inferential practices.
If Stich and Nisbett are correct that reflective equilibrium is compatible with false beliefs, then it is no good as a method of justification.

Stich and Nisbett provide three examples:

> i. The Gambler's Fallacy
> ii. Regression Errors
> iii. Erroneous Analyses of Covariation

For i, they invoke both the beliefs of ordinary folk and a nineteenth-century logic textbook, written by Henry Coppée.
Coppée, like many of us, have intuitions which lead us to hold the gambler's fallacy, and to commit related errant inferences.

> The existence of large numbers of subjects like Coppée is something of an embarrassment to Goodman. The Gambler's fallacy rule is in reflective equilibrium with actual inductive practice for these subjects. So on Goodman's account of justification, both the gambler's fallacy and the inferences made in accord with it are justified for these subjects (193).

For ii, Stich and Nisbett show that people fail to understand the nature of regression toward the mean.
For iii, they show that people make erroneous statistical inferences regarding covariance.

> Subjects in these experiments are prepared to endorse the fallacious rule they appear to be using, *viz.*: If the presence of *A*...is often followed by the presence of *B* then the chance of *B* occurring is greater when *A* has not occurred (195).

VI. Refining 'reflective equilibrium'

The data on people's misuse of data, and what is widely called irrationality, is convincing.
See §IV of the course bibliography for references to some popular works on irrationality.
Still, Stich and Nisbett's claim is stronger than just that people have poor intuitions about statistical inference.
They are claiming that such intuitions align with their best theories of inductive inference, that they are in reflective equilibrium regarding these inferences.

> Subjects frequently and systematically invoke inference patterns ranging from the merely invalid to the bizarre. And, though the evidence is less substantial on this point, there is every reason to think that many of these patterns are in reflective equilibrium (195).

In fact, it is difficult to see what evidence there is for the claim that such subjects are in reflective equilibrium.
Indeed, we have not even seen any specific criteria for judging whether such subjects are in reflective equilibrium.

Stich and Nisbett distinguish between stable and unstable reflective equilibrium.
Subjects who make the faulty inferences like i-iii, they propose, could be judged to be in an unstable reflective equilibrium.
But, they could be moved to a stable reflective equilibrium if they were presented further data or a general theory which would move them to give up their current erroneous beliefs.
In fact, this is precisely what we would do with such subjects if we were, say, their teachers, or just people who cared about them.
(One aspect of the normativity of epistemology is that we are concerned to correct faulty inferences, unless, like advertisers, we want to take advantage of those who make them.)

At first glance, the distinction between stable and unstable reflective equilibrium looks like a friendly amendment to Goodman's account.
For, the Goodmanian could accept that people actually make invalid inductive inferences, and resist claiming that such inferences reflect a stable reflective equilibrium.
If such subjects were in a stable reflective equilibrium, then Goodman would be forced to say that their poor inductive inferences are justified.
That claim and the digging-in response that Stich and Nisbett consider (197-8) are unacceptable.
Digging-in one's heels and claiming that the unacceptable inferences are justified for those who make them leads directly to a repugnant epistemic relativism.
It would mean saying that, say, while the Gambler's fallacy is unjustified for me, it is justified for those who make it.
We know that the inferences i-iii are unacceptable.
The challenge is to determine our best account of that unacceptability.
Goodman could change his account to the claim that inferences are justified (only) if they are in stable reflective equilibrium.

Unfortunately for Goodman, the distinction between stable and unstable reflective equilibrium, and the subsequent shift of the definition of justification, is a trap.

Stich and Nisbett argue that subjects can be moved to a stable reflective equilibrium based on even worse inductive inferences than the ones they hold.

We can convince people to give up better rules for worse ones, to, say, adopt the gambler's fallacy.

VII. Reflective equilibrium and coherentism

The underlying problem with SRE as a method of justification is that we have no reason to believe that stability tracks truth.

In fact, the reverse may be the case.

> Indeed, because of the counter-intuitive nature of some inductive rules, regression principles, for example, there is good reason to suppose that some invalid rules would be substantially *easier* to teach, and more stable once learned (197)

SRE is a coherentist epistemology: we seek a coherent theory in reflective equilibrium.

Our old epistemological paradox has reared its head.

> 1. Beliefs must be justified either foundationally or coherently.
> 2. No beliefs can be justified foundationally.
> 3. No beliefs can be justified coherently (via SRE).
> 4. Some of our beliefs are justified.

VIII. Respect my authority

To resolve a paradox, we have to give up one of the constituent claims.

Let's keep 1 and 2.

We could deny 4, and accept skepticism, but that seems rash.

Another option would be to find a different coherentist strategy, holding on to the denial of 3, and adjusting the SRE strategy.

That's the point of the second part of the Stich and Nisbett article.

They first wonder whether one could just do what we want to do: ignore the inductive inferences of the folk, and rely only on the reflective equilibrium of authorities.

> There are people in our subject's society who are recognized as *authorities* on one or another sort of inference. And if our subject wanted to appeal to a higher court than his own reflective equilibrium, he could do so. He need only seek out the experts and ask them (198).

Let's call this method seeking expert reflective equilibrium (SERE).

One interesting question about SERE is whether it is really the method Goodman had intended.

Goodman's discussion of reflective equilibrium is sketchy, a side note in the piece about confirmation and the new riddle of induction.

Stich and Nisbett are skeptical that Goodman intended SERE over SRE.

Though I think they are too dismissive, I will not pursue this question, here.

More importantly, SERE only pushes the question of justification back one step.
Stich and Nisbett pursue this criticism by describing a cognitive rebel, and showing that his denial of an inductive inference is incoherent.
That's not a bad way to describe the problem.
And, it allows Stich and Nisbett the possibility of amending the SERE account:

> Rule r is justified [iff] it accords with the reflective inferential practice of the (person or group) of people I (the speaker) think appropriate (201).

Stich and Nisbett are holding onto SERE, and refining the way one determines the experts.
But, this does not solve the fundamental flaw with SERE.
We have to presuppose a standard for inductive inference in order to determine the best practitioners of inductive inference.
Presumably, the experts are those who best understand or practice those standards.

IX. Back to skepticism?

The Stich and Nisbett article was written almost thirty years ago.
In more recent work, Stich realized that SERE begs the question of how to pick out the experts.
In the paper in the DePaul and Ramsey collection, he writes,

> Unless experts are picked out in a question-begging way (e.g. those people whose inferential practices are in fact justified), it seems entirely possible for the expert community, under the influence of ideology, recreational chemistry, or evil demons, to end up endorsing some quite nutty set of rules (Stich, "Reflective Equilibrium, Analytic Epistemology and the Problem of Cognitive Diversity," 102).

Stich currently thinks the whole SRE project is faulty.
In specific, he thinks that the problem of cognitive diversity undermines all such projects of justifying inferences.
If intuitions are really as unreliable as Stich and Nisbett say, then the whole method is lost.
Unless we can somehow save reflective equilibrium, it looks as if we are back to the epistemic drawing board.
That, my friends, is the question that imbues the rest of the course.
We are finished with setting up the framework.
Now, we proceed to the data.