PROJECT: The Chaos Engine 2
PUBLISHER: Renegade
DEVELOPER: The Bitmap Brothers: Simon Knight (Project leader, Design); Eric Matthews (Design); Steve Kelly (Programming); Steve Cargill (Programming); Rob Trevelleyan (Intelligence programming); Dan Malone (Graphics); Gary Carr (Graphics); Chris Maule (Music)
INITIATED: April 1993
RELEASE: Easter 1995

WORK IN PROGRESS

Two years ago The Bitmap Brothers released The Chaos Engine, a strategic shoot-'em-up in the style of Gauntlet. Now the sequel's almost ready to be unleashed, and The One presents a Work in Progress of gargantuan proportions. Over the next few months we'll be talking to the eight different Bitmap Brothers responsible for Chaos 2, as they move towards completion of their project. And if the first two are anything to go by, Andy Nuttall and Matt Broughton have a tough time ahead...

While all the others do the programming, graphics and music, Simon and I... er, resolve major design issues," grins Eric Matthews, *Chaos Engine 2*'s co-designer. "Like how to get rid of two of the characters from the original game."

The *Chaos Engine 2* is more than just a sequel, it's a character assassination. Literally. Two of the characters, the Preacher and the Thug, have been kicked out; not from the storyline, but certainly from the active part of the game. Sitting in front of us is the preliminary version; a simple, one-level, playable demo.

"We tend to approach the development of all our games by producing a mini version of them," says Eric. "The idea is that before we start everybody developing the different parts, like the graphics, sound and programming, it's really good to get a very quick feel on whether the concept works or not. What we've done with *Chaos 2* is to produce a single level, with some of the elements missing from it, to give us a good idea of what the game is about. And to test that it plays well.

"So, where should we start?" Eric looks for inspiration to his design colleague, Simon Knight. Rumour has it that gameplaying competition between the two is so great that it's not unknown for one to lock himself in the lavvy for half an hour after a particularly heated game of *Sensi*.

"Well, we could begin with the storyline," he replies, with a raised eyebrow and just the hint of a smile.

Simon Knight, looking pretty cool despite balancing precariously on a small ledge above the icy waters of the Thames.

"Towards the end of the development of *The Chaos Engine*," says Eric, "we started thinking about the sequel. We got the opinions of the people who played it; and generally everybody thought it was a great game, and worked really well. So we thought 'Let's take the characters across, but do something completely different with them.'

"One of the major things which came out was that there was a competitive element in the original game, i.e. you've got two characters in there directly competing for the same aims, and it would be good to focus on that for the sequel.

"In terms of the story," he continues, "the way it works is that at the end of *The Chaos Engine*... by the way, did you get that far, Andy?"

Oh, dear. Like Sensible, a visit to the Bitmaps is never simple. You very rarely get a straight answer, and you have the, erm, wee extracted from you. Constantly. Still...

"For those who haven't seen the ending, like yourself Andy [see?], the Chaos Engine itself is destroyed," Eric explains, "and the Baron, who created the machine, is trapped inside it. Across goes the Scientist, or the Preacher, to examine the inside of the machine, and he discovers that it's still active, and the Baron has escaped. ['M'ucked] off. Back in time, basically, to retrieve some items that were scattered through time when the Engine exploded. And he needs those items to rebuild it, you see, in turn to release himself and then escape."

CHAOSPITALITY

As you might expect, The Bitmaps didn't set the original ending up with a sequel in mind, and the last bit was, in fact, made up later. "If we had set it up," Eric grins, "it would have taken us far less time to make up the story. And it would have been a lot stronger than the one we're about to tell you! We were thinking of having one of those things like at the start of film sequels, just bringing you up-to-date with what hap-

CHAOS SERA SERA

The Bitmap Brothers, typical east end flotsam and jetsam picker-uppers. From l-r: Rob Trevelleyan, Chris Maule, Steve Kelly, Gary Carr, Simon Knight, Steve Cargill, Dan Malone.

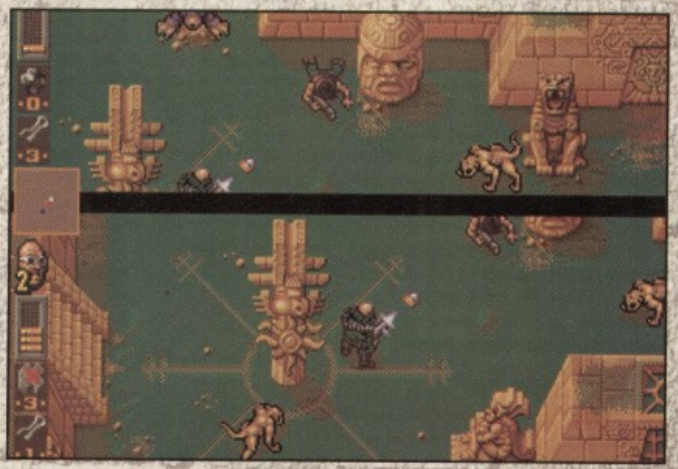
pened; and just say 'this was the end sequence from *The Chaos Engine*'. But we'd probably have loads of people saying 'hang on, I don't remember this bit'.

"So anyway, he discovers that the Baron has gone. And he thinks, ['Fucking] hell, what are we going to do now?' So, four of the characters go back in time to try to stop him, while the other two stay behind and guard the machine, just in case the Baron comes back before the others do.

"The four characters go back, of which you can select two to compete against each other, to find the items before the Baron does. Once you get back through time, the Baron appears, and he forms a link through the different stages of the game. He takes control of you, and says that one of you must kill the other player. And in turn the one that actually does that, by completing the puzzles or traps, the objectives that he sets you, will win the game. So you're in direct competition with the other human player. Alternatively, when you're playing the one-player game, the computer takes the part of the second player." While we're on the subject of the computer player, I can't be the only one to have noticed that the computer player in *The Chaos Engine* was a little on the, ah, greedy side. Can I? I mean, every time a secret exit opened, each time a node appeared he'd be off, collecting everything and shooting everything at top speed. Is this artificial avarice to continue in the sequel?

"You play in different time periods," says Eric, "so you go from the Future to an Aztec level, to a Medieval one, to a Japanese kind of thing. Once you've got the correct item from each zone, the Baron sets you up with a new challenge. Until finally you get all the items and you go off somewhere, which we're not going to tell you about. The last section's a surprise, you see."

