The Crop-Circle Phenomenon

An Investigative Report

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For years a mysterious phenomenon has been plaguing southern English crop fields. Typically producing swirled, circular depressions in cereal crops, it has left in its wake beleaguered farmers and an astonished populace—not to mention befuddled scientists and would-be "investigators"—all struggling to keep apace with the proliferating occurrences and the equally proliferating claims made about them.



The defining characteristics of the phenomenon lead in a fairly straight line toward the hoax hypothesis.

The Mystery and the Controversy

The circles range in diameter from as small as 3 meters (nearly 10 feet) to some 25 meters (approximately 82 feet) or more. In addition to the simple circles that were first reported, there have appeared circles in formations; circles with rings, spurs, and other appurtenances; and yet more complex forms, including "pictographs" and even a crop triangle! While the common depression or "lay" pattern is spiral (either clockwise or counterclockwise), there are radial and even more complex lays (Delgado and Andrews 1989; Meaden 1989; "Field" 1990).

The year 1989 brought no fewer than three books on the cornfield phenomenon and added to the already countless articles on the subject. Soon circles-mystery enthusiasts were being called cereologists (after Ceres, the Roman goddess of vegetation). Circlemania was in full bloom.

By this time, some of the nascent explanations for the early, relatively simple circles had

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been debunked. The circles' matted pinwheel patterns readily distinguished them from fairy rings (rings of lush growth in lawns and meadows, caused by parasitic fungi) (Delgado and Andrews 1989). The possibility that they were due to the sweeping movements of snared or tethered animals, or rutting deer, seemed precluded by the absence of any tracks or trails of bent or broken stems. And the postulation of helicopters flying upside-down was countered by the observation that such antics would produce, not swirled circles, but crashed 'copters ("England" 1989; Grossman 1990).

A "scientific" explanation was soon attempted by George Terence Meaden, a onetime professor of physics who later took up meteorology as an avocation. In his book, *The Circles Effect and Its Mysteries*, he claims: "Ultimately, it is going to be the theoretical atmospheric physicist who will successfully minister the full and correct answers." Meaden's notion is that the "circles effect" is produced by what he terms the "plasma vortex phenomenon." He defines this as "a spinning mass of air which has accumulated a significant fraction of electrically charged matter." Most evidence, he contends, "suggests that the spinning wind has entered the ionized state known as plasma, and that the vortices are to become plasma balls akin to ball lightning in appearance except that they are much bigger and longer-lived." When the electrically charged, spinning mass strikes a crop field, Meaden thinks, it produces a neat crop circle (1989: 3, 10-11).

Variant forms, he contends, are also allowed by his postulated vortices.



A "double pictogram" that appeared in East Kennett, England. (Photo by Busty Taylor/Centre for Crop Circle Studies.)

For example, of satellite circles Meaden states: "An induction effect may be the consequence of electromagnetic-wave interference resulting in antimodal extrema at the satellite positions, thus leading to secondary rotating plasmas at these locations." Because of their capacity to be ionized, Meaden asserts, the vortices can produce light and sound effects that have been associated with the creation of some circles (Meaden 1989: 60-66).

However, as even one of Meaden's staunchest defenders concedes, "Natural descending vortices . . . are as yet unrecognized by meteorologists" (Fuller 1988). Meaden himself acknowledges that "some from among my professional colleagues who have expressed surprise at the discovery of the circles effect and questioned why it has not previously attracted the attention of scientists, prefer to deny its existence and reject the entire affair as a skillful hoax" (Meaden 1989:15).

In contrast to Meaden's approach is that of Pat Delgado and Colin Andrews (1989), two engineers who have extensively studied and recorded the crop-circle phenomenon. The pages of their *Circular Evidence* are filled with digressions and irrelevancies—all calculated to foster mystery. For example, we learn of the authors' meeting with a professor and a member of the British Society for Psychical Research, "a meeting," say the authors knowingly, "which we recorded, although the tape was blank when we played it back." A dog that became ill at one site, "some kind of magnetic disturbance" at another, and a plane that crashed after flying over a field where crop circles had appeared some eight weeks before—these are the apparently random occurrences that Delgado and Andrews (1989: 60, 65, 74, 104) attempt to yoke into the mystery.

