An introduction to interactive design of dynamic elements

Guillem Bou

Graduate in Mathematics and Computing. Doctor of Education at the Universitat Autònoma de Barcelona.

Abstract

The quality of a web site depends mainly on applying classic knowledge to design and illustration. These kinds of rules have been considered in previous works, and the reader can consult Fernández-Coca (1998), Bou (1997), Matas (1997) or Ribas (1997). In this article, however, I will insist on some rules for interactive design for those who already have a good graphic base (element composition, symmetry and form distribution, etc.) but do not know aspects relative to the living part (moving, animated) of web pages. We will sketch some concepts and applications on the following questions: sensitive areas, economy and redundancy, ergonomics, conjunction of text and image, hypertext and limited animation. I will not go into other aspects on scripting and design related to plot management and navigation, application of set-ups, production criteria and quality control in multimedia application.

Key words

Interactive design, multimedia script.

Sensitive areas

The basic work unit in multimedia is the interactive scene, interactive screen or interactive page (terminology varies according to the author). This is a user-viewable screen made up of the elements set out in the following figure:

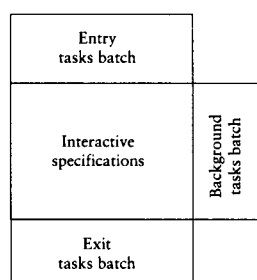| Entry tasks batch	
Interactive specifications	Background tasks batch
Exit tasks batch	

Figure 1. Components of an interactive scene.

Corresponding to the batch of entry tasks, we have all the computer actions produced before the user interacts. Examples vary according to applications, and some are as follows:

1. On screen, placing a background illustration.
2. On a web page, activating initial music which is stopped when the user clicks for the first time.
3. In a game, taking a question from the question bank by chance.
4. In an application on psychological investigation, the computer takes note of the beginning time so as to know how long the user takes to leave the screen.
5. In a scene, a text which says «welcome» is deployed from right to left before the set-up appears.

Thus, all these actions are set up before the user carries out any action and can last for a longer or shorter time. The time measurement by the computer mentioned in example d takes some milliseconds, but we can imagine an educational application in which, before the user answers questions, a half-minute long video appeared in the top right-hand corner of the screen; or think of computer games where, on entering a room, a light goes on, we can hear the sound of objects being moved, etc.

In reference to the exit tasks batch, the reader can intuit that we are speaking of the same thing, but that actions take place when we leave the scene.

A special mention must be made of the background tasks batch. These are all those actions carried out by the machine while the user does nothing. I always explain that it is important for screens in a multimedia application or web site be conceived as living elements, that is, something must always be happening in them (some movement) even if the user is not interacting. This is one of the differences between cinema and multimedia: in cinema, the background has its own life (leaves on the plants in the woods move in the wind), in multimedia it is the designer who establishes if something moves or not.

And, finally, the part of interactive specifications in a scene can always be thought of as the placement of areas sensitive to interaction (normally with a click on the mouse or when the cursor touches) on a background.

The utility of this outline lies in its usefulness both for concept (script) in audio-visuals and production. That is to say, its use helps to set up the basis for a

common analytical language when setting up an application among several people. Among the general rules for designing sensitive areas, let us stress the most common of ergonomic type:

- Normally it is not necessary to waste production efforts on making sensitive areas adapt exactly to background figures. For example, if somewhere on the screen there is a figure of a car, we can quite calmly define a square area which takes in part or all of the car and which, when passing over it, makes the text «car» appear. It is in the user's mind where the association label-image will take shape, and this association is easily produced, just because of the fact that the image is relatively close to the label.
- In general, sensitive areas are designed in a vertical sense, as the user tends to «scan» the screen horizontally. We will thus ensure that the user will bump into the sensitive area (see figure 2) when moving the mouse over the screen. Specifically, what makes an area detectable normally depends more on height than width.
- Sensitive areas with regular behaviour contribute to application uniformity and the user's familiarity with it. The are preferably reserved for applications for new or first-time users.
- Sensitive areas with conditioned behaviour or response and disconnection increase application interactivity, surprise and fresh narrative discourse. They are reserved, however, for users who often use multimedia applications.
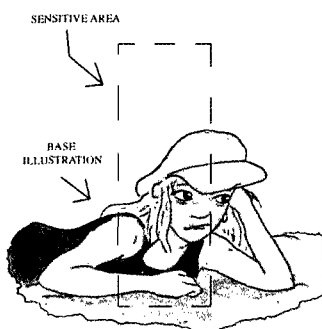

Figure 2. Sensitive areas are defined vertically (illustration by Nuria Calveras).

