AUTOMATED REDUNDANCY (through Redundant Automation)

By Charlie Richmond

It was inevitable. In the theatre, as in many other industries, technology is threatening to put people out of work. Those threatened are the ones we work with and rely upon - our colleagues and friends - and ourselves. Why did I imagine that live theatre and performance art would always be immune to this threat? Perhaps because I believed that we were an industry remaining true to some sort of ancient precept - functioning for centuries fundamentally unaltered within a world experiencing enormous change. Even with technological assistance, theatre has not until now become more efficient in its use of labour; rather, the added technology has actually required more work - just ask Broadway producers how the technological ante has been upped!

Even with memory lighting systems, computerized rigging controls and programmable sound, the complement of stagehands required to run a typical show has not radically altered. Most theatres have one person for each of those systems, just as they did for the manual systems which preceded them. True, the largest shows and theatre companies may have at one time used more than one operator for lights, sound or rigging/mechanics, but the additional stagehands were often already on the crew and had the time available. Large Broadway and West End productions seem to have assimilated technology not so much to reduce the size of the crew but to increase the capabilities of a crew already as large as the venue allows.

So it seems that new technology simply allows the designers and technicians more power, flexibility, accuracy and efficiency.

Little did we conceive that these systems might eliminate the need for stagehands. But, after all, is that not even now the direction in which we are moving? For example, what is the basic difference between:

1. Having the stage manager call "Sound Cue 56, GO" to an
    electrician who:
    a. confirms on a video monitor that cue 56 is 'standing
        by,' then
    b. presses the GO button; and

2. Having the stage manager:
    a. confirm on a video monitor that sound cue 56 is
        'standing by,' then
    b. press the GO button.

Just as the actions in the second example assume the same verb tense, so the execution of the cue becomes the action of a single person. The result? The show benefits from fewer missed cues, less redundant communication between stage manager and crew, less conversation and confusion and tighter cuing.

Technology allowing this exists now but it remains a rarity in practice since systems giving the stage manager direct control of the light, sound and other computerized control systems in the theatre must be custom made. It will not be long, though, before industry standard systems, software and commands will be available 'off the shelf.'

But let's go one step farther than the imminent and look at technology not yet considered by traditional theatre. Something which has always bothered me as a designer as well as a theatregoer has been the frequent lack of synchronization between on-stage action and the corresponding technical response.

Typical examples of this are:

1. Lag of the lighting cue behind turning a practical light switch on or off; and

2. Lag of the sound cue behind lifting, placing or scraping an on-stage phonograph stylus.

I'm sure these are well known to us all - certainly they're so well known to the actors that, typically, they never actually make the light switch click and they disguise the phono stylus business just so the cuing delay is less obvious.

Why does this obvious defect occur so often and why do we accept such a shortcoming as necessary? The answer is because it has always been this way and we have become complacent about it. For directors who have complained, the answer that it is impossible to fix has always been grudgingly accepted. But why is it impossible? Of course, the reason for the delay is obvious: the stage manager must see the action, call GO, then the electrician must execute the cue. But what if the _actor_ could make the cue go by simply doing the business? There would be no delay. Neither would there be anything for the stage manager or the electrician to do, at least for this cue.

But isn't this exactly what theatre is all about - giving the actor the power to perfectly control responses to their actions in an environment without compromises and stumbling blocks? In reality, is it not the actors who make the play and the crew merely puppets whose strings are pulled on command? This is a question with which we who work under the moniker of Theatre Technology must soon come to grips, for this power is here now and we must decide what to do with it. Actor- and music-controlled cuing is used by productions at theme parks such as Disney World and Universal Studios and in Las Vegas. Software is being developed which triggers cues by simply performing rehearsed physical motions in front of a video camera.