Overall, Delgado and Andrews hint most strongly at the UFO hypothesis—perhaps not surprisingly, since both have been consultants to *Flying Saucer Review* (Grossman 1990). Although they profess "guarded views" about whether circles and rings have an extraterrestrial source, they frequently give the opposite impression. For example, they go out of their way to observe that a 1976 circle "appeared about seven weeks before a Mrs. [Joyce] Bowles had seen a UFO [and a silver-suited humanoid] just down the road." Again, after visiting one circle Andrews met two teenagers, one of whom had earlier seen "an orange glowing object" nearby. Other mysterious lights and objects are frequently alluded to (Delgado and Andrews 1989: 17, 63, 98).

They rely heavily on anecdotal evidence (i.e., evidence in the form of personal stories, such as the "eyewitness" tales that supposedly prove Elvis Presley still lives). In this respect, it seems that both Meaden and the Delgado and Andrews team have much in common. For example, Meaden offers three alleged eyewitnesses (one an associate of Meaden) to the vortex creation of a circle. Unfortunately, all waited several years before making their claims, and none described the respective events in quite the same way (Meaden 1989: 26-28). Similarly, Delgado and Andrews (1989: 68) associate UFO sightings with circle formation, such as the night "a row of bright lights" was seen at the famous Devil's Punch Bowl at Cheesefoot Head, Hampshire. Use of such conflicting anecdotal evidence prompted one writer to state, rather cynically: "As long as the phenomenon continues, time is on the side of the believers, of course. More and more witnesses, with tales that conform to the dominant myth, will certainly come forward. The witness battalion has already grown since the

books appeared" (Shoemaker 1990). Almost predictably, a *hybrid* of the main theories has appeared in "eye-witness" form. Late one evening in early August 1989, or so they claimed, two young men witnessed a circle being formed near Margate, Kent. One of them, a 19-year-old, described "a spiraling vortex of flashing light" (a nod to Meaden et al.), which, however, "looked like an upturned satellite TV dish with lots of flashing lights" (a sop to flying-saucer theorists). The youth kept a straight face while posing with the circle for a news photo ("A Witness" 1989-90).

As the crop-circle phenomenon entered the decade of the nineties—bringing with it the emergence of ever more complex forms that earned the sobriquet "pictograms"—the main circular theorists rushed into print their various "Son of Crop Circles" sequels. For example, Paul Fuller and Jenny Randles (who are Meaden's disciples, although, ironically, they are UFOlogists) followed their *Controversy of the Circles* with *Crop Circles: A Mystery Solved*. Several periodicals devoted to the phenomenon also sprang up, such as *The Cereologist*, *The Crop Watcher*, and *The Circular*, which was published by the Centre for Crop Circle Studies (Chorost 1991).

If critics of the main theories were not capitalizing on an expanding market of interest in crop circles, they were nevertheless busily poring over the data and pointing out that the prevailing circle theories were, well, full of holes. We were among them.

Data Analyses

Our interest in the swirled-crops phenomenon increased during the latter 1980s. We had already opened a file on the subject, but now we sought to gather information at an accelerated pace. As we studied the incoming data and photographs, we began to formulate hypotheses and to seek out the opinions of agronomists and others who might be helpful. We also enlisted the aid of a computer expert to help us compile and analyze data on the swirled crops—a phenomenon we naturally distinguished from the simple circles or rings that may result from a number of causes (Delgado and Andrews 1989: 160-165).

It soon struck us (as it had many other observers) that the crop-circle phenomenon had a number of potentially revealing characteristics. Cereologists—whether of the "scientific" or "paranormal" stripe—tend either to deny these characteristics or to posit alternative explanations for them. For the implications are serious. While any *single* attribute may be insufficient to identify a phenomenon, since other phenomena may share that feature, sufficient *multiple* qualities may allow one to rule in or out certain hypotheses so as to make an identification.

The identification we allude to is hoaxing. The characteristics that point to it include an escalation in frequency, the geographic distribution, an increase in complexity over time, and what we call the "shyness effect," as well as a number of lesser features.

An Escalation in Frequency. This aspect of the phenomenon has been well reported. Although there have been reports of circles and rings in earlier years and in various countries—e.g., circles of reeds in Australia in 1966 and a burned circle of grass in Connecticut in 1970—only a few had the flattened swirl feature, and not many of those were well documented at the time (Delgado and Andrews 1989: 179-189; Story 1980: 370-371).

