

# On Making a Virtue Out of Telling Lies

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TALK about the telling of lies is ordinarily made of stern stuff, full of “thou shall nots” and cautionary tales about the corrosive consequences of the bearing of false witness. At the same time, however, there are few among us who do not harbor a certain secret pride at having successfully lied our way out of some especially tight spot or a certain quiet admiration for someone else’s especially well-crafted lie. Not to put too fine a point on it, a good lie is widely—but not publicly—counted as a point in one’s intellectual favor and so is generally seen as deserving of at least our guarded respect. This essay is about just this up-side of the generally down-side business of lies and deceptions.

Our ordinary intuition that the telling of successful lies requires a measure of admirable cognitive complexity is also typically matched by the corollary assumption that the ability to tell a really good journeyman sort of lie, one that will not come back to haunt you, is a skill that is slow to be acquired and perhaps altogether missing in children of a certain tender age. Consequently, most of us are prepared to believe that young children, like the Houynhnms of *Gulliver’s Travels* (Swift, [1726]1983), neither know much about the process of detecting lies nor are initially very skilled at concocting lies of their own. Who is surprised, for example, by the success of the Santa Claus industry, or by Vasek’s (1988) preschool subject who is quoted as saying, “I didn’t break the lamp and I won’t do it again?”

Although apparently ready, then, to grant that there is an age before which the competencies required for the telling and detecting of lies are yet in hand, and to suppose that the growing ability to tell a really well-crafted lie is something of a gradual intellectual accomplishment, most casual onlookers are happy enough to acknowledge a lot of ignorance regarding the details of what goes on in-between. Filling in some of these missing details is the point of this essay. The real problem in knowing how to best go about doing this is that the topic of lying is somehow both too big and too small. Too small for sure, if by lying we choose to mean only "lying through one's teeth." What about the several million deaf mutes in the world? Are they to be thrown out of the liar's club on what clearly amount to technical grounds? And what about the wordless ruses of pre-verbal children and all of those "lower" animals naturally designed for silent running? Rather than prejudging all of these cases right from the start, would it not be better all round if the notion of lying were simply taken more broadly so as to include any and all potentially culpable abuses of informational authority (voiced or unvoiced) that: (a) are false quite apart from any telling; (b) that are understood to be false by those putting them forward (by whatever means); and (c) that are promoted with the full intent of leading credulous others into false beliefs about some true state of affairs (Sweetser, 1987)?

Having advocated, as we do, a broadening of the subject of lying sufficient to also include non-verbal forms of deceit, the problem arises that things could quickly get out of hand, and so there is a need to set certain limits on what we mean to discuss. Our chosen way of doing this will be to look primarily inside the world of childhood where our own professional lights are brightest. Even this considerable narrowing of attention is not enough, however, since a good deal of what has been written on the subject of deception in young persons is only coincidentally about children, and tends to turn instead on the gradual ways in which persons of all ages go about the

business of telling better and better lies. While it would be possible to regale you with a whole raft of such empirical accounts written in support of the mundane proposition that older is ordinarily better, our aim instead will be to gate out such practice-makes-perfect talk in favor of the more interesting possibility that there are identifiable moments in the changing architecture of cognitive development before and after which young people think and act very differently with regard to the prospect of deceit.

The first part of this slimmed down agenda will be taken up with first trying to get clear about what is ordinarily meant by the English word "lie," and why, given the complexities of this notion, the process of lie-detection is as complicated and difficult to master as it apparently is. Here, the central theme will be that the concept of lying is best understood as "prototypically organized," and why, given this fact, many of the oddities that mark young children's early confusion with the business of lying can be seen to make a certain new and more followable sense. The second part is an exploration of those aspects of the actual hands-on business of lying that practice apparently does not make perfect. Here, in a place close to the center of our own ongoing program of research, we mean to examine the question, not only of why humans may be unique in being consummate liars, but why, before a certain age, children seem less like their elders and otherwise more like birds of the air and beasts of the field. Finally, we mean to end by asking after some of the practical consequences of children's measured progress in meeting all of the membership requirements for joining our grownup liar's club.

### *Getting Prototypical*

The key points to be made in this section are that the concepts of lying and truth telling are best understood as "prototypically organized," and that by taking that fact into

account, what would otherwise seem a grab bag of childish insights and confusions about verbal deception promise to seem more coherent. Our starting point here is that despite centuries of trying, neither professional ethicists nor ordinary adults have met with much success in coming to some set of simple definitional principles that would allow for the unambiguous categorization of real-world statements into anything like the iron clad dichotomy implied by the classical distinction between truth and lies (Strichartz and Burton, 1990). Am I, for example, really still lying to you when in the process of attempting to lead you astray I manage to get my own wires crossed and inadvertently market as a lie some claim that is actually good as gold? As things stand, your own intuitions, whatever they might be, regarding this and other "hard cases" typically turn out to be matched by opposite intuitions on the part of others (Coleman and Kay, 1981).

The difficulty with most classical accounts of word meaning, at least according to Wittgenstein (1958) and a following army of more contemporary prototype semanticists, is best seen as owing to a traditional but ill-conceived brand of set-membership semantics—a view according to which the meanings of words or concepts are thought to be found in some "checklist" of necessary and sufficient features that together uniquely specify membership in some class. Such traditional accounts, according to Wittgenstein, fail to properly reckon with the fact that linguistic categories are themselves grounded in particular life worlds and cannot be analyzed independently of other still broader but no less socially situated matters having to do with our collective understanding of the meanings of knowledge, evidence, and proof. In this view, the real meaning of verbs such as "lie" is more usefully determined by considering candidate cases against some best or most prototypic instance, all with the expectation that any given case will fit its prototype only more or less rather than perfectly or not at all. For example, something like a robin or "the blue bird of happiness" clearly lives near the center of our usual

prototype of "bird." Other outlier species such as penguins or ostriches that have little family resemblance to more prototypic birds occupy a place nearer to the outer reaches of the linguistic category and, while grudgingly thrown in with the robins, are generally thought of as poor excuses for a really good one.