"Go away, Andy. You still can't play *The Chaos Engine*." said Eric Matthews, testily.



"Even more so," laughs Simon. "Basically, he's out to do exactly what you're trying to do, so there will be more of that."

"Generally, the game is played in buildings," Eric explains. "In the buildings there are rooms, obviously, and within the rooms there are various items which you may or may not need to complete the level. Given that it uses a split-screen, you could be in one room of the building, and I could be in another, trying to do exactly the same things. Or we could be in the same room. And when that happens, we'll meet and we'll either decide to avoid each other, or to kill each other and maybe steal the things that the other person has collected. Very simple. I suppose the ideas behind it come from games in the past which we've thought worked really well, like *Spy vs Spy*."

This point in the interview is a little cloudy, as the interviewers and interviewees reminisce and cackle at great volumes about 'What a great game *Spy vs Spy* was'. Because, to be fair, it was. Based around characters from the US magazine *Mad*, the Commodore 64/Spectrum game featured a black spy and a white spy racing around setting traps for the other player, and trying to find pieces of a rocket. Thankfully all the laughing and very loud voices calm down shortly.

So did somebody just walk in one day and say 'I think we should do a *Spy vs Spy* game'?

"I think the idea came from us talking about what we liked in *Chaos*," says Simon.

"Yeah, that was a short conversation, wasn't it!" grins Eric. "We liked the characters, but much of the other stuff was just... well, we could have done so much more with it, let's put it that way. It was just Si and I, really; and I suppose it just came from one of us saying 'wouldn't it be fun if you could shoot the other character'. As simple as that. And then we started to look at head-to-head two-player games."

"*Spy vs Spy* was a very simple concept," adds Simon, "and we're doing a lot more here. But the idea that you're both in these rooms, and you run around trying to collect items, and you can booby-trap chests and stuff; all that was a really simple idea which worked really well."

"Another reference for the game would be *Super Mario Kart*," says Eric. "Not in terms of gameplay, because it's obviously not a racing game, but because you always have the ability to get back from a really bad situation, and feel you've got a chance of winning. In *Mario Kart* you could be eighth, and you've only got two more races to go; but then you get the star and suddenly... You know what I mean? With this, you might have your key and your ammo, and you're on your way, but then someone teleports you back to the beginning and shoots you. You get that shift between winning and losing, and it works really well — that's the kind of feel we wanted from the game."

"It's for that reason that we're giving the player a quick burst of speed when his opponent gets the key," chips in Simon, "so the losing player always has a chance to catch up."

The Bitmaps in, er, another typical pose. This time Eric (6th from left) was kind enough to join us, and we managed to get a quick snap of everybody before he buggered off again. Troublemaker.

CHAOSTEOPATHY

There were two main features of *Chaos* the designers wanted to bring forward: the characters, both in terms of the way they looked and the idea of each having their own attributes and weapons; and the gameplay, which was basically top-down, eight-way scrolling.

"We've added a lot more character animation," says Simon, "and also a few things that we didn't have in the original, which make the backgrounds more... interactive. For example, in *Chaos* you couldn't go underneath things, but now you can not only go under things, but you can hide behind walls. And you can lean against them, of course, and squash yourself right up against them, which is very useful in tight areas." Er... quite.

"And not forgetting, of course, the fact that you can now jump up and down from walls, and that's something you couldn't before," Eric enthuses. "So you can ambush people: if you've run out of ammo, and the other player walks on the floor beneath you, you can jump on top of him and take him out. So it's a lot more believable in terms of a landscape."

Hiding behind bits of scenery has more sneaky connotations than it first seems. Running quickly behind a wall, before leaping out and ambushing the other character is kind of dodgy, because immediately you stop moving, your opponent can see that your screen has stopped scrolling, and will instantly know where you are. However, if you can hide your little bloke, you can also hide a mine to blow him up, or something you don't want him to find, like a key.

"In the one-player game you've got a full-screen to yourself," Eric explains, "rather than split into two. There's a bigger radar with more detail on it, and pop-up screens — so that if the computer player finds a key, then you'll get a little pop-up window with him picking the key up."

Of course, that only applies for the two-player option, because a computer player wouldn't be sneaky enough to do something like that. Would it?

"You'll never get to the stage where you can recreate a human opponent, with the little nuances of play which will come out of two people playing each other," reckons Eric. "Any game which has been designed as a two-player, a racing game or whatever it may be, is always going to be better played against a human opponent.

"Rob [Trevelleyan]'s intelligence routines are very good in terms of how clever the computer can be, but at the moment we've got a very simple system where they can find their way around the map, they can teleport, and they know where the exit is. The stuff we're working on now is so they can avoid you; if they see you waiting in a corridor they'll go the other way. They'll have the radar as well, so they'll know where you are and go a different route."

Unlike *The Chaos Engine*, the sequel's levels won't be heaving with enemies. The designers are being

more selective this time, preferring to go more for quality rather than quantity. "You could really get away with no monsters at all in this game," says Eric. "We want the monsters this time to be a further challenge, something else to be aware of when you're playing. This produces more one-on-one challenges, head-to-head combat rather than 'Ooh, I've got a big gun and I'm going to shoot things'. The main thing which must be retained is the playability between two human opponents. The other things are ancillary to that, really.

"Not all of the monsters attack you, either," reveals Simon. "There will be a number which do certain things, like protecting objects, and then when you approach they'll move them. So they won't necessarily be aggressive towards you, they might just hinder you in some way."

A possible problem, which occurred with *Spy vs Spy*, is that the computer became too intelligent, and the only time you actually saw him was at the start of the game. From then, he simply said 'See ya', or something, ran off to collect everything, and the only time you saw him again was by accident.

However, the *Chaos 2* designers have already considered this: "The buildings are split up into smaller levels," Eric explains, "and we design them so that large areas are locked off until the earlier levels are completed. That way the smaller levels become more intense, because your opponent is always only two rooms or so away from you; and whoever finds the key for the exit, and goes through it, takes the other player with him."

