same way. The carbon is at the base of the wall and is "flipped" to the left along the base of the wall making lines on it; but the carbon is also "flipped" down, making intersecting lines on the floor that mirror those on the wall. The whiteness of the floor, and the fact that the works on it are each "on the floor" in a different way, emphasizes the physicality of all the instances of «Drawing Which Makes Itself", and seems to amount to an insistence that these works not be considered as two dimensional or as drawings.

A third work, the most complex of Rockburne's new work in this show, is also on the floor but in an entirely different way. An arc line made by the carbon, using its width as radius, and describing a quarter circle, begins at the point of intersection of wall and floor, and ends where the carbon paper is fixed to the wall. The intersecting lines of the carbon describe the diagonals of a square the size of the paper's width, and the carbon is fixed to the wall folded-up on one of the diagonals. The fold is mirrored in a line formed by a "flip" of the carbon from right to left. A third line, parallel to the mirrored diagonal line, describes the radius of the arc where the arc is not, and this radius line is "on-line" with the crease on the carbon intersecting the fold. Thus the position of the carbon paper on the wall. as well as the position and length of all the lines, is a direct function of the paper's size, and the relation of the work to the floor is one of "being tangent". Of the carbon works, then, one work is on the wall, one is on the wall tangent to the floor, one is nearly equally on all and floor, and one is on the floor butting the wall. A similar diversity of possibilities is explored in terms of whether the position of the carbon paper appears to be its initial position, final position, both or neither.

The sheer handsomeness of Dorothea Rockburne's new work is surprisingly undistracting and, on the contrary, attracts one into getting involved with the kind of thought the work demands and the kind of experience the work affords. It is only in this sense that "Drawing Which Makes Itself" involves perception. The appearance only presents the possibility of experiencing «the evidence of intention».*

**«Define an object. It must be that the prime way in which an object exists objectively, is the way in which I, subjectively, experience the evidence of intention. This is not perceptual». Dorothea Rockburne*

* from «An Interview» by Jennifer Licht, *Artforum*, March 1972.

Christo's Valley Curtain

Validation through enactment

Jan van der Marck

The Valley Curtain is Christo's most important work to date. It offers clues to every aspect of the artist's esthetic and it allows us to define his place within that broad spectrum of contemporary possibilities. The exhibition (at the Rotonda della Besana from May to June) is an out-front, no-holds-barred documentary of the obstacle course that led from the work's inception, in the spring of 1970, to its completion, 28 months later. As the artist has worked in full view of his public, he is not about to edit or tamper with the evidence. There are few precedents for this procedure. In contemporary art, the exhibition of Picasso's *Guernica* along with all the studies leading up to it, is the only instance that comes to my mind. But then, the Valley Curtain itself cannot be shown at the Rotonda for it, already, has descended into a photographic and cinematographic limbo.

The Valley Curtain saga has esthetic and para-esthetic aspects. For an understanding of this work-as-art-as-work we need to consider both. It is impossible, though, to neatly separate the two, for who knows exactly what makes for a work of art? As observers or critics we tend to be more concerned with the esthetics; Christo, most definitely, is only concerned with the work. I therefore must deal with the para-esthetic aspects — the responsibility for which I shared with Christo — as well as with the esthetic aspects. If it weren't for the latter, the artist would not have gone through as much trouble as he did, and we would lay no claim to it being a work of art. If, in dealing with the two aspects at once, I am less than objective, so be it.

To give an account of the process instead of merely appraising the product is one of art criticism's less customary procedures. We are reminded of that old *Art News* stand-by "X-Y-Z Paints a Picture".

Yet, in dealing with the Valley Curtain, one is inseparable from the other. As a concept it germinated and maturated in the artist's mind, was grafted onto a suitable landscape, scaled to the site by surveyors, calculated to bureaucrats, submitted to state and local authorities, and funded in advance by an international art community. It took more than a year before the concept started to take physical shape. In an all out effort, however, to raise the initially estimated quarter million dollars it would take to see the project through, Christo set up Valley Curtain Corporation and proceeded to find museums, collectors and dealers interested in the acquisition of works primarily related to the Valley Curtain — drawings, collages, photo-montages, scale models, etc. — but also including older work, in return for a cash pledge payable to the corporation. Sponsors received works they were free to select from among a wide variety at discounted fair market value. The scheme was sufficiently advantageous to attract 56 sponsors who each paid $ 10.000 or a multiple thereof, directly into the coffers of the corporation.