In any case, by the mid 1970s, what are now regarded as "classic" crop

circles had begun to appear. In 1976, swirled circles in tall grass were shown near a Swiss village by a man who claimed he was regularly visited by extraterrestrials (Kinder 1987), and Delgado and Andrews (1989) claim an instance in England that same year. When Delgado saw his first circles in 1981, his response was "to share the experience with other people, so I contacted several national papers, along with the BBC and ITN." Then, he says, "Local papers jumped on the bandwagon as soon as they could get the story into print" (Delgado and Andrews 1989: 11-17).

Delgado's use of the word *bandwagon* seems appropriate, since the term refers to an increasingly popular trend or fad. According to Noyes (1989) in an article titled "Circular Arguments," the crop-circles phenomenon "gives the appearance of elaborating and increasing its intrusions from year to year." Writing in 1989, he said that year had "brought more occurrences than ever before."

It was in an attempt to quantify and assess such perceptions that we decided to create a data bank of information on the circles. We used the data in Delgado and Andrews's *Circular Evidence*, which reviewers praised over Meaden's and Fuller and Randles's books for its "level of detail" (Shoemaker 1990) and its being "more comprehensive" (Michell 1989). "Over the years," John Michell (1989) says Delgado and Andrews "have inspected, measured, photographed, mapped and annotated hundreds of circles. . . ." Of course we considered that the incidences of the phenomenon in their book did not represent a complete list, but we intended to look at other sources of data as a cross-check on the sample.

With these caveats in mind we gave a copy of *Circular Evidence* to computer expert Dennis Pearce, an advisory engineer with Lexmark International. Plotting the number of circles per year, Pearce determined, showed a definite (i.e., significantly greater than exponential) increase in the number of crop circles annually from 1981-1987 (Pearce 1991).

This was well supported by data from Meaden's (1989-90) article in *Fortean Times*, "A Note on Observed Frequencies of Occurrence of Circles in British Cornfields." Figures for the four years from 1980 to 1983 were, respectively, 3, 3, 5, and 22; Meaden (1989-90) does not give exact figures for the next few years, but notes they were "rising"; then during the years from 1987 to 1989 the totals went from 73 to 113 to "over 250" annually. For 1990, the figure had again jumped remarkably—to 700 circles in Britain, at least according to Randles (1991a). Small wonder that even moderate voices in the controversy—like Noyes and Michell—insisted the phenomenon was increasing.

However, Meaden and his followers do not accept that there has actually been such a marked increase over the decade. Meaden (1989-90) attributes the increase in part to aerial surveillance begun in 1985. "In addition," he says, "totals for earlier years were still rising, partly as a result of feedback from helpful farmers who were telling us of occurrences of circles on their land which they had known about when they were young." But such anecdotal reports are untrustworthy in the extreme for reasons we have already considered—not the least of which is that we cannot at such a remove distinguish the "classic" phenomenon from other circles and rings.

Meaden mentions even an instance that supposedly occurred in 1678! Widely cited, it is the folk account of an alleged instance of witchcraft in Hertfordshire. Unfortunately for

cereologists, the account specifically states that the oats were *cut*, not bent down in a swirled pattern like the crop circles. Indeed, not only does this story of "The Mowing Devil" (1989-90) fail to support an early historical existence for crop circles, but, says one critic, "the phenomenon's general, if not total, lack of historical precedent is to me its most disturbing aspect" (Shoemaker 1990). Jenny Randles largely agrees with Meaden, although she now increasingly allows for a great number of hoaxes. Speaking of the proliferation of circles that occurred in 1989 and 1990, she states:

> Both those years are hopelessly tainted by the social factors [i.e., the bandwagon effect we mentioned earlier] generated from the huge media hype. Before 1989 we were getting maybe 30 press stories a summer on circles. In 1989 we got up to 300 and in 1990 we had almost 1,000. We can show that this escalation in publicity *preceded* the increase in circle totals and to us this strongly implies a correlation.

In short, she says, the number of circles has been swelled, "heavily contaminated by mass hoaxing inspired by all the publicity" (Randles 1991b).

Here Randles is helping skeptics make their case, because if there is indeed "mass hoaxing," might not the entire phenomenon be similarly caused? We agree with Randles that the escalation of the phenomenon seems to correlate with media coverage of it and that the coverage helped prompt further hoaxes. We provided Dennis Pearce with statistics on crop-circle articles that appeared in the London *Times* from 1986 to 1990, and he specifically commented on "the rapid rise in both locations and number of circles in the years following the London *Times* reports," which, he said, "is to me evidence of human intervention."

