Visiting Meissen in Germany recently, my guide, Professor Bernhardt Irrgang, pointed out that the cathedral there had a room for the architects, and while names of leading architects were sometimes known, the name actually served as something of a 'school' of such and such an architect – the same was often true for Renaissance artists. The room or office was for the whole entourage assigned the task of keeping the cathedral in repair. As Foucault has pointed out, the same frequently applied to authors – individual authors came into being with modernity, thus pointing to an even deeper connection between the "intentional" and the "designer" fallacies.

Let us now return to the designer problem and begin re-casting it. I wish to focus upon two interstices in a three part relation. The first interstice, in simplest form, is that between the designer-inventor, or including subsequent designers and materiality. What is at play is a set of interactions between the designer(s) and the materials being worked with – it is a two-way relationship within which the "accommodations" and "resistances" Pickering speaks of, come into play. (Pickering, 1995)

My beginning example is the long fantasized desire of humans for flight. The Icarus story, with its technologies of bird feathers and wax, is clearly fantasy only. Similarly, Roger Bacon's and later Leonardo da Vinci's descriptions of flying machines also remain in the imaginary realm, although da Vinci's recognition of the curved wing shape of birds was a step in the right direction. Almost everyone has seen documentaries on early flight experiments, usually comic with films of flying contraptions – human powered – and their subsequent falls and crashes. But, note, once again, the serious experimentation begins with that Industrial Century, the 19th.

From the beginning, it was recognized that wings had to be both light and strong, and the design was at first biomorphic in that bird wings, and sometimes batwings, served as the pattern. Yet, how clumsy the designs seem in retrospect! Gliders began to succeed to some degree, with much experimentation of light materials, wood or bamboo, and glued linen or other light cloth. Interestingly, the reluctance to follow the fantasy trajectory of human powered flight gave way to the recognition of the need for a light-weight power source which historically we recognize as the internal combustion engine plus 'screw' or propeller. The Wright brothers' flying machine was a hybrid conglomeration of many technologies. The Wright brothers were experienced light weight technologists – bicycle makers – who adapted from windmill technologies, a propeller for driving through air rather than being driven by the wind. Then making wing and control designs, some modified from other's attempts, they eventually produced the first powered flights (I ignore the historical controversies around who actually first flew, since there were many contenders). What we really have in this history is a competitive 'dance of agency' through trials and failures, until finally the small success which launched the trajectory of human+machine flight. From 1903 to the present century, development has seen flight move away from biomorphic designs towards ever more variations of flight which are less and less like those of flight's origins. The simplest example is that of a fixed wing over a flexible and moveable wing. Flight, originally fantasized as embodied human flight, has never really materialized, its closest actualization

probably is that of hang-gliding and its kin, which flight is restricted to lovers of extreme sports. The one bicycle-technology, propeller driven, light-weight aircraft, flown by a trained cyclist, which successfully flew across the English Channel, was hardly anything like birdlike grace in form, even if actually human powered. But with mylar skin, and weighing in at only pounds, it was a culmination of a trajectory towards lightness which was the material need for this approximation of flying. What I am trying to point out, is that one does not find anything like sheer plasticity of the material, over which the designer has anything like a transparency of control. Rather, one finds a process of interrogation of materiality and experimentation with it, which results – sometimes – in fortunate results.

The second interstice would, under the designer fallacy model, be the 'uses' to which the invention, the technology, is put. Maintaining the analogy to literary practices, this would be reader response, or responses. What results from the literary or technological product? In the case of my flight example, the proliferation of uses is historically clear – there is something like an actualization of a possibility tree. In less than a decade, airplanes were beginning to be used militarily, by World War I, there were inter-airplane "dog fights", bomb dropping, reconnaissance; equally early, commercial developments began; recreational uses with the "barnstormers" and stunt fliers; races, distance breaking flights such as Lindberg's over the Atlantic, and the like. And, in each use, changes in previous practices occurred. By World War II, the *Blitzkreig* employed its own version of "Shock and Awe" with Stuka dive bombers, to the present, where unmanned Predators and 'smart bombs' are employed, displacing what was once trench warfare or disciplined regiments marching at one another. I need not follow each of these trajectories, but it is clear that Orville and Wilbur neither foresaw the speed or the diversity of their invention's results. And, just as the interrelation of designer and materiality contains an indeterminate set of accommodations and resistances, through which may be produced a result never simply planned, so with the results and the indeterminacy of multiple uses.

I have tried to show that the designer-materiality interstice is such that the inter-relation of designer-materiality precludes any simple notion of control or transparency over the simply plastic or passivity of the material. Instead, the interaction is exploratory, and interactive. In the second, now artifactual-use interstice, the designer has even less control or impact, rather the user(s) now play the more important role. The indeterminacy here is multistable in terms of the possible range of uses fantasized or actualized. One particular set of interesting examples comes from the ingenious ways in which technologies may be defeated – defeasibility uses. Video surveillance cameras, for example, may be disabled by laser pointers flashed into the lenses. Hardened steel steering wheel anti-theft devices, precisely because hardened steel is vulnerable to fast-freeze brittleness, can easily be broken when sprayed with a freeze spray. Slightly more complex are the 'wars' between police determined to trap speeders with radar, now laser speed detection devices and the 'insurgencies' which develop technologies to detect radar signals or confuse laser reading devices. And so go the multiple directions from same, different, or differently used technologies.