On May 3, 1971, the contract was awarded for the construction of a Valley Curtain at Rifle Gap, Colorado. Lev Zetlin Associates, Inc., New York, had prepared the engineering drawings and Morrison-Knudsen Company, Boise, Idaho, undertook to build it in forty-five days. Land had been leased from two private owners, an order for the necessary hardware had been placed with United States Steel, and J.P. Stevens, the country's biggest synthetic fabric manufacturer, was finding a specialized fabricator to sew the curtain, following our engineers' design. On the local level, not all problems had been squared away with the Colorado State Highway Department which exercises authority over Highway 325, a secondary road leading through the Gap. Also, releases had to be obtained from two irrigation companies and telephone and power lines had to be put underground at the corporation's expense. The Rifle community, suspicious at first, became cooperative as they realized how concerned Christo was about their interests. If it were not for the good citizens of Rifle, the project might have aborted in its early stages. They rallied to its defense, when the Valley Curtain threatened to become a political football and the decision for allowing it to happen landed on the Governor's desk.

Excavations for the bottom anchor foundations started on May 24 while an official permit was still pending. The conditions with which the corporation had to comply were stiff and included the posting of bond to guarantee removal and massive insurance coverage. But one condition, that of an independent engineering study by a state appointed firm and to be paid for by the Valley Curtain Corporation, turned out to be a blessing in disguise. The Ken R. White Company in Denver had to see all our plans and sent out a geologist to inspect the site. As the latter examined the slopes, he found that what looked like solid rock (and our own engineers had never found necessary to probe!), was cracked sandstone, alternating with shale. The mountain ridges through which torrid streams once carved their way, had originally been mud flats near an inland sea; subterranean upheavals had pushed them into a vertical position, but the pressures had been uneven and had caused the soft, layered stone to break up. The geologist insisted that test borings be made to determine whether the slopes would hold the anchors Zetlin had designed for them. He innocently inquired, «Why doesn't

Christo go find himself another valley?»

Test borings took two precious weeks and confirmed our worst fears. The two top anchors, designed to go straight in and to be weighted down with seven tons of concrete each, would have pulled themselves clear out of the mountain flanks under any kind of stress on the curtain. Back on the drawing board, a new top anchor design was produced that called for substantial excavation, complicated drilling at varying angles, the grouting of 59 stressed steel rods into 5" and 31/2" holes, alternating from twenty to forty feet in depth, and the pouring of two hundred tons of concrete per anchor. Custom-made ten-ton steel caps in the form of over-sized waffle irons, installed at a downhill slant as an integral part of the massive blocks of concrete, were to provide the main cable connections. We knew and resigned ourselves to the fact that these changes cost an extra $ 62.000, but it was almost better, at that point, not to know that the building of the top anchors took three months or twice the time initially allowed for the whole project from start to finish.

On July 12 the Colorado State Highway Department granted the long awaited permit and a time period of forty-five days in which to complete the work. By then five of the six bottom anchors and most of the twenty-three slope anchors had been finished. There had been no need yet to erect a hoist over the highway or to stop traffic, the two main reasons for which we needed the permit. The slope anchors had required very little else but the drilling of holes and the installation of steel plates held down with so-called mine roof-bolts. For the bottom or deadman anchors, however, an average of seventy tons of concrete had to be poured as the impact of the wind on the curtain would be felt by the top and bottom anchors mainly. Yet, as the work progressed it was discovered how unreliable the slopes really were; despite the relatively light pressures under which they would have to bear up, arguments between engineers and contractor resulted in some further boosting of the slope anchors and reinforcement of the shifting surface.