Geographic Distribution. A second observed feature of the patterned-crops phenomenon is its predilection for a limited geographic area. As we have seen, prior to the mid-1970s crop circles appeared sporadically at scattered locations in various countries, but since then they have flourished in southern England—in Hampshire, Wiltshire, and nearby counties. It was there that the circles effect captured the world's attention.

In plotting the occurrences of formations among English counties, Pearce confessed that he was "surprised at how localized the phenomenon is." Although there are known exceptions, such as an occurrence in adjacent Wiltshire in 1980, all the pre-1986 cases published by Delgado and Andrews in *Circular Evidence* were in Hampshire, with the vast majority remaining there during the period surveyed (Pearce 1991).

Other sources provide additional evidence for this geographic preference. In 1989 *Time* magazine concluded: "While there have been reports of circles from as far away as the Soviet Union, Japan, and New Zealand, by far the greatest number have appeared in Hampshire and Wiltshire" (Donnelly 1989). The Associated Press, citing a total of 270 circles for the summer of 1989, reported that "two-thirds appeared in a square-mile zone near Avebury in Wiltshire's rural terrain, including 28 in one field" ("England" 1989).

Jenny Randles and Paul Fuller (1990:50) argue that, to the contrary, "sensible circle researchers have known for some years that circles appear all over Britain, but for various reasons formations appearing away from this area receive little publicity

and go unreported outside their local media." But, as Ralph Noyes (1989) counters, many of the reports Randles and Fuller cite are "poorly documented"; he adds that "if credit is given to them all, however, there still remains a strong appearance of an overwhelming concentration of events in Wessex [an area in southern England, named after the old Anglo-Saxon kingdom] and of a phenomenon which has developed explosively in the 1980's."

It may not be coincidence, given the early sporadic circles' association with UFOs, that the clustering occurs where it does. The Wiltshire town of Warminster is "the famous UFO capital of England" (Michell *1989-90*); during the sixties and seventies it was what Randles and Fuller term "the centre of the UFO universe, drawing spotters from all over the world." Therefore, the area may have provided a unique climate for hoaxes—in the form of UFO-landing sites (as the early Wessex circles were often thought to be)—to flourish.

Some cereologists suggest that, within the densely circle-pocked area, the configurations do have a peculiarity of distribution. Wind-vortex theorists, like Meaden and Fuller (1988), insist that a high proportion of crop circles—some 50 percent—appear at the base of hills, a fact they attribute to the topography's transforming air currents into vortices. However, Delgado and Andrews (1989) observe that the circles form in a variety of locations—"many . . . remote from any hills." On the other hand, it is obvious to skeptics that hills offer good vantage points for hoaxers to view their creations.

Looking beyond the Wessex area, just as the popular media's increasing reportage of the cornfield phenomenon appears to have produced an increase in circle totals—as even Jenny Randles concedes—it also correlates well with the spread of the phenomenon elsewhere. In view of just the data in *Circular Evidence*, Dennis Pearce observed that the number of reported geographical locations in England each year grew at a faster than exponential rate. "I would suspect," he said, "that a natural phenomenon would be either consistently localized or consistently spread about, but not spreading rapidly over time." Also, whereas the circles' pre-English distribution was exceedingly sparse, after newspaper and television reports on the phenomenon began to increase in the latter eighties circles began to crop up in significant numbers around the world. For example, in September 1990 two circles appeared in a Missouri sorghum field and were immediately followed by reports in three other fields—one in Missouri and two in Kansas (McGuire and Adler 1990).

About this time they also had begun to appear in significant numbers in Japan and Canada. Although circles had been reported in Canada sporadically since the mid-1970s, they reappeared with a vengeance in the fall of 1990. Soon after circles turned up in Manitoba in August, the *Toronto Globe and Mail* reported they were "appearing almost weekly now across the Prairies" ("Rings" 1990).

Increase in Complexity. A third characteristic of the patterned-crops phenomenon is the tendency of the configurations to become increasingly elaborate over time. Looking first just at the data in *Circular Evidence*, we see a definite trend. Delgado and Andrews (1989) themselves state: "Before the late 1970s it looked as though single circles were all we had to consider; but, as has always been the pattern, and as we have learnt over the years, something, maybe some intelligent

level, keeps one or more jumps ahead. . . ." (p. 122). Again they say: "As soon as we think we have solved one peculiarity, the next circle displays an inexplicable variation, as if to say, 'What do you make of it now?' " (p. 12).