What one is led to expect by such prototype accounts, as opposed to more traditional set theories, is that the meaning of most words (including the word *lie*) is best found within some loose nomological net formed by the set of family resemblances that ordinarily cohere around such concepts as used. Just as there is expected to be a good deal of public agreement about highly prototypic cases (for example, robins), so too is it anticipated that we will naturally find ourselves hard pressed to agree about other more marginal cases (for example, penguins). The really interesting possibility that is raised by taking up such a prototypical view of lying is that the many difficulties that divide the old and the young in their efforts to manage the world of lies may well prove to be best understood as a byproduct of their building understanding of the prototypic lie.

So far, there has been only a handful of empirical studies directly aimed at testing out the psychological reality of prototype theory's account of the word *lie*. In what is perhaps the first of these, Coleman and Kay (1981), working exclusively with adults, undertook to test the proposition that the readiness of their subjects to label a particular statement as a lie varied as a direct function of the degree to which such a statement matched the prototypic lie that, according to their analysis, included as key elements: (a) the falsity of the proposition; (b) the speaker's belief in the falsity of the proposition; and (c) the speaker's intent to deceive the listener. As required in prototype semantics (but not by traditional semantic theories), their subjects regarded lying as a matter of more or less, with the clearest and most consistent judgments being reserved for cases that involved the intentional misrep-

resentation of true facts. When fewer than the full compliment of prototype elements were present, respondents were frequently confused and found the statements difficult or impossible to categorize. These authors were also able to assess the relative contribution of each element to the prototype by establishing their respective weights in arriving at a decision to count something as a lie. Their findings suggest that respondents were most influenced by (b) and least moved by (a) with (c) playing an intermediate role. Among the developmental questions left untouched by this study is whether young persons of various ages similarly attend to all relevant elements of the prototype, and, if so, whether they would be inclined to weight these elements in the same way as do adults.

Some answers to these and other questions were provided by a subsequent study by Strichartz and Burton (1989) that was closely patterned after that of Coleman and Kay but which included as subjects preschoolers, first and fifth graders, and adults. In contrast to the findings of Coleman and Kay, the strongest effect reported by these authors was for subjects of all ages to base their judgments more or less exclusively on the factuality of what was being told. For preschoolers and first graders, however, simple facticity was the only dimension of the stimulus materials that bore upon their judgment—quite apart from whether speakers believed or disbelieved what they say, or whether they had any intention to deceive. Fifth graders were intermediate between the still younger subjects and adults in that they began to take into account whether the speaker personally believed what he or she was saying, but did so only when there was a clear intention to mislead. Even the adults of this study appeared surprisingly reluctant to place much weight of the question of intent, preferring instead to label as lies any statement that was both false and known to be false. These results are described by the authors as being generally consistent with the classic findings of Piaget ([1932]1965) and a subsequent army of social-cognitive

theorists, the great bulk of whom have shown that preschoolers and young school-age children base their judgments almost exclusively on the external features of situations and only gradually come to attend to more subjective factors, such as the intentions and beliefs of others.

Taken together, these two studies go some distance toward making the point that at least some of the difficulties young children are known to have with of the concept of lying is owed to the fact that the prototypic structure of the English word "lie" is itself quite complex and requires, at a minimum, an alertness to and the algebraic integration of at least three separate but highly prototypic features. What, at least according to Coleman and Kay, counts as most relevant in the eyes of adults (that is, speakers intentions and their beliefs about the falseness of their statements) are, it would appear, precisely those aspects of the process of lying that are least available to young children, who are known to be slow to become attuned to the very possibility of beliefs about beliefs and other intentional states.

What is left entirely unsettled by the studies just cited is whether other of the polyphonic features of the prototypical lie might also work to further stump preschoolers and other young school-age children. One such candidate possibility turns on the prospect that as Piaget regularly maintained (Chandler and Chapman, 1992), the attention of young children tends to be "centered" rather than "decentered." That is, preschoolers tend to get confused, for example, as water is poured from one of those proverbial "standard" beakers into another taller but thinner container, typically claiming that there is now more water because their attention is "centered" on its height, or less water because their interest shifts to the especially skinny container before them. What they can not do, according to Piaget, is "decenter" in a way that would allow them to simultaneously consider both the height and width of the container.

One of our own earlier studies of children's moral reasoning (Chandler, Greenspan, and Barenboim, 1973) suggests that some

of these same considerations also apply in any circumstance that pits knowledge of intentions against other more tangible things such as facticity or, in this case, "consequentiality." What this study made clear is that preschoolers can be made to center their attention on either the intentions of others or the consequences of their act but cannot, until some years later, effectively de-center by simultaneously considering both intentions and anything else. A similar problem in decentering would help to explain why preschoolers approach the problem of lying in such a one-dimensional way. Facticity is one thing, intentionality another, and beliefs about beliefs is a third. Keeping all these conceptual balls in the air at once may be at least as much of a problem for young children as managing to get a singular handle on any one the more ephemeral of the prototypical features of most lies.

*Lying and the Problem of Criteria Versus Symptoms*

A second class of problems confronting children as they attempt to wrap their minds around the tangled skein elements that compose the prototypical structure of lies is that not every thing that happens to ordinarily go along with something being a fully-fledged lie is necessarily one of its constitutive prototypical parts. This distinction was originally introduced by Wittgenstein (1958), and turns on the difference between those semantic features of a concept that are truly "criterial," and so confer membership in a category, and those that do not, and so are better understood as only "symptoms." Coleman and Kay, in their 1981 attempt to work out the prototype semantics of "lie," employed this distinction in trying to get clear about what is "prototypical" and what is merely "typical" of lies. Their point, like Wittgenstein's, is that the constellation of attributes that have come to adhere to particular instances of a lie need not be equally criterial in deciding whether or not to classify them as legitimate instances of lying. As things now



stand, for example, being a surgeon or a CEO of some corporation is highly associated with being male. This bit of shabby social reality aside, the fact that surgeons and CEOs are "typically" male does not make maleness "prototypical" of those professions and so should not be understood as helping to make up their official roster of linguistically relevant properties. The obvious relevance of this distinction between the "typical" and the "prototypical" is that the job of working out what is truly criterial (in our case, of a lie) is a good deal less straightforward than simply learning what happens to coincidentally go with what. All of the above bears directly on our current problem in at least two ways, one of which concerns the status of "moral reprehensibility" as a possible prototypical element of lies, and the other concerns the relation between lies and punishment.