Construction work went at a snail's pace and the summer months were spent in an agonizing wait. For each stage of the operation a deadline was set and then overrun. There were numerous setbacks due to the condition of the terrain, there were miscalculations of time due to the unprecedented nature of the project, and there was not enough logistics and engineering backup for a field crew, both small in number and working with inadequate equipment. On August 6 the contractor went on an overtime schedule, but the mental strain of working sixty hours a week without a goal firmly in sight and a basic belief in (and respect for) the curtain, drove the laborers to the local bars instead of producing the hoped-for accelleration of the work. The Colorado State Highway Department, originally unyielding, pitied Christo's plight and twice extended its permits.

The last two weeks of September were used for bringing to the site the huge drums with steel cable, their unrolling and hanging between the top anchors, 1,250 feet apart. Each cable was 2-3/4 inches in diameter, 1,308 feet long and weighed eleven tons. The curtain would hang not from those four main cables, but from a pickup cable, 1,362 feet in length and 1-11/16 inches in diameter, which had to be fastened to the main cables with seven sets of "clamps": two large contoured steel plates between which the main cables were to be bolted, and two smaller steel plates between which the pickup cable would be bolted, plus a five-foot steel cable with eyes, pins and sockets connecting the larger to the smaller "sandwich". This whole operation for which a trolley had been designed that proved unworkable, was handled by experienced iron workers with deceptively simple equipment, but it took until October 4.

Our spirits were rekindled by the sight of the orange curtain spilling out of the metal container in which it had been stored for four months. Now we seemed to be getting to the heart of the project and to the fulfillment of Christo's vision. The material for the 250.000 square-foot curtain was of the type of which super-strong parachutes are made, a polyamide with a tearing strength of 5,000 lbs/sq ft. Following Christo's specifications it had been dye-padded "International Orange", the color of bridge girders and road construction equipment. The artist had chosen orange for two reasons. It acts as a filter delaying the destructive effect of ultraviolet rays on nylon fiber. It provided the best color complement to the reddish mountains and the deep blue sky.

The events that led to the curtain's premature unfurling and ultimate destruction can best be summarized. All-important to be analysed last year when they seemed the closing chapter of an heroic but failed attempt at hanging the curtain, their interest is now superseded by this year's successful completion of the project. In brief, the contractor had only the foggiest idea as to how to get the curtain attached to the pickup cable, hauled up the slopes, connected to the main cables, unfurled and tied to the bottom anchors. True, the engineers had given him preciously little help and procedures had to be worked out on the spot. Here Christo's experience from previous exploits and the arrival of Dimiter S. Zagoroff, who had worked with him on the 1968 Kassel *Air-Package*, came in good stead. Tarpaulins were rushed in to serve as a protective cocoon, the lacing system was drastically revised, quick-release ropes and lazy jacks were attached to the curtain to control its unfurling. The bundling and covering of the fabric took many hands and constant checks to make sure that nothing became entangled. Light breezes inflated six-to-nine-foot lengths of material into ominous balloons that were brought under control but not before some damage was done. Tears caused by abrasion were repaired, but they gave a foretaste of what could happen if the curtain was not going to be quickly and fully secured to the anchors.

By the end of Saturday, October 9, the curtain, all rolled around the cable with hundreds of ropes tied about or dangling from it, had been hoisted approximately two-thirds of its planned height of 365 feet above the valley floor at its points of attachment and 185 feet where it sagged in the middle. Christo warned the contractor that it was unsafe to leave the curtain hanging without support until the next morning and begged him to use the two remaining daylight hours to make at least one connection. But the contractor argued that this would take too long, that he did not have lights to work by and that he would rather risk the curtain than his men. Thus, the work force went home for the day at 4:30 P.M. Less than two hours later, at 6:20 P.M. to be precise, the curtain started to come loose and billow out, two hundred feet below the east-slope anchor. To the few people remaining on the site, the unexpected unfurling struck like a bolt of lightning. The valley lay majestically silent but up high a wind was passing through, enough to wreak havoc. The knots on the quick-release vopes were coming loose and the build-up of air pockets increased the pressure on the adjoining knots. Fatal to the curtain was the hoist cable, crossing the pickup cable and cutting into the fabric bundled around it. It was a matter of minutes before a huge rip developed and then all hell broke loose. Before the eyes of a stunned crowd of spectators wind and the giant artifact were locked in a hopeless battle. Construction workers came scrambling to clear the valley of cars and equipment while the better part of the curtain's east half, or a hundred thousand square feet of fabric, licked through the valley like a dragon's tongue, split up the middle. As the sun set and the sky grew a deep dark blue, the torn curtain gesticulated with the unbridled force of leaping flames. It was spectacular, but heartbreaking to see so much effort come to a sudden and grinding halt.