A case in point involves Terence Meaden. When he first published *The Circles Effect and Its Mysteries* in mid-June 1989, setting forth his wind-vortex theory, he declared that "single rings around single circles always rotate in a sense opposite to that of the interior," and he explained that this was necessarily the case (p. 96). Yet no sooner had his book been published than a circle appeared with a ring swirled in the same direction (Michell 1989-90)!

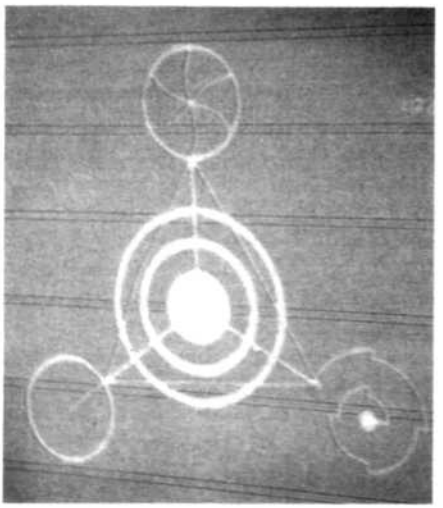
Still, Meaden has clung stubbornly to his vortex theory. He merely acknowledges "the amazing discoveries of recent years" and speaks of the "difficulties of interpretation," concluding:

> Much of the supposed "evolution" of the phenomenon—to which some have even ascribed "intelligence"—can therefore be explained rationally by an insufficiency of data. The more complete the archive becomes, the better this will be appreciated. (Meaden, in Noyes 1990:76, 85)

To a degree, Meaden is correct; there were some moderately complex forms in earlier periods. But the overall evolution of forms *within the Wessex area* still seems well established, and—worldwide—the emergence of the pictograms in 1990 clearly represented a new phase. States Meaden: "Admittedly, 1990 does look to be exceptional, but just because the reasons for this wait to be clarified, it would be fatuous to decree [that] an alien intelligence is at hand" (Meaden, in Noyes 1989: 85).

The pictograms are wildly elaborate forms with a distinctly pictorial appearance. There have been circles with key shapes and clawlike patterns; complex designs, consisting of circles and rings linked by straight bars and having various appendages and other stylized features; and still other configurations, including free-form "tadpole" shapes and even a crop *triangle* ("Field" 1990; Noyes 1990). Small wonder that Delgado and Andrews, as well as others, suspect that the force that is making the designs is being "intelligently manipulated" ("Mystery" 1990).

But few would have underestimated the cereologists' will to believe had they known of the crop-*message* incident of 1987. The message, written in the typical flattened-crops style and with the words all run together, read: "WEARENOTALONE." Delgado told readers of *Flying Saucer Review:* "At first sight it was an obvious hoax, but prolonged study makes me wonder." Of the crop circles, he said: "Maybe these circles are created by alien beings using a force-field unknown to us. They may be manip-



This July 1991 pictogram at Barbury Castle is an example of the increasing complexity of the design of crop circles. (Photo by Busty Taylor/ Centre for Crop Circle Studies.)

ulating existing Earth energy" (quoted in Randles and Fuller 1990: 18-19). Or the beings may be terrestrial ones, laboring by the sweat of their brows. At least the pictograms enabled Jenny Randles to wake up to the unmistakable evidence that hoaxes were not only occurring but were running rampant. She has admitted (1991a):

> I do not believe that wind vortices created the pictograms, though serious research into that possibility continues. . . . I can think of very good reasons why the pictograms might well be expected, based on our sure knowledge that crop-circle hoaxing was greatly increased from just a few known cases before 1989 to a far higher figure deduced from my own personal site investigations in 1990. I would put the hoaxes to comprise something over 50 percent of the total.

However, Randles still believes that beyond the hoaxes is a genuine, wind-vortex-caused phenomenon, whereas there seems no need to postulate such. If the "experts" like Meaden, Delgado, and Andrews cannot tell the genuine crop circles from hoaxed ones in 50 percent of the cases, one wonders just what the other 50 percent consist of.