So now we face the prospect of calling and controlling a live show automatically with an intelligent system connected to a video camera and various actor-operated switches. No stage manager, no crew. Is this a practical alternative and, if so, is it preferable to the way it's done now? Is this the direction we should be going, or should we be perfecting better tools for a

live stage manager? Certainly we will use more of this technology, but I cannot believe that live performances can ever do without live technical supervision and expertise.

When talking with an associate recently, he asked "Surely you're not proposing that all technical elements be controlled by ONE CENTRAL CONTROLLER?" Then he suggested it might now be time for him to produce that show he'd always wanted to do: "Cantata for Woodwinds, Fresnels and Air Castors." Just like the stage manager will never want - or be able - to replace a good sound mixer, neither will the stage manager's control system be able to directly control the myriad technical systems found in the theatre.

Each of these systems will normally have a controller dedicated to the job of running that particular type of system. Real, live, trained operators will continue to manipulate these controllers directly so that they can retain immediate control of any element within their realm. Simultaneously, however, the stage manager's system will be designed to electronically communicate the stage manager's - or the actor's - wishes to each of the system controllers.

Response to this communication will be immediate and unambiguous since there is a new industry standard communication protocol developed by the USITT called MIDI Show Control (MSC). Resultant controller action may range from:

 1. Immediate response without operator intervention; through

 2. Cue execution dependent upon an operator pressing a
     confirmation or safety button; to simply

 3. Turning on a cue light or sending a message to a mimic panel
     or video monitor.

Operators will be able to override or selectively accept electronically initiated cues plus create live variations. In short, nothing but the best of both worlds is acceptable because anything less wouldn't work. Ideally integrating all these needs, MSC provides succinct, efficient and rapid communication between intelligent controllers.

There is, also, a potentially brighter side to this scenario's employment potential. Although we may now require fewer operators, our capabilities are expanding tremendously. This means that elaborate and complex live productions are acquiring the - previously unheard of - reputation of being safe, reliable, and cost effective as well as exciting, stimulating and vital. Producers who have had bad technical experiences or avoided complex productions are welcoming these developments. More and more of them are now considering live productions which were previously rejected because of their difficulty.

The most significant increase in live production is in theme parks - where only rides and mechanical attractions once existed, owners are adding live shows. Disney and Universal have recently invested heavily in live productions which have quickly

become their most popular and exciting shows. In many cases, the
new show technology allows technicians and stagehands to learn
faster and more reliably and their shows to run back to back
without a hiccup thousands of times.

    The net result is, happily, that there are now even more
jobs for stage hands and theatre technicians. Soon, when
traditional theatre companies and Broadway/West End productions
discover this, we'll also see them use the latest technology to
help keep their share of the ticket-buying audience. By the time
this trickles down to regional theatre companies, there will
hopefully be a revival of interest in live theatre enough to keep
us all employed for a long time to come.

    Maybe then stage managers will all be talking like this one
quoted in the introduction to John Huntington's Masters' Thesis:

"Back in the old days, as a stage manager, I had a lot to do
during the show. On big shows on Broadway, we had 40 or 50
people working backstage, all running around like crazy. I had
to use a flashing light to signal cues, talk to people on
headsets, and follow the script on paper! You know, in some
ways, I almost miss those days, I didn't get quite as bored
during the show then. Now we have these voice and music pattern
recognition systems, and they interface on the network to the
lighting, sound and automation systems. There's only a few
technical people backstage, mostly in the wardrobe and props
departments, because they haven't quite got the robotics cost
effective yet. The only reason I'm even here is in case
something goes wrong, and to press this 'Authorize' button on the
dangerous cues, once the actor is in the right position. Other
than that, I watch a lot of HDTV and play 3-D video games!"[1]

    Although I don't predict such a boring life for stage
managers, there will hopefully be a lot more of them because good
live theatre is always better than 'canned' entertainment. Only
time and our best efforts at keeping theatre technically up-to-
date can ensure a bright future.

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1. John Huntington, "Methods of System Synchronization and
Interconnection for Live Performance" (Yale University, May 1990)