#### *Lies and Moral Reprehensibility*

The job of working out whether "moral reprehensibility" is merely typical or also prototypical of lies is evidently complicated for both children and adults. As Coleman and Kay (1981) point out, the fact that deceit usually profits the deceiver likely contributes to a widely held folk belief that there is a deep connection between deceit and harmfulness and so, according to Sweetser (1987), to generally accepted assumptions about the natural reprehensibility of lies. As we have just seen, however, coming to understand that reprehensibility is "typical" of acts of lying need not be the same thing as deciding that reprehensibility is also a prototypical property of, and so foundational to, the actual meaning of "lie." Few would be reluctant, for example, to label attempts to mislead the Gestapo concerning the whereabouts of Jews as other than an unqualified lie, although fewer still are likely to see acting in this fashion as morally reprehensible. Given such divided thoughts, some compassion is perhaps also owed to those of Piaget's (1932/65) young subjects who subscribed to an

over-inclusive definition of lying that encompassed swearing, "dirty" words, and misdeeds of all sorts—all for the reason that they are all somehow typically (but not prototypically) "naughty."

### *Lies and Punishment*

A related case can also be made regarding the tendency, again originally reported by Piaget, of young children to evaluate "... lying as naughty because it is punished" (Piaget, [1932]1965, p. 161). Bussey (1992) specifically details such a tendency among more contemporary preschoolers (but not second and fifth graders) who were found to evaluate vignettes involving lies more negatively when punishment was present than when it was absent. These findings, old and new, again appear to reflect an understandable but still childish tendency on the part of young persons to confuse criteria with symptoms. To describe something as a lie is, more often than not, to begin a line of criticism that actually ends in some kind of punishment: a fact that children are evidently quick to pick up. Knowing how children might come by this idea is not the same thing, however, as sanctioning what appears to be another case of turning the typical into the prototypical and making a symptom into a criterion. It does, however, carry us some distance closer toward an understanding of the uphill battle that children face in working out what are and are not prototypical elements in our convoluted adult conception of lies, and helps to justify our contention that coming to appreciate and detect instances of lying is a substantial cognitive accomplishment.

### *Lie Production*

The aim of this section is to clarify both *when* and *why* it is that young people become capable of actually authoring lies and other non-verbal forms of deception when they do. Whether there is any need for this "time of onset" to correspond with the ability to

identify and detect the lies of others will depend, as it turns out, on just how much of a fully fledged understanding of lies we are prepared to insist upon, and what we are prepared to accept as a minimally complex demonstration of having pulled off a *bona fide* deception. It is perhaps already clear enough that not everything that deserves a place in the *pharmakeion* of any satisfactory definition of lying must also be at work in the actual production of each and every lie. What that leaves open, and what will become the real point of this second section, is just how much one needs to know about the makeup of lies in order to author anything that we would be willing to acknowledge as a legitimate form of deception. What has already been demonstrated is that from a quite tender age children already appreciate that merely saying something does not necessarily make it so. Whether they take us to be deceitful or merely misguided, even infants in arms, for example, often refuse to buy all of that talk about just how "yummy" the strained squash actually is. Similarly, there would seem to be no reason to suppose that in order to be effective liars, young children must also be reflectively aware of their own often mean-spirited intentions. Where that leaves us is with the question of when, in the course of their growing up young people first become capable of appreciating the distinction between truth and truthfulness by working out the very possibility of false belief. As it turns out, this natural link between lie detection and an understanding of counterfactual beliefs is remarkably serendipitous. This follows for the reason that while few contemporary researchers seem particularly interested in specifying the age at which children first begin to lie, there is a whole army of investigators currently hard at work trying to pin down just when it is that young persons first twig to the possibility of false beliefs.<sup>1</sup>

### *Deception and False Belief Understanding*

The common starting point for all those investigators concerned with the question of when children first come to a

fledgling appreciation of the possibility of false belief is the need to work out what could count as a minimally complex demonstration of such capacities. Not surprisingly, an important part of this work has come to focus on the possibility of deception in other species. In what follows, a brief look is first taken at this substantial body of new work before hurrying on to an examination of the emergence of false belief understanding in children.<sup>2</sup>

A large part of the recent interest among child developmentalists in the study of deception in "lower" species was initially triggered by a seminal 1978 paper by Premack and Woodruff that raised the provocative question whether chimpanzees might possess a "theory of mind." The fundamental issue taken up by these investigators and debated in a series of attached commentaries was whether by acting in ways that could qualify as truly deceptive chimpanzees might also warrant having it said of them that they possess an appreciation of the possibility of false belief. In order to put this question in its proper perspective, it is important to know that, like students of human behavior more generally, a whole school of nineteenth-century comparative psychologists managed to embarrass themselves badly by drifting into an overly casual and decidedly anthropomorphic way of talking about the supposedly higher mental abilities of "lower" animals. The whistle was finally blown on this kind of excess by Morgan, whose turn of the century "canon of parsimony" was leveled against his contemporaries who were entreated to "in no case interpret an action as the outcome of the exercise of a higher physical faculty, if it can be interpreted as the outcome of one standing lower in the psychological scale" (Morgan, 1894, p. 54). Step one in our own and others' efforts to stay out of range of Morgan's cannon [sic] has been to work to avoid the easy temptation to read too much into what might mistakenly pass as deceptive behaviors in young children.

A beginning step along this cautionary path is to start by throwing up some hedge against what are best counted as

pseudo-episodes of deceit, by quarantining off into a separate category all those solitary occasions that fall short of being truly "conversational." Belonging to this essentially throw-away category are cases of the sort involving people who have been "deceived" by the moon illusion, or where there is talk of having "tricked" some vending machine with foreign coins. Although inclined to talk in this way, people do not, we suppose, literally mean to imply by such usage that the moon has been acting in bad faith, or that it is really the vending machine rather than its owner that is the real victim of our petty larceny. True cases of deception, we take it, are necessarily dialogical and require at a minimum both a deceiver and a deceived.