Two other aspects of the patterns' complexity are revealing. The first concerns the lay patterns, which, like the configurations themselves, evolved in complexity. Whereas "the swirl lays of previous years had been orderly and depressed neatly," say Delgado and Andrews (1989), 1987 produced more diverse and far more complex lay patterns (p. 126). They were even more elaborate in 1989 (Noyes 1990: 91).

Then there are the crop designs that have been formed in *stages*—not as single vortex strikes or other brief events. For example, a giant three-ringed circle, with satellites, that was photographed on May 19, 1990, was photographed again on May 27, whereupon it had developed an additional outer ring and ten more satellites (Noyes 1990-93). Surely such work-in-progress seems like nothing so much as the effort of industrious hoaxers.

The Shyness Factor. A fourth characteristic of the patterned-crop phenomenon is its avoidance of being observed in action. There is considerable evidence of this fact.

First, there is its nocturnal aspect. Delgado and Andrews (1989:156)—who appear to have done the most extensive documentation of the phenomenon—state:

> Many . . . confirmations of nighttime creations come from farmers and people living near circle sites. "It wasn't there last night, but I noticed it first thing this morning" has become almost a stock statement. The evidence is overwhelming that circle creations only occur at night.

Randles and Fuller (1990:53) agree that "most seem to form during the night or in daylight hours around dawn." However, they insist that "several circles are known to have appeared during daylight," although they do not explain. If they are referring to alleged eyewitness accounts of vortex-formed circles, or other anecdotal evidence, they simply fail to make a case. Besides, this concession that the circles phenomenon is *largely* nocturnal is important since that characteristic seems to run counter to the wind-vortex theory.

Not only does the circle-forming mechanism seem to prefer the dark, but it appears to specifically resist being seen, as shown by Colin Andrews's Operation White Crow. This was an eight-night vigil main-

tained by about 60 cereologists at Cheesefoot Head (a prime circles location) beginning June 12, 1989. Not only did the phenomenon fail to manifest itself in the field under surveillance, but—although there had already been almost a hundred formations that summer, with yet another 170 or so to occur—*not a single circle was reported for the eight-day period anywhere in England!* Then a large circle and ring (the very set that, being swirled in the same direction, seemed to play a joke on Meaden by upsetting his hypothesis) was discovered about 500 yards away *on the very next day!* (Noyes 1990:28; Michell 1989-90: 47-58)

The following year, the cereologists attempted to profit from their mistakes. This time they conducted a "top secret" operation termed Operation Blackbird, which lasted three weeks beginning on July 23, 1990. They took $2 million worth of technical equipment—including infrared night-viewing camera equipment—to an isolated site where they maintained a nighttime vigil. Reuters quoted the irrepressible Colin Andrews as explaining what happened in the early morning hours: "We had many lights, following that a whole complex arrangement of lights doing all sorts of funny things. It's a complex situation. . . . But there is undoubtedly something here for science" (L. Johnson 1991). Pressed by reporters, Andrews denied that his group could have been fooled by a hoax. However, when they and reporters converged on the site they discovered a hastily flattened set of six circles, with a wooden cross and a Ouija board placed at the center of each.

Other Characteristics. Additional features of the "circles effect" are varied and revealing. Although Ralph Noyes insists that "hoax, as a general theory can be consigned to the dustbin of 'explanationism,' " he notes an interesting apparent characteristic of the phenonemon. This is the way an elaborate feature, a segmented-lay pattern, seemed to have been anticipated a few weeks before: In a nearby field had appeared, says Noyes (1990:30), "what seems to be the first rough sketch of it." He asks, "Was something *practicing* on that earlier occasion?"

The "something" apparently uses a variety of techniques in doing its sketching and drawing. This is evident not only in the general variety of lay patterns (swirl, radial, etc.), but also in specific details. For example, Delgado and Andrews (1989:139) explain that one circle "looks as though the floor was first swept around counterclockwise, then the edge was finished off with a thin circular stroke in the opposite direction." Another circle is notable for "serration marks" found on a few stems and leaves (p. 51); another (p. 142) shows a tightly wound center (as if the stems were wound about a post that was then removed); and so on.

We have already indicated the phenomenon's seeming propensity for mischief. As cereologist Archie E. Roy states (in Noyes 1990:12), "The phenomenon begins to have the look of a large-scale jokester who is leading us by the nose." John Michell (1989-90) mentions the "perversity" of the phenomenon in producing new patterns that invalidate previous hypotheses. And Hilary Evans (in Noyes 1990:41) observes that "whoever/whatever is responsible for the crop circles shows every sign of playing games with us."