Authors' language or web page design allow standard elements to be sensitive also (buttons, icons, animated icons, etc.). In script terms, we tend to refer to non-distinguishing sensitive areas; in the phase of gra-phic design, however, the designer details the composition of the page and each type of element.

Economy and redundancy

The principle of economy is based on the conviction that the human brain is an active entity, receptive, agile and extremely fast when processing information. Therefore, we begin with the basis that any multimedia application (CD-supported or on the web) should only give the precise information for activating a mechanism for reconstruction and interpretation. Another way of applying the principle is to give a lot of information but at a very fast rate, so that there is a high density. Both variants share a common conclusion: if the receptor's brain is busy, the user enjoys it; in the opposite case, the user is bored and leaves the application.

In previous works, I have explained the types of economy, basically five: time, space, concept, language and waiting. Of these types of economy, the last is the one which more directly refers to the rhythm of an application. It explains that in a multimedia application we must not go into a dynamics of elements which wait for each other, but rather that they must be overlapping. The technique is borrowed from cinema narrative: we see a scene and hear a sound belonging to the next one. Thus, the soundtrack from the second scene does not wait for the disappearance of the image from the first. This effect, far from being disconcerting, is an agile way to link and aids perception of continuity in the audio-visual product. In theory, therefore, we can expect the possibility of activating different elements asynchronically without problems in a multimedia application or a web page; the user will give them the right meaning.

On the other hand, this innovative concept with predominant dynamics, which is always very useful when carrying out applications designed for users familiar with multimedia, is opposed to basic ergonomic principles of redundancy. That is, for applications destined to users with a lesser development of audio-visual habits (or applications in which the value of information is dominant and there is a slow and sure rhythm) it is advisable to recur to redundant resources to guide the user and avoid confusion or loss of control over the application.

The most typical resources are those related to redundancy of effort. For example, Microsoft opted

for this style of menu icons in its applications for Office (97 and 2000): If we put the cursor on an icon and do not move it, a small explanation appears on a label. Another example is that of web pages with labelled links, that is, those which are made up of a sufficiently clear explanation but which, while passing over it, show a brief text.

In the design of applications and web sites there is discussion about to what extent a redundant style is an option. The example of Microsoft is clear due to the fact that its products are conceived for universal use (and, therefore, most end users will need this extra help to use them easily). The decision is thus based on the end user. However, there are three ideas to be taken into consideration when opting for redundant design:

- You must follow fashion. This means that if most web pages and computer products use labels with yellow background and black letters, join the general trend. The reason is obvious: you want to help users; so keep in mind that if their application is «like everybody's» this likeness is a plus. Avoid an excessive graphic excentricity in these fields.
- Adopt patterns of regularity. For example, if each time a link is clicked, an explanatory icon appears or a reinforcement sound is heard before bifurcation, make sure that it always happens. Otherwise, the user will be confused and insecure if the reinforcement element is missing.
- It is generally agreed that there is a need for redundant elements generally on web sites: site maps, internal searchers, help and other similar resources. In these cases redundancy is not for new users, but rather for users in a hurry, that is, those who are looking for site efficiency as an information point. As to this point, it would be useful to consult the discussion on web sites and their conception (as browsable pages or as data bases) to be found in Ribas (2000).

Combining text and image

There are basic principles in this field which are well-known but which are not yet applied to web pages (and we cannot say that it is due to technical limitations). We will comment on two of them: anchoring text with respect to image and the dramatisation of image with respect to text.

The first comes from the idea that image is, by nature, polisemic. An isolated photograph, for example, just put on a web page can mean many different things. The text which goes along with it will make us a specific meaning among those possible; that is why it is said it anchors the image. Advertising is a perfect example of this mechanism, as in magazine ads (whole-page), when our attention is caught by an image, which can mean many things and which can be slightly provocative (transgression). Then we read the text and understand the meaning of the ad, we «get» the advertisers message by means of an anchoring of the initial visual stimulus which caught our attention.

The second is widely developed in journalistic composition and involves the dramatising (humanising or exemplary) by photographs that go along with the news. If the headline is about the distance between two politicians, for example, the photograph shows them sitting at the same table but looking in different directions. The image thus plays the role of an instant flash to illustrate the news (besides reinforcing it and giving it credibility).