#### *Deception and Designed Mimicry*

A second and related category of pretender instances of "true" deception is composed of that loose collection of living things that appear to have been genetically "designed" in such a way that their misleading appearances end up manipulating other species by parasitizing certain of their otherwise appropriate response predispositions (Smith, 1986). The woods are literally full, for example, of plants and animals that through some sort of Batesian mimicry somehow manage to blend in with their surroundings by looking like rocks or leaves, or that pretend to be what they are not by masquerading, for example, as the eyes of some large predator (Mitchell, 1986). What is perhaps most telling about such cases is that the animal authors of such deceptions do not, it seems, give a personal fig about whether anyone happens to have been looking, let alone deceived. While well camouflaged, such organisms should probably not be held responsible for "hiding" or keeping themselves "secret" in any meaningful psychological sense, and are perhaps best thought of as obscure in the same way as are still hidden features of the inanimate world.

A possible next step toward something that could legitimately count as animal deception are all of those "injury-feigning" birds (Sordahl, 1986). The actions of such "one-trick-plovers," while no doubt manipulative and disinforming, are, nevertheless, singular, tightly "designed," and largely insulated against experience, and so, too, are probably also best set outside of the tent reserved for things that are fully deceptive.

*Deception and the Withholding of Information*

A second and somewhat larger class of similarly marginal cases is largely owned by all of those usually small and typically furry things that are very good at guilelessly going all quiet, especially whenever there are grounds for hope that in so doing their presence will remain undetected. Perhaps mirroring the familiar distinction between "sins of omission" and "sins of commission," such acts of secret keeping typically involve the withholding, rather than the planned manufacture, of false information. The classification problem here is that such often mindless non-actions (Sexton, 1986) are hard to distinguish from other more deliberate bits of secrecy such as those common to military strategists who, with malice of forethought, work to disguise the location of such things as shore batteries, all with the obviously self-conscious aim of communicating as little as possible about the country's war footing. What, for example, are we entitled to believe when the quarry freezes in its tracks at the snapping of some proverbial dry twig, and how free are we to change our minds when we learn that it is "the Path Finder" and not some mindless furry thing? The obvious difficulty here is that in the absence of any clear window onto generally hidden intentions (Vasek, 1988), the chain of events that includes "you break the dry twig, I freeze in my tracks, you (suspecting nothing) maraud on by" can just as well be read as your heady attempt at secret keeping or my easily manipulative but wholly guileless chain of contingent behaviors. Those who are drawn to councils of per-

fection (for example, Russow, 1986) will see in such evaluative dilemmas good reasons for insisting that no instance of simple secret keeping should ever be made to count as trustworthy evidence of deception. Others, who are more inclined to agree with William James (1910) that, "There are worse things that can happen to a man in this world than being duped," will tend to maintain a more sympathetic attitude toward the admissibility of evidence concerning the withholding of information on pain of otherwise becoming the recurrent victim of poker bluffs, stiff upper lips, and coy looks of indifference.

All of this is pertinent to the question of when young persons first begin to lie and deceive for the reason that while they may not be very good at making themselves look like rocks or the eyes of predator owls, children are often quite good at secret keeping in general and withholding evidence about their own misbehavior in particular. As has been repeatedly shown (for example, Vasek, 1988), even nursery school children not only hide out when they have something especially devilish to do (as perhaps does the family dog), but seemingly work to purposefully defraud others by actively trying to cover their own tracks or suppressing give-away evidence that could otherwise count against them (Chandler, Hala, and Fritz, 1989; Hala, Chandler, and Fritz, 1991). While demonstrations of this sort go some real distance toward establishing that even infants in arms are capable of something like secret keeping, they do not clearly demonstrate, as would more unimpeachable evidence, that children of this tender age are also capable of lies and other kinds of disinforming acts that have as their definite purpose leading others into false beliefs. The problem is that secret keeping can too often be seen as an attempt to manipulate only the behaviors but not necessarily the minds of others.

#### *Manipulating Behaviors Versus Manipulating Minds*

It is not enough, you will recall, to merely say or do on purpose something that coincidentally happens to be false in

order to qualify as being authentically deceptive. Rather, you must also appreciate that you are purposefully misrepresenting some real truth of the matter with the aim of actively disinforming others by leading them into some false belief. That is a lot to be demonstrated, and so it is not so surprising that those investigating such matters have been hard pressed to come up with procedures that could definitely clench such a difficult point. Simple secret keeping, as brought out in the preceding examples, will rarely do. What promises to be more decisive are all those prompted and naturally occurring instances in which some more definitive action is taken that "could" easily work to trigger genuine false beliefs. Unfortunately the scare quotes around the word "could" in the preceding sentence need to be there for the reason that even in cases involving explicit acts of disinformation, there are no automatic and iron-clad guarantees that the misleading stuff being put out is actually intended to manipulate the mind rather than the behavior of one's opponent. Consider, for example, Daniel Dennett's (1987) often repeated example of Ashley's dog which, with the definite aim of getting intruders out of its favorite chair, routinely employs the ruse of scratching at the door, "as if" it needed to be let out. Of course, when it comes to dogs, who do not otherwise seem to bristle with further evidence of deceptive intent, those who most live in fear of being shot out of the water by Morgan's canon are perhaps within their rights in supposing that all this scratching is nothing more than the automatic result of a well-oiled contingent association between earlier scratches and past door-openings, both conveniently married up with some desire to empty out the chair. That is, as Morgan (1894) was quick to see, it is perhaps enough in such cases to simply assume that this or that behavior has been unwittingly associated with some favorable outcome, and so simply learned and run off without any recognition of what others may or may not happen to think about them. As you might suspect, no one who routinely chooses to read each and every apparently disinforming



behavior in this reductive way, and so lives in a no-fault world, has ever been duped into labeling something as truly deceptive when it is not. At the same time, the real world to which children are apprenticed needs to be seen as literally riddled with deceit (Anderson, 1986), and any analytical strategy that denies this fact as a matter of pristine methodologic principle would appear to have confused interpretive caution with a phobic fear of Type 1 error.