The Hoax Hypothesis

We believe that, taken together, the characteristics we have described—

the escalation in frequency, the geographic distribution, the increase in complexity, the "shyness effect," and other features—are entirely consistent with the work of hoaxers.

That there *are* hoaxed crop circles no one can deny; the question is of the extent of the hoaxing—that is, whether, if all the hoaxes were eliminated, there would still be a residue of genuine circles that would require postulating some hitherto unproved phenomenon, such as wind vortices or extraterrestrial visitations.

We have seen that some of the cereologists' evidence—the alleged eyewitness accounts, the supposed correlation of circle sites with hilly terrain, and some other claims—is at best unproved and unconvincing. But there are additional assertions.

One claim is that tests of grain from crop circles showed a significant difference in "energy levels" from that in non-crop-circle areas. In fact, a prominent cereologist, the Earl of Haddington, submitted "blind" samples for testing to the Spagyrik Laboratory after receiving confirmation from its director that it could indeed detect the different "energy levels." But in a letter to *The Cereologist* Haddington reported: "Days, weeks passed, months passed, with phone calls at regular intervals always given the same reply. "We will put it [the report of the results] in the post tomorrow." After six months Haddington (1991) concluded: "When they are not told which sample came from a Crop Circle and which from a heap of grain in my back yard they are either unable or unwilling to give a result." (Other claims of differences in "energy levels" come from the many cereologists who employ dowsing or "witching" wands and pendulums to detect the mystical forces. Needless to say, such claims remain unproved.)

Many alleged characteristics of the circles are disputed. Is the phenomenon "silent," as some claim, or sometimes accompanied by a "humming or chirping" sound, which does not appear to be very consistent and might be almost anything? Again, consider the row of "detached" and "dancing" lights seen on the same night a circle was formed: Did they indeed represent a UFO "above the trees" or could they have been a line of hoaxers with flashlights on a distant slope? (Michell, in Noyes 1990:45; Delgado and Andrews 1989: 68)

If the cereologists cannot offer much in the way of positive evidence, they nevertheless make several negative claims, notably that hoaxers cannot produce circles with the qualities of the "genuine" ones. But what are these qualities? When one of us (JN) debated Delgado on a Denver radio program, it was difficult to get a straight answer from him on this issue.

Delgado's main argument was the alleged lack of broken-stemmed plants in the "genuine" formations, a point he and Andrews make repeatedly in *Circular Evidence*. For example, they say of one circle that "the root end of each stem is bent over and pressed down hard with no damage to the plants, which is why they continued to grow and ripen horizontally" (p. 138).

In response, his various equivocations were pointed out: e.g., in one instance "most" of the plants were undamaged (or rather unbroken; some had "serration" marks on them!) (p. 51). His contradictions were also noted. For instance, Andrews states of one crop ring: "Between the two radial splays was a line of buckled plants. Each one was broken at the knuckle along its stem length." Did he regard the formation as a hoax? No. He only said, as mysteriously as possible, "These collapsed plants

appeared to have suffered whiplash damage, possibly caused by opposing forces meeting" (pp. 63-64). In other words, if the plants are unbroken, that is a mystery; if broken, that is another mystery.

It is entirely possible that the circles with broken plants are merely the less skillfully hoaxed ones. We also considered that the moistening effect of dew on plants bent at night might mitigate against breakage, while agronomists we talked with pointed out that from mid-May to early August the English wheat was green and could easily be bent over without breaking—indeed, could only be broken with difficulty (Blitzer 1990; Daugherty 1990).

Another supposed impossibility is for hoaxers to produce circles without leaving tracks—there allegedly being none in the case of "genuine" circles. But a study of numerous crop-circle photographs in the various publications reveals that virtually every circle would have been accessible by the tractor "tramlines" that mark the fields in closely spaced, parallel rows. In any case, one can carefully pick one's way through a field without leaving apparent tracks.

Can cereologists really tell a hoaxed circle from a "genuine" one? Randles and Fuller (1990:72) provide a chart of features that supposedly differentiate one from the other. But Randles's belief that the pictograms are not authentic, when Fuller and others think otherwise, suggests that there is little objective basis for making a judgment. Says Dennis Stacy (1991), writing in the *MUFON UFO Journal*, "Most times, we're simply left to take the investigator's word for it, as if some sort of inherited sixth sense were at work."