The human element, if you will, which comes into play in *Chaos 2* will be exploited by a number of different rooms which the players can simply drop into. "It's like a half-hour-after-work type of thing," says Eric. "So while you'll be able to play it right the way through if you want to, you can drop in to several different zones just to have a muck around." And what better way to spend a half-hour after work, than blasting hell out of your colleagues in a futuristic arena?

CHAOSMOSIS

The level which we're playing, effectively the test level, is made up from six rooms linked together. The final game will not only have bigger levels, but also different floors that you can go up and down on. Even with just six rooms, though, the game can become quite complex.

"This level is very small, but when people have played it they've discovered things which we didn't design to happen," reveals Eric. "There are two restart points, one for each character, and if you get teleported you come back to these positions. So one [d'astard] thing to do to your mate is to cunningly drop a mine onto his teleporter, and then teleport him. Not only will he go where he doesn't want to go, but he will die when he gets there. Brilliant!

This single completed level of *Chaos 2* is simplistic in the extreme. But although the Bitmaps are intending to throw in monsters, pickups galore and a plethora of new toys, the last thing they want to do is over-complicate it.

"We want to retain the simplicity of the game," says Eric. "It's possible to make much more of the levels by understanding how they work."

In a great tradition, stretching back to the Bitmap's original shoot-'em-up *Xenon*, each of the Brothers' games has featured a shop. Power-ups, new weapons, shields... everything available, at a price, and success at the game breeds the money to succeed further. But *Chaos 2* will be subtly different:

"The shop works in a pretty similar fashion to previous games," explains Simon, "but in this one you're gaining experience more than anything. A lot more of it will be automatic; you'll be granted powers for achieving things, so the better you play the game, the more power will be given to you."

"There are preset things you can have as you reach certain points in the game," says Eric. "So a weapon might appear, and you can buy charges to use with that weapon in the shop. So you'll have, I think, up to four or five per character: teleports and speed-ups, all this kind of stuff. There'll also be money and treasure." Hurrah!

And food, perhaps?

"Foo-foo-food. *From Chaos 1*, yeah?" he laughs. If you haven't played the original, sorry about that. In-joke, you see.

Oh. Fine.

"Once in Ro-oooyal Da-aavid's Ci-ty, stood a lo-oowly Ca-aatle Shed." Can we have our fifty pee now, mister?

NEXT MONTH!

We'll be featuring the magical words of Dan Malone, the creator of the excellent graphics in *Speedball 2* and the backgrounds of *The Chaos Engine*. He'll be describing some of the techniques he uses to achieve that special 'Bitmap Brothers' look, and exactly what he's doing at the moment for *Chaos 2*. Oh, and we'll be chatting with programmer Rob Trevelleyan too, about his work on artificial intelligence. Don't miss it!

Welcome to the second part of our exclusive Chaos Engine 2 Work in Progress, where we meet artist Dan Malone and programmer Rob Trevellyan. Despite their heavy drinking schedules keeping them mostly 'down the pub', they still managed to take time out to speak to crack Welshman Andy Nuttall (cack, surely? — Harry.). With a slight slur.

The story so far... Thug and Preacher have been killed off; the four remaining characters have formed a renegade band to help do away with the evil Baron. But, the Baron is one step ahead of them, and has turned them against each other. Sprinkle in a liberal dose of time travel, and thus we have the plot for *The Chaos Engine 2*.

Artist Dan Malone, by his own admission, has "been around for years." Starting off as a prospective comic-book artist fresh from college, he got involved with Palace Software, where he worked on high-profile games like *Cauldron 2* and *Sacred Armour of Antiriad*. Five years ago he joined The Bitmap Brothers, where he has produced graphics for *Speedball 2*, *Cadaver*, *The Payoff* and *The Chaos Engine*.

He's currently working on the characters and backgrounds for *The Chaos Engine 2*, and apparently it was partly his decision to get rid of the two characters. So what's he got against the Preacher, anyway?

"We were just talking about the idea of having four characters instead of six," he explains, "and we asked ourselves which ones looked good. And we thought that probably the Thug and the Scientist were the weaker of the six. Did I say 'Scientist'? Sorry... I meant Preacher. He was called a Scientist in the States, and it stuck, unfortunately, because he should have been a preacher.

"He was the weakest character, kind of like the Gentleman without any hair, so we dropped him. The Thug was a bit like the Navvie, but again without hair, so he went as well. The four that were left, the Gentleman, Navvie, Brigand and Mercenary probably represent the widest range of characters, so that's why we kept them in."

Even though, from the screenshots you see here, the characters might not look altogether different from their *Chaos Engine* counterparts, they've gone through a fairly extensive overhaul over the last few months. Stationary, they look very similar, but they've been redrawn with slightly different colours this time around so they take up their own separate palette of 16 colours.

"In *Chaos 1* they were part of the same overall palette, along with the background, the monsters and the explosions," says Dan, "so now they've got more colours, effectively. We've added an extra screen of animations in too, which makes up about another 60 frames of animation, so they can fall over, punch, lean against walls and jump. They can push objects as well, so they've got much more character, but in terms of just looking at them on the screen they're not that much different.

MR PECKSNIFF

A big problem for Dan has been that Jes Bitmaps have been developing the game on the Mega Drive. Which means that instead of the Amiga's huge range of colours, he's had to construct everything from the MD's rather limited palette.

"It's almost like going back six years in time," he laughed retrospectively, "when 16-bit computers first came out. The colours are so unforgiving; I just haven't got the range that I'm used to, because I've

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got an Amiga 1200 with an extra 4Mb of RAM, a hard disk and an accelerator card. The colours from a 512 colour palette have big jumps from one to the other, and that's been a real headache. I haven't enjoyed that at all.

"I don't know why we're developing on the Mega Drive first. It started that way, I think, because at the time there was a big push for the console. But I don't know what's happening now. The characters are basically the same as in *Chaos Engine*, but now you can walk under and behind things, and that's making a big difference to the design.

"Because I was only supposed to re-colour the characters, though, I've been told off for spending too much time on them. But it was important to me that I make it look good. So they're better, and they animate more realistically."

Do you remember the *King of Thieves* Work in Progress a couple of issues back, when Rico Holmes was talking about his difficulties with drawing sprites, even though his backgrounds are superb? Well, spookily, Dan finds it a bit of a bugger, too.