*On Finding Better Ways of Recognizing Deception When It Actually Occurs*

Where all of this leaves us, if we are to avoid always being right for the wrong reason, is with the necessity of finding clever ways of minimizing the possibility of misinterpreting some actions as the outcome of a higher mental faculty when "it can be [better] interpreted as the outcome of some faculty standing lower on the psychological scale." One potential way of doing this, at least in the case of human subjects, is to simply wait around until they are linguistically competent enough, and presumably credible enough, to tell us truthfully whether their actions were or were not meant to play with minds and not merely the behaviors of their adversaries. The problem here is that real questions about the deceptive capabilities of children need to target age groups whose real abilities to give voice to their true purposes are in some serious doubt. An alternative—perhaps the best remaining alternative—is to construct assessment situations that are sufficiently varied and novel that the possibilities of what might happen next can hardly be laid off to some previously well-oiled and well-practiced behavioral routine. Not surprisingly, it is this second, but by no means fool-proof, alternative that has most frequently been taken up by those working in the field.

As it turns out, the research literature devoted to the question of when children (and sometimes other species) first

begin to show sturdy evidence of recognizing that others can actually be led into taking for true things that are actually known to be false divides itself into two parts, the smaller of which is about deception *per se* and the larger of which concerns the broader topic of false belief understanding. It is to the second and larger of these matters that we will first turn.

*Studies Into the Usual Course of False Belief Understanding*

Premack and Woodruff's 1978 suggestion that organisms capable of promoting or otherwise understanding the possibility of false beliefs deserves to be credited with some actual emerging "Theory of Mind" which has ended up working as a form of bear-baiting to a whole den of cognitive developmentalists hungry for a way to make some empirical contribution to the classic study of philosophy of mind. Two Austrian psychologists, Heinz Wimmer and Josef Perner, were among those quickest to see this possibility clearly, and their now classic 1983 study entitled, "Beliefs about beliefs: Representation and constraining functions in young children's understanding of deceptions," sounded the first note in what has become a long crescendo of research undertakings all meant to decide when and why it is that young children first understand the possibility of false belief. In the dozen or so years since the publication of that seminal study, more than 10 books, over 200 chapters and journal articles, and countless conference presentations have all been given over to the purpose of either buttressing or challenging Wimmer and Perner's initial findings.

Although there is no hope of capturing all the complexity of this dynamic literature in the few paragraphs available here, certain broad generalizations are still possible. First, it needs to be pointed out that while early parts of this work dealt directly with the subject of deception (for example, Wimmer and Perner, 1983; Wimmer, Gruber, and Perner, 1984; Mitchell,

1986), it soon came to be argued that what were seen to be the added task demands associated with the framing of deceptive strategies could work against the possibility of putting them to use in devising a "minimally complex" assessment task. Consequently, the direct measurement of deception was largely abandoned in favor of alternative assessment tasks that have come to be referred to as "unexpected change" and "unexpected contents" measures of false belief understanding. In the first of these, a child and adult puppet are typically made to participate in the storing of a chocolate bar, or some other desired item, in one of two available containers. Later, after the child puppet is whisked off to another location, some non-deceptive pretext is introduced that causes the adult puppet to remove the chocolate from its original location "A" and re-store it in new container "B." The critical test question intended to measure children's understanding of the possibility of false belief concerns where it is that they assume the returning child-puppet will "look for" or "believe" the chocolate to be. Interestingly, children younger than first 6, and later 5, and eventually 4 were found to confuse current reality with entitled beliefs by predicting that the child puppet would somehow mysteriously know that the chocolate was now located in new container "B," despite having been kept ignorant of its "unexpected transfer." Errors of this sort, labeled "reality errors," are typically taken as evidence of a failure to understand the possibility of false beliefs, whereas children who succeeded are credited with both false belief understanding and the rudiments of a first "theory of mind."

The research that has swirled around Wimmer and Perner's key finding, and its supposed demonstration of the existence of a previously undiscovered watershed in the course of children's cognitive development, has taken a variety of turns.<sup>3</sup> The bulk of this work has been taken up with a seemingly endless series of re-demonstrations of the same basic finding and the occasional attempt to relate false belief understanding to other standard markers of cognitive maturity. What, for

present purposes, is perhaps the most interesting spur in this train of research is a series of studies that are meant to call into question the assumption that only 4-year-olds, but not still younger children, already possess some understanding of the possibility of false belief. This work is relevant to the purpose of this essay for the now obvious reason that the ability to detect and fabricate lies or other forms of deceit is necessarily dependent upon some rudimentary grasp of the very possibility that beliefs can be false.

Some parts of this literature center on the suspicious claim that only 4-year-olds possess anything like a legitimate theory of mind, and have focused attention on the fact that standard "unexpected change" measures are verbally top heavy, computationally complex, lacking in appropriate temporal markings, and altogether too hypothetical and third party for their own good. Most pertinent for present purposes, however, is a line of research meant to challenge the procedural decision on the part of mainstream theory of mind investigators to substitute various roundabout "unexpected transfer" and "unexpected contents" tasks for more frontal attempts to directly assess young children's abilities to act deceptively. Several lines of reasoning that have emerged from this literature converge in support of the conclusion that deception may be an altogether more sensitive marker of false belief understanding than are otherwise standard false belief tests. One of these is that tasks involving opportunities to deceive typically invite children to pursue agendas that are their own, whereas measures that turn on the success or failure of some third party puppet character in finding his missing chocolate bar depend upon outcomes that are really no skin off the nose of those obliged to take such tests.

A second and related matter concerns the fact that acts of deception typically involve what Anderson (1987) has described as "analogical" or opposed to more "digital" forms of communication. That is, deceptive acts typically trade upon communicative forms that simulate actual objects or events in

the physical or psychological environment (that is, false smiles, the occasional false trail) and typically work by literally changing the environment to resemble some counterfactual situation, rather than by relying on some arbitrary, typically verbal, and often hard to learn signal system that only declares but does not demonstrate some counterfactual state of affairs. Testing situations, such as standard "unexpected change" measures that are heavily dependent upon the use of narrative accounts and verbal responses, necessarily depend upon the arbitrary relations that only hold between various socially sanctioned signs and their better-to-confuse-you-with referents. Finally, as Sweetser (1987) points out, deceptions generally tend to be closer to action than are the markers of false belief understanding and so are more likely to put in an earlier appearance on the ontological scene. For all these reasons, some special attention is due to those few studies that have attempted to directly evaluate young children's abilities to act deceptively.