In fact, rushing to judgment seems a habit of certain cereologists. When 98 circles appeared atop two hills in Wales in less than a week, Colin Andrews was described as spokesman for a "team of top scientists" who were going to investigate. Andrews asserted: "We believe we have something of major proportions. . . . Because of the scale of the formations, we are sure there is no human involvement." Alas, a follow-up report stated: "Red-faced scientists who investigated the 98 mystery circles in the Black Mountains of Wales have discovered they were made by a local farmer—to encouage grouse to settle" (quoted in Randles and Fuller 1990:97).

In what amounted to a test of his ability, Colin Andrews was asked by a BBC film crew to examine a circle they said they had found. Reportedly, upon visiting the pattern Andrews declared it genuine, but when the BBC explained that it was a hoaxed circle made especially for the occasion, he decided that the circle looked "too perfect" to be genuine after all (Sullivan 1991).

In several cases hoaxers have come forth and confessed, although often the reaction of cereologists is to doubt them. But Jenny Randles and Paul Fuller give credence to the claim of four farmhands from Cornwall that they had created the second 1986 circle-and-ring formation at Cheesefoot Head—one accepted as genuine by Delgado and Andrews (Randles and Fuller 1990: 64-65, 69).

Since we do not have definite knowledge of how particular "genuine" circles were made, the claim that hoaxers cannot have made them is a logical fallacy known as an argument *ad ignorantiam*. As observers like Dennis Stacy (1991) point out, it is now clear that crop cricles are comparatively easy to hoax. In fact, the different lay patterns and other details discussed earlier suggest there are various ways of making circles, and

indeed various techniques have been described in newspaper articles and books and even detailed by the hoaxers themselves.

An effective method was filmed by the BBC and has impressed those who have seen it. The BBC brought in "a young farmers' tug-of-war team," with the announcer sagely noting that they looked surprisingly practiced as they made their way down the tracks left by the sprayers [i.e., down the tramlines] to the spot we'd chosen." Using a rope to establish a radius, they linked arms, tramped around, and in no time at all had produced what appeared to be a fine circle, which one of them finished off by careful grooming on hands and knees. The announcer commented: "It was roughly at this point that serious doubts crept in and all sorts of little green men were replaced by images of large ruddy ones."

Challenged by the announcer, "Looks as if you'd done it before," the members of the team exchanged grins and knowing looks. Finally, one said, "Well, that would be telling. It's a trade secret. I wouldn't like to say. I think many farmers in Hampshire would be knocking on our doors."

More recently, in September 1991, two "jovial con men in their sixties" claimed they had been responsible for many of the giant wheat-field patterns made over the years. In support of their claim, they fooled Delgado, who declared a pattern they had produced for the tabloid *Today* to be authentic; he said it was of a type no hoaxer could have made. The men said their equipment consisted of "two wooden boards, a piece of string and a bizarre sighting device attached to a baseball cap" (Schmidt 1991). They demonstrated the technique for television crews, e.g., on ABC-TV's "Good Morning America," September 10, 1991, and their proclaimed hoax was publicized worldwide.

The burden remains with the cereologists to justify postulating anything other than such hoaxes for the mystery circles. We feel their time would be better spent attempting to identify more of the hoaxers and to learn what motivates them to do their work. In a chapter titled "Theories Update" in his and Colin Andrews's *Crop Circles: The Latest Evidence* (1990), Pat Delgado promises cryptically, "What the energy is and who controls it will be explained at a time considered to be more fitting." In the meantime, an insightful reviewer has characterized the circles effect as "a form of graffiti on the blank wall of southern England" (J. Johnson 1991).

Although the phenomenon has clearly exhibited aspects of social contagion like other fads and crazes—the goldfish-swallowing contest of 1939 comes to mind (Sann 1967: 789-792)—the graffiti analogy is especially apt. Just as graffiti is a largely clandestine activity produced by a variety of scribblers and sketchers posssessed of tendencies to indulge in mischief, urge religious fervor, provide social commentary, show off elaborate artistic skills, or the like, so the crop-circles phenomenon has seemingly tapped the varied motives of equally varied circle-makers—from bored or mischievous farmhands to UFO buffs and New Age mystics, to self-styled crop artists, and possibly to others. The phenomenon is indeed mysterious, but the mystery may be only the ever-present one of human behavior.

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