"Animation's really hard; it's a lot more difficult than drawing, because you're dealing with a moving object. I'm fortunate because I can do animation as well as static drawing. It's a separate skill, without a doubt, but drawing for me is something I do, it's something I've always done; and animation is just an extension of the drawing. So to get a character moving I find myself doing all the actions..." starts waving his arms in the air, making faces and firing an imaginary gun, "...so I can get all the movements right. It's much easier to get a feel for it if you jump around and make faces in front of a mirror. And it's fun too, of course.

"I agree, though, that sprite animation is 'd'ucking (right on! — Haz.) hard work, because you're working in such a limited space. The pixels get so big I just can't do anything with it. With *Chaos 2*, being a look-down game, I did all the character animation and the backgrounds while Gary [Carr] did all the monsters."

(Left) "It's good to do drawings of characters in a game, for a lot of reasons," admits Dan. "The best reason for doing them is that they inspire you; if you put them on the wall, then it puts you in the mood because you're surrounded by the imagery of the game or whatever you're working on. My problem is that occasionally I get carried away by details, which, looking back on some of the work that I do, I wouldn't really bother with. For the *Chaos Engine* CD32 intro I should, in some ways, have kept it simple and included more animation."

LOOK OUT! IT'S ROB TREVELLYAN!

Although Rob T. didn't work on the original *Chaos Engine* at all (apart from converting it to the SNES, that is) he did program *Speedball 2* on the Amiga, ST and PC. Clever stuff, but his work for *Chaos Engine 2* looks to be even cleverer. He's breaking into AI, or Artificial Intelligence, you see, and while the Steves Kelly and Cargill are programming the bulk of the code, he's backing it up with some pretty snazzy monster and character intelligence routines.

After joining forces with Dan Malone for *Speedball 2*, Rob Trevellyan has now gone on to specialise in the art of Artificial Intelligence, effectively teaching the wily computer opponents in *Chaos 2* how to, er, be wily.

"I'm using some of the same techniques I used for Speedball 2," he reveals, "because basically the stuff we're working on for Chaos 2 is two-dimensional as well. The game world appears to be 3D, but effectively it's simply 2D areas connected by ladders. So, I go back to what I really know best, which is geometry, and apply them to a 2D environment.

After much mooting, Rob decided the best approach to creating intelligent players was to split the game world up into a number of zones. The zones are actually built in to the game map by the level designers, which then automatically generates information which the characters and the enemies in the game can use to navigate their way around the maps.

"That worked very well," Rob enthuses. "Basically, I spent a couple of weeks reading, and then a couple of weeks doing the editor; so within a month we actually had some monsters moving around in the game.

"The character intelligence is based on a set of tasks. You think of certain things which a typical character has to be able to do on any particular level: he's got to find the key, find his way to the exit, open the exit door, and go through it. You give him his initial task which is, unsurprisingly, solve the level, and then he examines his current conditions, and decides 'okay, before I solve the level, I've got to open the door.'

"Then he asks 'How do I open the door?' then 'Have I got the key?'. If not, 'How do I find the key?' and so on from there. He stacks tasks up which he has to do, until he gets to one which he can do — and he goes off and does it. The solution to that task will then give him both the ability and the knowledge to do the previous task, and it all works from there."

In between getting the tasks, he might occasionally decide that he wants to fight the other player, of course. For instance, if he wants the key, and he's got a pretty shrewd idea that the other player has it, then he can decide to attack the other player.

"We're making the skill of the computer as high as possible, and then we'll knock his intelligence down a bit so that the game is actually fun," explains Rob. "At the moment the computer guy is embarrassingly good — so good it's actually impossible to shoot him. It's a lot easier to do it that way, rather than trying to build in imperfections to begin with.

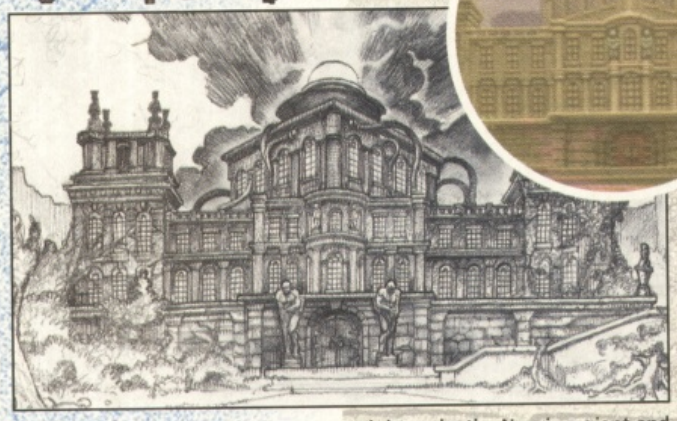
"Shrewdness is the hardest thing to program. He will set traps for the enemy, to the extent of dropping mines behind him if he's being followed; but we haven't implemented a routine — yet — where he can actually booby-trap things.

"AI is a way of thinking about things, a way of approaching a problem, and certain techniques which are frequently used. It's not magic. If you use the right techniques, and you approach a problem in the right way, you can develop apparently intelligent behaviour." A-haaa.

"There's no brain inside the computer, of course, but there is a brain dump of me and the designer; and the parts of our thinking are actually in there. Then the game goes out and interacts with all the people who play it, like tens of thousands of people playing *Speedball 2* or *Chaos 2* against a clone of me. That's what gives me a buzz."

SERA

CHAOS SERA SERA



"This is the Mansion, which made it onto the CD32 intro for *The Chaos Engine*," says Dan. "I actually did it after the original game was finished. I was in a rush to get it sorted, so I used the sketch as a reference to draw it up in DPaint, in 256 colours." [inset] And indeed, here is the finished mansion from the intro animation.

The pencil sketch of the original six *Chaos Engine* characters shown here is now even more of a caricature than the original Victorian er, caricatures; even though Dan drew the originals in the game, the new chaps are for the CD32 animated intro, almost two years after the release of the 'floppy' game.

"I just thought I'd spice them up a little bit," he admits, "because the straight portraits which you've got on the cover of the box are a bit staid. Like for instance the Mercenary, who I wanted to make just a little bit more warped; and the Preacher, who I always intended to be a rather sick character, I've tried to bring... erm, I've basically tried to bring all of their characters out a bit more. The Navvie's huge, and the Thug's another big character with his fat gut. I just wanted to take them all a step further. I think if you're going to do something again, you've got to take it a bit further, otherwise there's no point in doing it at all.