#### *The Production of Lies and Other Deceits*

Anecdotal evidence suggesting that young children are notorious for their patently self-serving attempts to re-write history in accordance with their own liking is already thick on the ground (for example, LaFermiere, 1988; Vasek, 1988). While the question of whether such clumsy, transparent attempts to bend the truth are more like a wish than a lie, and whether they are really meant to deceive anyone at all, continues to be a matter of ongoing debate; such "romancing," to use Piaget's ([1932]1965) term, hardly seems to qualify as being made out of the same sturdy stuff as are the more mischievous and fully-fledged lies of older children and adults. Actual research evidence bearing on such more serious matters is, however, surprisingly hard to come by and often both suspect and contradictory. LaFermiere (1988), for example,

reported that few of his 3-year-old subjects were willing or able to lie, but the conditions in which they were expected to do so required that they lie directly into the face of adults whose real knowledge about their actions was far from obvious. Lewis, Stanger, and Sullivan (1988), by contrast, found that the lion's share of their 3 year-old subjects were quick to attempt what appeared to be hard to verify lies when asked whether they had touched a forbidden toy. Utilizing somewhat older preschool and early school age children, Selman (1980) and Shultz and Cloghesy (1981), like LaFreniere, also reported that their subjects regularly failed to lie or otherwise act deceptively in various laboratory-based competitive game situations. It remains unclear, however, whether this good behavior marks any real inability to lie, or was instead a byproduct of these subjects' failure to appreciate how lying might be of service to them in what were generally novel and heavily rule-bound games. As with the other work just cited, these studies offered few options to those who may have been inclined to deceive, provided little in the way of license for those uncertain about what was and was not permissible, and generally made it hard to weigh the likelihood of being caught. Hardly the best way, you might venture, of bringing prospective liars out of the closet.

What is perhaps the best available repair for these missed opportunities is (we say rather immodestly) a series of more than a dozen studies that have come out of our own laboratory (that is, Chandler, Hala, and Fritz, 1989; Hala, Chandler, and Fritz, 1991; Chandler and Hala, 1994; Hala and Chandler, forthcoming). In the first half of these experiments a hide-and-seek game was fashioned in which two-and-a-half to five-year-old children were encouraged to hide a treasure in one of a series of differently colored containers with the "help" of a push-toy doll that awkwardly left tell-tail footprints clearly marking out its movements across a white playing surface. Faced with this dilemma, subjects could undertake to deceive a returning opponent by lying, by wiping away incriminating

evidence of the dolls progress across the playing surface, by laying additional sets of false and misleading trails to empty containers, or by employing various combinations of all of these strategies. Although there was some evidence of building competence with increasing age, 70 percent of even the young 2 1/2-year-olds took active steps to disinform their opponent by laying false trails to empty containers. They also wiped up offending tracks, behaved surreptitiously, occasionally lied, and in more than half the cases gave credible explanations for their having done so. Clearly, if such evidence could be made to stand, then false belief understanding has a considerably earlier age of onset than the 4 years plus that is commonly put out, and deception puts in a first appearance a good deal sooner than has often been supposed. Clearly these were fighting words.

Two groups (Sodian, 1991; and Ruffman, Olson, and Keenan, 1993) quickly responded with hide-and-seek studies of their own, and others still (for example, Wellman, 1990) reacted only with words. Perhaps not surprisingly, the new evidence offered in rebuttal ended up matching exactly the unshakable faith these authors are known to hold about the rightness of the proposition that only 4-year-olds but not still younger children have any real comprehension of the possibility of false belief. In one of these studies (Sodian, 1991) 3- to 5-year-olds were told an elaborate story about good and bad puppets that needed help or hindering and were allowed only a single means of acting deceptively. In the other (Ruffman et al., 1993), children were offered the opportunity to trick out a Mr. Bubby whose forbidden cookies could only be approached by crossing a field of spilled flour. The options available to the puppet figures of this study boiled down to whether they tracked through the flour while wearing their own or someone else's shoes. Deception in this case turned on keeping all of this straight while working out that Mr. Bubby might be misled by a plan that involved stealing the cookies while wearing someone else's oversized shoes. Small wonder

that these purported replications fared so badly, and less wonder still that more attention is ordinarily paid to studies showing that children actually possess some capacity, and less to those in which they are shown to fail. Given enough tangled rope, children can be made to hang themselves on almost any sufficiently twisted procedure.

What is perhaps of more interest is the war of words touched off by the original Chandler et al. study. Wellman (1990) suggests, for example, that the intention of the typical 2- and three-year-olds in our studies was not, as it would appear, to actively disinform an opponent by laying false trails to empty containers but "is more simply to rid himself of a competitor. His actions essentially say 'go away' not 'believe this mistaken information so that you will go away.' That is, the young child is avoiding competition for a desired object by sending the competition some place else. . . ." Others (Sodian, 1991), perhaps less extravagantly, suggested that our subjects were simply caught up in the fun of making and wiping up of tracks, and might well have behaved similarly if they were trying to help rather than hinder.

The subsequent study sequence (Hala, Chandler, and Fritz, 1991) was undertaken as a way of countering some of these reductive readings of our earlier work. Here, we essentially replicated that original study, while making room for direct tests of the possibility that our successful subjects were undertaking to manipulate only the behaviors and not the beliefs of their opponents, and taking pains to insure they would behave differently if instructed to help rather than mislead an opponent. The new 3-year-old subjects of this study not only explicitly indicated that their efforts would lead others into definite false beliefs, dutifully helped rather than hindered when asked to do so, but also successfully demonstrated that they were not members of some different and more deceptive Canadian race by consistently failing other standard (but less sensitive) measures of "unexpected change."

On the heels of this more recent and we hope knock-down



line of evidence, we have gone on to conduct a series of six or more experiments (Chandler and Hala, 1994; Hala and Chandler, in press) in which we have moved our measurement efforts out of the troubled waters of hide-and-peek tasks by producing an only slightly modified "deceptive" version of the otherwise standard "unexpected change" measure. What was done in these studies in effect was to arrange things in such a way that it was up to our young subjects themselves (rather than puppet figures) to move the equivalent of the standard chocolate bar from its original container "A" into some new container "B," all for reasons that were clearly meant to be deceptive in intent. The common finding across all of these studies was that young 3-year-olds almost always succeed in their deceptive hiding efforts and did so for the express and open purpose of leading others into false beliefs. On the strength of this and our still earlier evidence, we mean to argue that children as young as 2 1/2 or 3 can and do regularly take definite and deceptive steps to lead others into false beliefs.