Hopes of salvaging at least half of the curtain evaporated the next day upon closer inspection and consultation with engineers. While the curtain appeared a total loss, its elaborate support structure into which most of the Valley Curtain Corporation's investment was tied up, had in no way been damaged. A hard look at the options and a morale boosting wave of sympathy from the local population which overnight realized its own spiritual as well as

economic involvement, made Christo decide that this calamitous mishap could not and should not also spell the end of his project. Undaunted by the ordeal he had just gone through, Christo announced at a press conference to a cheering crowd including the acting governor of the State of Colorado, that the project would be continued as soon as weather would permit and no later than the summer of 1972.

* * *

For Christo, not to finish effectively the work he started invalidates as art all the stages that led up to it. This is a harsh, self-imposed criterium, indicative of the artist's loathing of compromise. It is held to be a painter's prerogative to cut up or paint over a canvas that did not come out as intended; a sculptor is praised for his artistic integrity when destroying an expensive but imperfect cast. Theatrical productions go through rehearsals and out-of-town try-outs; film can be re-shot and props can be re-built endlessly until they satisfy the director. In contrast, Christo does not enjoy the privacy of studio or foundry with the attendant trial-and-error freedom, nor can his work be rehearsed or edited to «take the bugs out». He works on location and in real time, the principal of a spectacle he is not always able to control. Despite the risks involved, the Valley Curtain had to be rehearsal, try-out and first-night performance all at once. When disaster struck, there was no way to avert or hide its effects. It had to almost be accepted as part of the work, a drawback in a game whose stakes have risen higher and higher.

To some artists the concept for a work is enough and its execution, sometimes, a statement of the obvious or a needless assertion of ego. Other artists, whose ideas and activities deal with the realms of whim and fantasy, do not insist on their execution, realizing full well that they are inoperative schemes of the mind and humanly impossible to realize. Christo's ideas for work to be realized come dangerously close to what most sober minds would call impossible. Yet, Christo knows, from their inception, that they can be realized if granted the right conditions and, as the song puts it, «a little help of his friends». Never sofar has he tackled the impossible, although the Valley Curtain came close to being just that. Parisian authorities may not have allowed him to wrap the trees on the Champs-Elysees, and a sponsor has yet to be found for Christo's proposed stack of two and a half million oil drums in Texas, but that in no way proves that these works cannot be executed.

But where did the first attempt at curtaining a valley go wrong? It was certainly more than what took place in those last fateful hours. Suspension engineers of international renown did not provide Christo with plans tailored to the site and fit to be executed. The world's largest general contractor, credited with building hydro-electric dams and underwater traffic tunnels, proved unable to successfully complete a concept so simple that it eluded them. The contractor may have called it an «act of God», but it is not God but Christo who has to take the blame for not completing what he said he would. There has been much wishful thinking and some generally feeble attempts at bringing art and industry together in some kind of holy matrimony. Well, here was one instance of a collaboration between an artist and business and industry, in which the latter defaulted on the former and in a paying customer relationship to boot! In a society with an unprecedented record of technological accomplishment, from aeronautics to cybernetics and from the harnessing of power to the design for survival, can an artist trip up this gigantic enterprise by presenting it with a proposition so simple that it defies execution? The obvious answer is that Christo did not get the intellectual and technological aid he had bargained for.