CHEVVY SLIME

The original characters were Dan's design. A 'guy called Fergus' who used to work for the Bitmaps came up with the idea of the Victorian/Cyberpunk theme, and then the team sat around and thought of good character types for the game.

"I had names like Gentleman, Navvie, Preacher, Brigand, and, er... Prize Fighter — all good Victorian-type characters. I just drew them up from the names. There were nine characters originally, and I just sat down and thought 'Right, I'll make the Preacher a pervert, I might make the Navvie a giant and a bit of a hard-nut, while the Gentleman's a real dandy'."

Wait a mo... nine characters?

"There was the Prize Fighter; a lady adventurer with a kick for danger, a small pistol and a range of weapons hidden under her skirt. (Such as? Phwoooaaar! — *The One*). But she got dropped because she wasn't a very interesting drawing, with her big dress on. There should have been a woman character, though; it probably would have done the game some good. I can't remember what the other one was; maybe a copper, I think.

As far as backgrounds go, Dan has produced much of the necessary artwork for the five different worlds (Future, Aztec, Medieval, Japanese, and an as-yet secret location). He builds the graphics in blocks, and then he uses the blocks to decorate a very basic map design given to him by Simon Knight, who, amongst other things, designs the maps.

"Simon designs a level, and then I'll window-dress it with the blocks that I've got. What invariably happens is that I'll start changing things, and I'll have to go back to Simon and say 'I've changed half of this!' so I can get all these graphics in. Then he'll shout at me, and I'll shout at him, and then he'll shout at me again. Anyway, we'll come to a compromise eventually.

"I know what's going to look good, and what isn't, and it's nice to put little 'set pieces' in here and there, like a big, glorious ornamental pillar with all these things around it. Simon's really good to work with; he'll agree that something looks better, or say that this must be like this, and I'll have to just knuckle down and do it. So there's always a bit of give and take between map design and artwork, and it works because there are two opposing sides working on the same thing."

"I'm a comic artist who's doing computer graphics, basically," Dan admits. "I tried some stuff for *2000AD*, and they sent me a couple of scripts, but I was really looking for work at the time — I needed to get some money. I was doing that when I got the work at Palace, and then I just stopped looking around for illustration work.

"I joined the computer industry because... it's, well, easy. And it's good money, and it's a good laugh; and that's why I'm still doing it. I couldn't really go back to comics now, unless I did them on the side, because they'd take up too much of my time. I'd have to get my reputation in gear, and I'd be getting very little money and tiny storylines until I gained recognition in the field. Maybe one day I'll get back into it... I want to, definitely, because it's good fun. I draw without thinking, but when you're on-screen, working with pixels, you can't do a rough — it just looks awful. You can get away with roughness in animation, but on computer it just looks messy. So it's quite a demanding thing to get it exactly right.

Because *Chaos 2*'s been in development for some time, artist Dan Malone has already produced a large amount of graphics for the game — including the newly-drawn little chappies you can see dotted around the page.

"The hard thing about working on computer, apart from the pixels, is drawing with a mouse. It's not easy; you're trying to draw an arm, or a head or whatever, and it's like 'bloody hell, this is hard work', but when you're drawing on paper it's done before you can think about it."

MONTAGUE TIGG

Dave Gibbons, the esteemed comic-book illustrator who drew last month's *Chaos 2* cover artwork, draws rough sketches of his illustrations and then scans them into a Macintosh computer, (Oh I thought you meant the ever-popular rain-proof — Andy you patronising git — Haz.). He then uses the scan as a basis for the drawing, and colours it all in on computer.

"It's easy to make a mess of colouring. If you're working with inks, and you go wrong, you have to go over it again — but if you're using a computer you just Undo it. On paper you can ruin two or three days work by the slip of a pen, so you end up being really careful, but on computer you can let it go a bit. It's great. Are you going to the pub?"

Aha. A sign, perhaps, that young Dan is getting a little bored with being interviewed (after all, he's not used to it, y'know), and the time has come for him to move on to newer and more pleasurable climes. One last stonker of a question though, before he goes. Was he annoyed when MicroProse changed the artwork for *The Chaos Engine* in the States?

"Yeah, I was. They had to take the Preacher's dog-collar out, the Gentleman's pipe out, lots of different things. Yeah, it annoys me, but I find it a bit petty, to be honest. I don't think it has any relevance; I know they're all trying to stop violence for the kids, and make a cleaner game, but I really don't think that it matters with something like that. I mean, an old clay Victorian pipe? It's just like Sherlock Holmes, isn't it? But if you took his pipe away, that would be ridiculous.

"Oh, and of course, they changed the name; and I thought the new name was absolutely arse. *Soldiers of Fortune*. It was something that I didn't have a hand in, so it doesn't bother me so much. It's a shame that they had to change it all, though, because it takes some of the character away, doesn't it?"

Oh yes, indeedy.

NEXT MONTH!

We'll take a look at the work of the other artist, Gary Carr, who's responsible for all the horrid little monsters that will give you so much pleasure as you blow their heads off. And, if we're lucky, Steve Cargill, one of the two programmers behind *Chaos 2*.

Spring finds The One's freshly waxed Welsh dresser and ovine depilatory roué squirming at the feet of someone who may, possibly, be about to release a game, which might, if the entrails are favourable, find its way onto the Amiga. Andy Nuttall is that desperate.

PROJECT: Chaos Engine 2
PUBLISHER: Renegade
DEVELOPER: The Bitmap Brothers: Simon Knight (Project leader, Design); Eric Matthews (Design); Steve Kelly, Steve Cargill (Programming); Rob Trevellyan (Intelligence programming); Dan Malone, Gary Carr (Graphics); Chris Maule (Music)
INITIATED: April 1993
RELEASE: Easter 1995

The much-vaunted Mercury Monster (see text) can be seen at the top here, dripping to the South. And, elsewhere, shooting to the East. With about 49 monsters (50, if you include Gary's shoes) *Chaos 2*'s really beginning to take shape.

Like Dan Malone, interviewed in last month's installment, Gary Carr wields crayons for a living. Designing monsters, mainly, which makes him Dan's opposite half, he works primarily on the sprites and animations in the game.