The only real hedge that we know that has been thrown up against the generality of this claim is a brace of studies by Peskin (1992) and Russell, Mauther, Sjarpe, and Tidswell (1991). In both of these sets of experiments subjects were drawn into a game in which they were made to compete with an opponent who waited to learn either their own preferences for one or the other of two stickers (Peskin, 1992) or which of two boxes contained a prize (Russell et al., 1991) and then rudely used this information to beat out the subject and to take the sticker or the prize for themselves.

At least for anyone easily capable of behaving deceptively, the evident solution to both of these problems is to simply communicate to the opponent the exact opposite of ones' true preference or desires. What is perplexing about the results of both of these studies is that young preschoolers seem to go on, apparently endlessly, acting against their own best interests by avoiding the apparently obvious deceptive solution in favor of the more open-handed but self-defeating strategy of continu-

ing to wear their true desires on their sleeve. This is puzzling for at least two reasons. If preschoolers are, in fact, capable of behaving deceptively, as the studies cited earlier would suggest, then why do they not bring these talents to bear by simply "saying" the opposite of what they intend. If, by contrast, they wholly lack such abilities, then why, as studies involving the simple perceptual training of other species would suggest they should, do they not mindlessly shift to those behaviors that are most likely to secure a "reward?" Although Russell (1994) has more recently suggested that the problem here may have more to do with the details of the particular procedures than with any inability on the part of young subjects to behave deceptively, the failure of preschoolers to master this problem could be traceable to the fact that children may find it harder to lie about some things than others. That is, the possibility exists that whereas preschoolers may find it easy enough to lie and deceive about concrete matters of fact (that is, is the chocolate in container "A" or container "B"), they could find it more of an uphill challenge to lie about their own intentions or purposes. If so, this would suggest interesting developmental parallels between young children's difficulties in both factoring the intentions of others into their efforts at lie-detection and their apparent problems in lying productively about these same matters.

#### *Summary and Conclusions*

What has hopefully been made evident by all of the above is that by a remarkably early age (somewhere between their nursery and preschool years) young children have already separately acquired all of those fundamental competencies that together form the prototypical meanings that go into the definition and detection of lies and that are required in order to act deceptively toward others. A simple appreciation of the distinction between facts and fiction would appear to be a part

of the repertoire of even infants in arms. Intentions too seem not to be lost on the young, and, at least when such intrapsychic matters are not pitted against the clamor of other more glaring instances of facticity, preschoolers appear quite ready to read at least some of the good and bad intentions of others. Finally, the distinction between truth and truthfulness (or conversely the difference between reality and the false beliefs that can be had about it) also seems to be well inside the competence range of children somewhere between the ages of two and four. As such, their judgments seem to correspond with those of older children and adults whenever they are confronted by truly prototypic lies, and they are often able to behave in ways that are genuinely deceptive, at least with regard to concrete matters of fact. Clearly, young children cannot be counted among those that you can fool all of the time, nor are they quite as innocent as certain earlier talk about "pure as the driven snow" or "unblemished as the newborn lamb" might lead you to expect. A young child can very well trick you out and will do so if your guard is not up.

At the same time, however, there is a good deal that preschoolers are not very good at figuring out. For them, a lie about a hundred pound canary is twice as bad and deserves twice as much punishment as a lie about a fifty pounder (Piaget, [1932]1965). Further, if these or other stories are punished, then they are automatically reprehensible, and if reprehensible, then they must be lies, as opposed to some other bad things that might come out of your mouth. As DePaulo and Jordan (1982) put it, a lie to a preschooler "is simply a moral fault committed by means of language" (p. 153). Despite having made real headway in knowing about false beliefs, this distinction between truth and truthfulness is easily lost, and the fact that some statement happens to be objectively wrong ends up counting for more than a world of good intentions, or the fact that one may have been inadvertently passing on the lies of others (Wimmer, Gruber, and Perner, 1984). Deception apparently comes fast and easy, but the choice of digital lies over more analogical deceit comes

hard and slow (Chandler et al., 1989); and those early lies that are attempted are not likely to prove very consistent or convincing (Vasek, 1988), particularly if they happen to be about one's own internal states.

What one is to make of all this factionalism and gradualism will depend a lot on why one wants to know. If you happen to be a grown-up theorist of mind and want to know when false belief understanding is first possible, then learning that even 2- and 3-year-olds are sometimes capable of deceit is a large part of what you were trying to find out. If you happen to be a family court judge in the midst of a *voir dire*, and need to establish whether a given child is competent to understand the difference between lying and truth telling, or whether their testimony is credible as opposed to a pack of lies, then all of this to-ing and fro-ing about gradually getting prototypical or lying early but only out of some parts of one's mouth can only be an obstacle to answering an important but not especially psychological question. We would like to be able to tell you something different, but then we would just be lying.

### Notes

<sup>1</sup> For recent anthologies and reviews of this huge literature, see, for example, Lewis and Mitchell, 1994; and Moses and Chandler, 1992.

<sup>2</sup> For recent anthologies and reviews, see Mitchell and Thompson, 1986; Whiten, 1991.

<sup>3</sup> See Lewis and Mitchell, 1994, and Moses and Chandler, 1992, for reviews.