An artist who upended a 5,600 cubic meter *Air-Package* for the IV. Documenta or covered a million square feet of coastal cliffs with plastic at Little Bay, cannot work without the aid and advice of professionals in other fields. Again he had to trust himself to engineers and contractors to share with him the risks and responsibilities of a second attempt at raising and unfurling the Valley Curtain. But the distribution of roles and the chain of command were different this year. The Colorado State Highway Department allowed its 1971 consulting engineers, the Ken R. White Company of Denver, to become actively engaged in the construction of the Valley Curtain. Readying and modifying the supporting structure became their specific responsibility. Dimiter S. Zagoroff and his partner in Unipolycon, John Thomson, undertook the design and provisions for hanging the new curtain. The Ken R. White Company and Unipolycon together selected a contractor—not on the basis of bids, but on qualifications and compatibility—, A. & H. Builders, Boulder and Thornton, Colorado. The contractor, in turn, hired a subcontractor for the iron work, Universal Steel Erectors, Denver. All parties involved had a site supervisor on the job and one or more principals who were around in the final stages. The teamwork turned out to be exemplary, there was no internal strife, lines of communication were kept open at all times, and Chirsto's final authority was heeded.

Preparations for the hanging of a second curtain had started one month after the first curtain's demise with the design and fabrication of a replacement. Allowance was made for the original engineers' miscalculation of the cable height. Its fit was tighter because excessive billowing in the wind had added to its vulnerability. The bottom would clear the valley's contour with five feet on the average and a ten--foot skirt was attached to the bottom to close the gap. Consequently, the new curtain measured 142.000 square feet or less than three-fifth of the original one. This quantitative reduction was offset by sturdier manufacture and special features, all built-in, to facilitate the curtain's unfurling. Most important of all, a 3 inch dacron rope was led through the heavily reinforced bottom seam to take the place of the secondary or lower pickup cable to which, in 1971, the curtain had to be attached after unfurling.

Readying the construction site began the first day of summer. Dr. Ernest Harris, senior staff designer of the Ken R. White Company proposed a number of vital improvements to suspension and anchors. The main anchorages and the four main cables were used as planned and completed the year before. A huge rock, however, in the path of the main cables, had to be removed. To pick up the slack in the secondary cable which had been ordered much too long, and to reduce its sway, four more steel assemblies, connecting the main and secondary cables, were installed, bringing the total number of "clamps" to eleven. The slope anchorage system required essential revisions. Under stress some anchors would have pulled free and caused minor landslides. To avoid this hazard, particularly on the west slope, compression members had to be installed for lateral, and tension members for vertical reinforcement. On the east slope some anchors were abandoned as useless, others were added, and many more tons of concrete were poured. The new anchor configuration read as follows: nine anchors on the west slope, five across the bottom and thirteen on the east slope.

The most delicate phase of the operation, of course, was the installation of the curtain by hoisting it to the proper height, attaching it to the eleven connections, freeing it from its cocoons, unfurling and lashing it to its ground supports. This was planned for early August and occurred on schedule. To ascertain the best time of day for the unfurling proper, Unipolycon engineers had monitored wind velocities and pressure systems for six weeks running. Between nine and ten in the morning, as the sun passed over the crest of the mountains, the wind fell consistently to its daily low, hovered at the zero mark, and then turned to blow from the other direction with slowly increasing speed.

On August 9 at 8:15 A.M., before hundreds of tense onlookers, standing on the highway or perched on rocky ledges, the *daisy chain* was pulled to release the curtain's gray outer cover. The *gravity operated* zipper got stuck at the second curtain loop and from there had to be assisted by iron workers from an overhead position, following along in a trolley hooked to

the main cables. As the control lines fell down, they had to be first untangled, then tied to the anchors by crews manning the anchor stations. Removing the all too protective cover took all day and the unfurling had to be postponed to the next.