Working once for both Palace and Bullfrog, Gary's been involved in some brilliant Amiga games over the last few years: *Powermonger*, *Populous 2*, *Cyber Assault* (which later became *Syndicate*), before eventually leaving during the early stages of *Theme Park* to join the Bitmaps. He joined to go straight into the design of *Chaos 2*, so he missed out on the original game and had some catching up to do.

"When I started with *Chaos 2* I had to try to get my head around the original idea too," he explains. "I didn't really play much of *The Chaos Engine* before I joined, so I had to play it for a while to get a feel for it."

Dan Malone drew all of the graphics for the original game, so a certain amount of inspiration was drawn from his work.

"I did look at Dan's original characters," admits Gary, "because I didn't want to lose any of their feel. I needed to look at the way in which he used them, and their viewpoint in relation to the player." However, as well as throwing his own ideas into the look of the enemies, his thoughts have moved to behaviour as well.

"In *Chaos Engine*, the nasties are quite often simply cannon fodder; they'll walk around and right into your line of fire. With *Chaos 2*, though, I've tried to give them a few more individual moves, to enhance their character. Like the Mercury nasty, who simply dissolves back into Mercury when you shoot him, little things add to their character. Quite often, in some games, as you're busy blasting away at a big bunch of baddies, you can't see what they're meant to be. And that may happen with *Chaos 2*, but I've really tried to give them a little bit of... er, personality anyway."

Yeah, we know all about that; shoot-'em-ups which throw all manner of detailed, well-drawn enemies at you, but when did you last study the enemies in your favourite blasting game? Gary's a big bloke, though, so you'd best take a decko at his more interesting creations.

PSEUD ANIMS

This diversity of 'personality' within *Chaos 2*'s baddy circles also stretches to the movements of said nasties. In *Chaos Engine* the characters pretty much did everything within a certain size of sprite, Gary reckons, so "when one character was put into the game they all worked." In other words, they mostly moved in a similar fashion to their underworld brethren. Gary, not one, apparently, for under-complicating things, has designed each to move uniquely.

"Unfortunately my baddies don't behave normally," he laughs. "They all move differently in different directions, so we had to come up with a list of sprite pattern tables." Which are what, exactly?

"Well, for example a sprite might do something in an easterly direction which it wouldn't do in a southerly direction," he explains, somewhat cryptically. "To take the Mercury nasty as an example again, it drips to the south, yet fires to the east."

Amongst the fifty-or-so enemies which Gary has drawn for *Chaos 2*, there exists a hierarchy not dissimilar to that of *The Chaos Engine*, in that different nasties have different degrees of 'hardness', but also some are apparently more 'intelligent' than others.

"For each level there have been a number of major nasties," explains Gary. "The actual number of nasties depends on the level, and the type... well, there are some which are quite hard, and some which you can blow away easily. There are roughly nine nasties per level, so there's quite a bit of work involved to get all the characters moving in all directions — and they've each got different moves, too."

A 'major' nasty can take Gary up to two weeks from start to finish, because it has so many moves inci-

PART 3

CHAOS SERA SERA

STEVE CARGILL

Steve Cargill, sitting by the dock of the, er, bay.

Steve Kelly does the main code, I'm more of a... backup programmer," says Steve Cargill, programmer of the original *The Chaos Engine*. "I help him out with machine-specific stuff, developing utilities that the programmers and designers need."

The main area that Steve was responsible for at the start of the project was the map editor, a clever program which enabled the designers to begin work on the maps before any coding of the actual game took place.

"When we're first starting on a game like *Chaos 2*," he explains, "we usually use old bits of code which are lying around just to actually get things running. When we have a bit more of an idea what's needed for the game, I then go ahead and put together some specific utilities with the game in mind."

This is apparently the case with every new game; a few pieces of bespoke code are written to develop a particular area of the game. "In *The Chaos Engine*, the editor was actually built into the game. I wrote a special version of it so someone could play the game, go and edit the aliens, and then carry on with the game." That was in the days when les Bitmaps used to program solely on the Amiga, of course, and it was necessary to have everything running in memory. Now all the code is developed on a PC, which in turn controls the Amiga.

"After the map editor, then there comes the sprite cutter, which takes the screens filled with forty-or-so sprites drawn by the artists, and converts them into a form which the program can use."

If Steve was the main programmer for the original game, why, then, did he not want to program the sequel?

"Because it's too big for one person to write in the time scale," he admits. "The original *Chaos Engine* took a long time — well over two years — to complete, so we decided to get three or four people working on it, each doing specific tasks. Hopefully, this will get the job done a lot quicker."

dental to the main action of moving around. "It's good to be able to get a major nasty and a minor nasty out of the way in a fortnight. So when you times it by the number of levels, it's quite a bit of work."

There was one particular nasty which Gary has, ah, borrowed from the original game, but he's remaining pretty cagey about it:

"There was one nasty, which was a main character in the original game. And he makes an appearance, but he's a bit different... I don't think I should say any more than that."

Oh, come on, Gary. You can tell little us...

"Let's say it was a character which wasn't very well accepted in some countries."

"You might as well tell him who it is, now," says Simon, laughing. No, I'm still stuck.

Having completed his design work for the sprites in the game, Gary is now looking forward to fine-tuning his creations' movements; to make sure that they behave exactly how he originally intended. "The sprites might go in to the game, and Simon might not like how they behave, for instance," explains Gary, "so the next few weeks will be taken up with tweaking already-created sprites. But then that's probably the end for me."

A short silence followed at this point, where everybody sat and pondered the 'end' for Gary. Every interview has them; embarrassing pauses. Interviewers forget their questions; interviewees shuffle their feet as they think of something interesting to say. We're oh so very lucky, in this case, that great blokes Steve and Simon are here in the room to rip the Mickey from Mr Carr for fluffing his lines.

"Ahem. Background animations," Simon clears his throat, gently reminding Gary that the important subject of moving backdrops, something which apparently concerns him, has not yet been broached.

"Oh yeah," Gary's eyes twinkle back to life. "Sometimes the sprites have to interact with things in the backgrounds, you see. So I've still got things like that to do... er, I'm trying to think of an example, actually, but I can't."