### References

- Anderson, M., "Cultural Concatenation of Deceit and Secrecy," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on*

- Human and Nonhuman Deceit* (Albany, NY: State University of New York Press, 1986), pp. 323-48.
- Bussey, K., "Lying and Truthfulness: Children's Definitions, Standards, and Evaluative Reactions," *Child Development*, 63 (1992): 129-37.
- Chandler, M.J., Fritz, A.S., and Hala, S.M., "Small Scale Deceit: Deception as a Marker of 2-, 3- and 4-Year- Olds' Early Theories of Mind," *Child Development*, 60 (1989): 1263-1277.
- Chandler, M. J. and Hala, S., "The Role of Personal Involvement in the Assessment of Early False Belief Skills," in C. Lewis and P. Mitchell, eds., *Children's Early Understanding of Mind: Origins and Development* (Hove: Lawrence Erlbaum, 1994), pp. 403-25.
- Coleman, L. and Kay, P., "Prototype Semantics: The English Word *Lie*," *Language*, 57 (1981): 26-44.
- Dennett, D.C., "Beliefs About Beliefs," *The Behavioral and Brain Sciences*, 4 (1978): 568-70.
- Dennett, D.C., *The Intentional Stance* (Cambridge, MA: MIT Press, 1987).
- DePaulo, B. M. and Jordan, A., "Age Changes in Deceiving and Detecting Deceit," in R.S. Feldman, ed., *Nonverbal Communication in Children* (New York: Springer-Verlag, 1982), pp. 151-80.
- Grice, H.P., "Logic and Conversation," in P.Cole and J. Morgan, eds., *Syntax and Semantics, Vol. 3: Speech Acts* (New York: Academic Press, 1975), pp. 113-27.
- Hala, S. and Chandler, M. J., "Child Development: The Role of Strategic Planning in Assessing False-Belief Understanding," forthcoming.
- Hala, S., Chandler, M. J., and Fritz, A. S., "Fledgling Theories of Mind: Deception as a Marker of Three-Year-Olds' Understanding of False Belief," *Child Development*, 62:1 (1991): 83-97.
- LaFreniere, P., "The Ontogeny of Tactical Deception in Humans," in R.W. Byrne and A. Whiten, eds., *Machiavellian Intelligence. Social Expertise and the Evolution of Intellect in Monkeys, Apes, and Humans* (Oxford: Clarendon, 1988), pp. 238-52.
- Lakoff, George, "Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts," papers from the 8th Regional Meeting, Chicago Linguistic Society, 1972, pp. 183-228.
- Lakoff, G., "A Study in Meaning Criteria and the Logic of Fuzzy Concepts," *Journal of Philosophical Logic*, 2 (1973): 458-508.

- Lewis, M., Stanger, C., and Sullivan, M. W., "Deception in 3-Year-Olds," *Child Development*, 25 (1989): 439-43.
- Lewis, C. and Mitchell, P., eds., *Children's Early Understanding of Mind: Origins and Development* (Hove: Lawrence Erlbaum, 1994).
- Mitchell, R.W., "A Framework for Discussing Deception," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 3-31.
- Mitchell, R.W. and Thompson, N.S., eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986).
- Morgan, C.L., *An Introduction to Comparative Psychology* (London: Walter Scott, 1984).
- Moses, L. and Chandler, M. J., "Traveler's Guide to Children's Theories of Mind," *Psychological Inquiry*, 1 (1992): 286-301.
- Peskin, J., "Ruse and Representations: On Children's Ability to Conceal Information," *Developmental Psychology*, 28 (1992): 84-89.
- Peterson, C.C., Peterson, J.L., and Seeto, D., "Developmental Changes in Ideas About Lying," *Child Development*, 54 (1983): 1529-535.
- Piaget, J., *The Moral Judgement of the Child* ([1932]New York: Free Press, 1965).
- Premack, D. and Woodruff, G., "Does the Chimpanzee Have a Theory of Mind?" *Behavioral and Brain Sciences*, 1 (1978): 515-26.
- Ruffman, T., Olson, D.R., Ash, T., and Keenan, T., "The ABCs of Deception: Do Young Children Understand Deception in the Same Way as Adults?" *Developmental Psychology*, 29 (1993): 74-87.
- Russell, James, "What Makes Strategic Deception Difficult for Children—The Deception of the Strategy," *British Journal of Developmental Psychology*, 12: 5 (1994): 555-81.
- Russell, J, Mauthner, N., Sjarpe, S., and Tidswell, T., "The 'Windows Task' as a Measure of Strategic Deception in Preschoolers and Autistic Subjects," *British Journal of Developmental Psychology*, 9 (1991): 331-49.
- Russow, L.M., "Deception: A Philosophical Perspective," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 41-65.

- Selman, R.L., "An Analysis of 'Pure' Perspective Taking: Games and the Delights of Deception," in R.L. Selman, *The Growth of Interpersonal Understanding* (New York: Academic Press, 1980), pp. 49-68.
- Sexton, D.J., "The Theory and Psychology of Military Deception," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 349-56.
- Shultz, T. R. and Cloghess, K., "Development of Recursive Awareness of Intention," *Developmental Psychology*, 17 (1981): 456-71.
- Smith, W.J., "An 'Informational' Perspective on Manipulation," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 71-86.
- Sodian, B., "The Development of Deception in Young Children," *British Journal of Developmental Psychology*, 9 (1991): 173-88.
- Sordahl, T.A., "Evolutionary Aspects of Avian Distraction Display: Variation in American Avocet and Black-Necked Stilt Anti-predator Behavior," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 87-112.
- Strichartz, A. F. and Burton, R. V., "Lies and Truth: A Study of the Development of the Concept," *Child Development*, 61 (1990): 211-20.
- Sweetser, E.E., "The Definition of Lie: An Examination of the Folk Models Underlying a Semantic Prototype," in D. Holland and N. Quin, *Cultural Models in Language and Thought* (New York: Cambridge University Press, 1987).
- Swift, J., *Gulliver's Travels* ([1726]New York: Penguin Books, 1983).
- Vasek, M. E., "Lying as a Skill: The Development of Deception in Children," in R.W. Mitchell and N.S. Thompson, eds., *Deception: Perspectives on Human and Nonhuman Deceit* (Albany, NY: SUNY Press, 1986), pp. 271-92.
- Wellman, H. M., *The Child's Theory of Mind* (Cambridge, MA: MIT Press, 1990).
- Whiten, A., ed., *Natural Theories of Mind: Evolution, Development, and Simulation of Everyday Mindreading* (Cambridge, MA: Basil Blackwell, 1991).
- Wimmer, H., Gruber, S., and Perner, J., "Young Children's

- Conception of Lying: Lexical Realism-Moral Subjectivism," *Journal of Experimental Child Psychology*, 37(1984): 1-30.
- Wimmer, H. and Perner, J., "Beliefs About Beliefs: Representation and Constraining Function of Wrong Beliefs in Young Children's Understanding of Deception," *Cognition*, 13 (1983): 103-128.
- Wittgenstein, L., *The Blue and Brown Books* (Oxford: Blackwell, 1958).



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