Predictions about the time it would take to open up the inner cocoon, an integral part of the curtain, ran from one to ten minutes. But here again, the daisy chain did not effect full release and a spirited start was abruptly halted. As the curtain cascaded down in three suspense-filled stages, crews rushed to loop the tie-down lines through the shackles held by the anchors. A light breeze furnished enough pressure on the snags to unravel by themselves. 92 Minutes and 44 seconds went by as one hundred men—35 pros and 64 itinerant art workers—, assisted by a caterpillar, a cherry-picker and three winch trucks, battled to control the flowing fabric and firmly secured it from anchor to anchor. The workers were cheered by the crowd of onlookers. Christo was carried on the shoulders of enthusiasts and dunked into Rifle Creek, the traditional victory award for a good coach. A Denver skydiving group came sailing down the Gap on colored parachutes, ripping-off a piece of the action, and campers and farmers on horseback competed for the honor of being first to pass through the 24 foot arched opening in the curtain on Highway 325. Rifle was jubilant and cameramen, both professional and amateur, had a field-day. As Christo had intended it, the event became instant history through still and moving pictures.

Nobody but Christo and the engineers had visualised, though, the awesome pressures on the curtain as it strained and groaned in even the gentlest breeze. It had been calculated that at 20 knots the wind load on the curtain equaled the force needed to propel two oceanliners at full speed. But the true test was yet to come. The brilliant orange curtain and the euphoria its unfurling had created, lasted for only 28 hours. At 2:30 P.M. the next day, a sandstorm accompanied by 60 knot gusts, whipped through the valley. For veterans of the 1971 events a bad dream once more struck with force, unexpected as before. The billowing fabric separated from the seam that held the rope to which the thimbles, control and tie-down lines were fastened. Starting halfway up the west slope, the curtain tore in an eastward direction over a 500-foot length, then zipped straight up to the cables. The wind had reclaimed the curtain as fast as the eye could follow its devastating effect. What had been likened to a giant butterfly peeling from its cocoon, the day before, could now be more properly described as a whale in the throes of death. A sight of great and overwhelming beauty reverted into a paroxysm of ripping fabric once again.

A comparison with the art of sailing is useful here. As the larger-than-life prairie schooner lay anchored at its moorings, one started to appreciate the fact that wind is meant to furnish power of propulsion and not to be simply stopped in its course. When pressure builds up something has got to give. The Valley Curtain could not lift its anchor, nor could it lower sail. The mountain held firm and the anchors stayed put as expected. But the tie-down lines, engineered to release under excessive pressure, refused to oblige. In this chain of relative strength, the fabric proved the weakest link. The wind went straight for the jugular, i.e. the area most weakened by stitching. From there the tearing proceeded along the path of least resistance, changing direction as it had lost momentum.

Christo was remarkably calm and composed as he watched, helplessly, how the winds took care of his curtain. For there was an essential difference with that moment of despair, ten months before. He had completed the work he had planned. That reality could neither be erased nor diminished. What had broken away from his control were merely the manner and the timing of the curtain's ultimate disposal. The artist was almost relieved, or so it seemed, that the heroics of the work were cut short instead of being allowed to degenerate into a carnival of touristic exploitation. Tolerant of whatever exploitation did spring up and blossomed on the Valley Curtain sidelines, he must have welcomed its collapse for it left him and everybody with a more clear-cut proposition and the memory of a more unique and less cluttered spectacle. The Rifle city fathers bore Christo no grudge. Thousands of budgeted tourist dollars poorer, it nonethelles conveyed on the artist the honors of a golden keye to the city before his departure to New York.

At its highest level of accomplishment human endeavor aspires at the conditions of art or play. We talk about an *elegant* proposal, an *ingenious* construction, a *brilliant* financial scheme or a political *master* stroke. Beyond practicability, performance, monetary return or voter response, the successful perpetrator of great feats in these fields, is praised for his ability and vision as well as for the beauty of what he wrought. Christo was able to draw and orchestrate an amazing array of talent and effort with that virtuosity we associate with successful enterprise towards ends not merely of solving problems, raising funds and gaining acceptance for what must have been the wildest show the west has ever seen. But he reached, what the businessman, engineer or politician can only reach by *proxy*, that pervasive and all-encompassing end of really having turned work into art. The Valley Curtain is a triumph of work, raised to the level of art.

September 1, 1972