The root of the issue is that these two resources which are so genuinely audio-visual are not yet in common use on our pages. The image still plays the role of a nice contextualising background, usually presented with a slight blurring (or slightly matted) and is limited to being a support for the text deployed on it.

A more radical approach, based on technical resources, would certainly increase the communication impact of a web page . Carry out an experiment for proof: take a sample of some ten pages which follow the conservative structure set out in the previous paragraph, think how it could be presented according to one of the two resources set out, that is, think if it could be focused as an ad (anchor) or as a piece of news (dramatisation). You will see then that with some of them it is possible and, besides, with a notable improvement.

Hypertext

The question of how some pages open for users in an undetermined order and they construct a corpus of information is so polemic and hypothetical that I would dare to qualify it, in all modesty, as esoteric. Certainly, cognitive psychology has advanced a great deal in the models of constructivist learning, and many authors

resort to it for basing web sites of an open nature, free and highly hypertextualised. Perhaps a strictly evaluated experience will some day prove that users frequently get lost, leave the site or take too long to find what they are looking for.

As a rule, therefore, we should put ourselves in the users' place and ask not only what they are looking for but also how they want it. For example, is there any sense in a hypertext document on computer legislation? Yes, to a certain point; but then again, no. To a researcher, it may be very useful to have pages on this legislation, others on precedents and others on general advice. However, perhaps it would be more useful to print out each and every set of pages, to study them at length while comfortably seated at a desk. What happens, then, if we have designed each of these texts with a high level of hypertextualisation, with explaining links, with windows which appear and disappear? Well, users will look at them and want them for what they need, and will begin an arduous task of printing by batches in which they will get lost quite quickly (they will not remember what they have printed and what is still to be printed and, besides, they will almost certainly leave out pages at the end).

Therefore, without giving up investigating and reading tempting results based on constructivism, my proposal is that we base our work a little more on use when tackling problems of hypertextualisation. I had already warned of some typical problems in Bou (1997), but now there are further interesting reflections in Ribas (2000).

Limited animation

Tex Avery's animation team (Bugs Bunny and co.) reused animation transparencies in times of crisis: they were erased and redrawn. Series produced by Hanna-Barbera (The Flintstones, Yogi Bear, etc.) optimised production by using style matrixes with limited animation (achieving the effect of movement by a limited number of photograms reduced to a standardised minimum). I would like the reader to realise that there has always been an interest in achieving high productivity (in may different ways) in animation production, that is, it has always been sought after, despite its high cost.

If The Simpsons meant a successful and innovating experiment with the development of the series

based on drawings with regular, simplified sketches (eyes, cheeks, hands, human figures...) and based the expressive strength on the script, we can say that now it is South Park which has turned the screw again. It is almost incredible to see the naturalism of the end product when the base drawings are practically restricted to elementary geometric shapes (eyes, circles; hands, squares; a rectangle for a torso, etc.).

All these examples should be taken into account for web page designers to notice that animation is a flexible field for investigation and that daring ideas tend to give good results. If we stop to have a closed look at collections of little animated figures which dwell in the web we will see the tremendous graphic simplification (base drawing) and dynamics (number of photograms) of the set before being placed on the page. And it works! That is, it catches users' attention, brings the page to life and solves many uncomfortable space problems, excessive rigidness, etc.

For this reason, my advice is that part of production should invest in limited animation. We have already seen that both reduction of photograms and base drawing simplification can give good results. It seems that it is basically a question of playing with small sizes and finding the most adequate style. It only needs to be tried out. The pages we produce will gain communicational impact.

Bibliography

BOU, G. (1997). *El guión multimedia*. Barcelona: Anaya.

BOU, G. & RIUS, E. (1999). *Ciento once ejercicios de guión y producción multimedia*. Edition for Master in New Information and Communication Technology. Madrid: Universidad Nacional de Educación a Distancia.

FERNÁNDEZ-COCA, A. (1998). *Producción y diseño gráfico para la world wide web*. Barcelona: Paidós.

MATAS, A. (1997). «Productes multimèdia: disseny i anàlisi conceptual»[on-line]. E-article available at <www.bcnmultimedia.com>.

RIBAS, J. I. (1997). «Direcciones en el diseño de interactivos» [on-line]. E-article available at <http://www.iua.upf.es /~ribas/>.

— (2000). *Caracterización de los interactivos de difusión cultural. Aproximación a un tratamiento específico, los ensayos interactivos*. Thesis. Barcelona: Universitat Pompeu Fabra.