Another pause. "Switches, perhaps?" I offer. It was the first thing that came into my head, okay?

"Yeah. Anything which involves sprites being part of the background is mine," reveals Gary. "The monitors, for example, with little images on them — I've still got little things like that to do. The monitors will be showing data, or something, just to give the impression that there's a computer system controlling things in the background."

HOUSE MARTENS

Over the last few months I've had a lot of contact with the various members of clan Bitmap, and possibly the funniest story, well, anecdote, I've heard was about a particular nasty which Gary drew in a moment of desperation one night. Mentioning it causes Simon and Steve to heap ridicule on Gary's head, which collapses under the weight. Whatever could this strange baddy be?

A pair of Doc Marten's boots.

"If you've got about 50 sprites, you know, nasties in the game, it can, when you get to your 45th nasty, make you think 'Oh, 'p'uck, what am I going to do now?'," explains Gary. "You run out of ideas. You get to a stage where you've done things that drip, jump, walk — so many different things, but you eventually start to run out of ideas.

"What you're referring to," he continues, to more laughter from Steve and Simon, "was, literally, the last sprite on the last level of the game. I was about a week behind schedule, so basically it was a case of 'get on with it as quickly as possible'. And I couldn't think of anything. My boots were draped on the bed, and I sort of looked at them... and then one thing led to another and I had this giant pair of Docs marching about on the screen! It was a bad idea, but I was very tired, and emotional, and it was late. I took it in on the following Monday, and... I really don't know why I thought it would be okay.

"I've actually not replaced that particular nasty yet; we're still one short. I'm hoping that, given time, I can come up with something a bit more interesting. It's difficult, because when you've got them in *DPaint* they look different than when they're in the game. It's only when they're actually put into the game that you can do most of your tweaking and stuff to make them all fit in really well."

But, of course, there is a certain school of thought, namely Steve and Simon, which suggests that a pair of Doc Marten's will never be any good, even with a major tweak overhaul. And I tend to agree!

PROJECT: Chaos Engine 2
PUBLISHER: Renegade
DEVELOPER: The Bitmap Brothers. All of them. Nearly.
INITIATED: April 1993
RELEASE: Easter 1995

Steve Kelly's just had a baby. Nine months ago to the day, in fact, and the little'un's at that stage where neither mater nor pater can guarantee regular shut-eye. "Babies and music," he says, wearily. "That's all I can talk about, really, because for the past couple of months that's all I've been doing." Steve's here alongside Simon Knight, who I'm sure many of you are beginning to know rather well: he's the designer chap, cropping up in many of these interview-type things.

"I'd say it was split 75-25, babies and computer programming," Steve announces, thoughtfully, before realising that rug-rats are once again chewing at his mind and promises that there will be no more baby talk. At least, until we get to the pub.

"I've been working quite closely with Simon recently," he says. "Today we've been concentrating on... what we're calling level nine, but will actually end up as level four of Futureworld." The future is to be the first section in *Chaos 2*, rather cheekily up-ending the time/space armchair from the very beginning. "They're not ordered by time, though, just the order we create them," laughs Simon.

"We're getting in a lot of specials at the moment," Steve enthuses,"different powers for each player: for instance invisibility, and a duplicate self. The latter you can use to drop a clone of your character, which will then go off and attack your opponent for a while."

"That's actually rather similar to one of the competition entries," Simon grins, referring to *The One*'s recent design-a-weapon compo. "But I thought of it first!" There's somebody rather disappointed out there now; knowing already that they can't have won the prize. Never mind, though; at least you know that The Bitmaps thought it was great.

"And we've been tweaking the mines, rather an important element in the game," Steve continues. "A mine is a weapon that you collect as a power-up, and then drop behind you as you run around. Before, they used to blow up after 30 seconds, now how long they last for depends on your rank — so if you're at '0' it might last 10 seconds; but if you're '3' or '4' it might last for 30 or 40."

Rank? Is this a new thing within the *Chaos 2* design?

"Yes. Basically, as you collect more objects and amass more points you go up in rank. If you go to the next rank, a screen appears in-between levels to inform you," adds Simon. "Higher ranks enable you to move faster, to take more hits, and you can get better effects from the special power-ups."

"So back to the mine, the higher the level you are, also the more damage the mine can do," Steve explains.

Steve's seemingly the lead programmer for *Chaos 2*; at least, everybody else has described him so to date, although he's reticent to admit it, and prefers to play down his role. "The programming is split between myself and Steve Cargill, really. I do the engine for the game, effectively, moving the characters around and so forth. When Simon comes up with a design idea, I try an implement it as quickly as possible."

"He's also a bit of a guinea-pig for me, in that I design the levels with two players in mind first of all," describes Simon. "Otherwise it takes far too long to work out the character intelligence. So I need someone like Steve that I trust to play it alongside me, and then we work out together if it works or not — maybe it might need another door here, or something else there."

"That's exactly what we've been doing today, with this Futureworld level," Steve chips in. "In the second half of the level there were four keys, and when we played it we realised that because of their position, each player got two each; and there wasn't enough ammo in there to rob them back off the enemy. So when that happens we go back into the code, and correct that sort of thing."

"This will change depending on which character is being played," says Dan Malone, pointing to the left-hand face. "There's your Skill, Health, Speed, Bullets... Overall Level [points to the big bar at the bottom]. And, er..." he gets stuck with the empty black box. "That's supposed to be the ammo."

RANK SMELLING

Because the levels are designed with two players in mind, this quickly weeds out any possible design problems which may be thrown up when actually playing it — because a human player can be far more creative and cunning than a computer player could be. Next to actually designing and programming the levels, it's this 'tweaking' stage which really eats up development time. The Bros have found that more and more tweaking has been necessary lately — a good sign, which at last points towards the end of development of the game.

"I'm pretty confident that we can start putting in monsters into the Futureworld level now," Simon says, "because now we've tweaked it, even though it's still rough in places we know that it fundamentally works as a level. And we're getting used to working this way, so each level becomes quicker to work out than the last."

"Yeah, in the last two months, the monsters have really started to come together," agrees Steve. "We've been looking specifically at levels which have been designed for maybe... six months, and making them work correctly; which means we've been able

It's time for the fourth and, probably, the penultimate section of the Bitmaps' latest masterpiece. Too bad — Andy Nuttall's beginning to like visiting their plush Docklands offices, and Matt and Harry like getting him out of the office for an afternoon. Shame.

to throw loads of baddies in as well."

Now for the techie stuff: don't read on if you're faint of heart.

"At the start of development, I put together a system which defined everything in the game as an object," explains Steve. Don't worry — he promises not to get too technical. "All of the backgrounds, animated things, everything is made up of objects. My system can create objects, delete them, and move them around while checking for collision detection [where an object hits another object — Patronising ed.]."

Simon, who also doubles as a programmer, then created this thing called an object language, where every object can be programmed individually to say what it does given a certain event.

"If you take a pressure pad, for instance," Steve says, "Simon could program the pad to display a different sprite if a player walks onto it — giving the impression that the player is pressing the pad down. When it goes down you might want it to open a door — which would simply be a case of programming the pad to create an event when it's pressed, and programming the door to open when it receives that event. Does that make sense? Anyway, that's what I've been doing for the last year or so."

"When we were thinking about how to do it I spent quite a lot of time talking to Eric, because he'd done *Gods*, chatted to both Steves about how *The Chaos Engine* worked, and quizzed Jason [Perkins] about *Ruff 'n' Tumble*," says Simon. "Basically, it's important to draw on other people's experiences as well as your own stuff that you've done before.

NAVVIE RASH

"As a very simple example, in the original *Chaos* if you flipped a lever to open a door, that was it. You couldn't do anything else with it. In this one, though, you can keep flipping the lever and the door will keep opening and closing."

"It's meant that we've expanded the system," adds Steve, "so much that it's taken on a very deep complexity; you can do a hell of a lot with it. It's grown to be... quite a big thing," he flounders, trying to think of something very large."

Are you excited about *Chaos 2*?

"Yeah, very much," Steve says, enthusiastically. "It's really starting to come together. There's loads more stuff to be done, though. The end-of-level guardians are a major part, for instance. There are some tweaks which can't be done using the existing system, and need to be done individually; and then there are the monsters. Most of them will be standard eight-directional characters, with four walking frames and a shoot frame, but there'll be some others which will have to be coded separately."

Steve Kelly's been involved in almost all of the Bitmaps' games, though *Chaos 2* is his first serious programming project since *Cadaver*. Since then he has been but dabbling his toes in the murky waters of computer games.

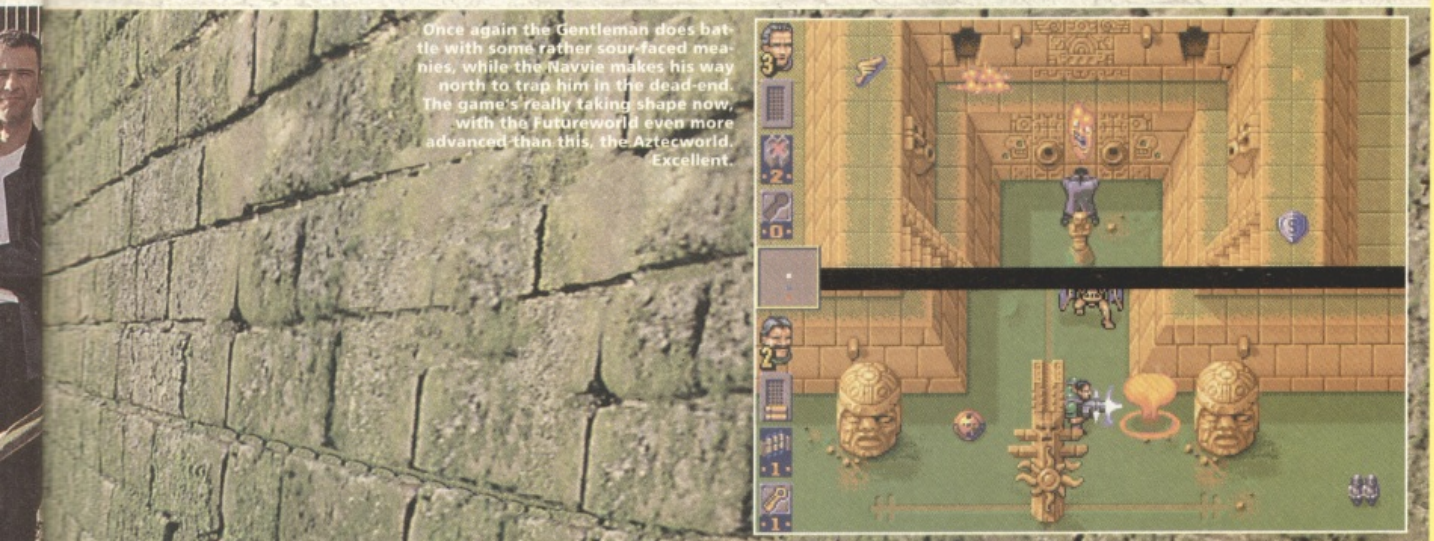
"There's also the Medieval level, in which you have the ability to go in and out of rooms," says Simon, "and the Japanese level where you can walk into water. Those will also have to be programmed individually by Steve."

"All the management screens are written," Steve adds, to much applause from Simon. Apparently he's been waiting all this time to mention management, simply because Dan's given us a screenshot of a Level Award management screen. "They work perfectly on their own, but when you put them into the game... hello, nice black screen. I think Steve [Cargill]'s fixed that today, though, so we'll go way ahead and get those going next."

"We're basically going to try and get the whole of the Futureworld up and running, as a sort of mini-game," says Simon, "with the management screens around it, the 'Game Over' screen and the title screen. We'll give that to the testers and let them play it, and from then on Steve and I will keep adding levels on to the full game."

From the mini-game, Simon reckons, it should be easy to produce a coverdisk demo. And you know what that means? Yes, the lucky winner of December's competition to design a weapon for *The One*'s exclusive demo of *Chaos 2* will see his or her fantastic creation in action.

Watch out for next month's issue, where we'll be printing some of the best competition entries, and also the results — chosen by a panel of experts selected from... well, *The One* and the Bitmap Brothers, really. And of course, we'll be bringing you the final installment of 'Chaos Sera Sera' — featuring musician Chris Maule, and a final few words from Eric and Simon about how it's all turned out. See you then!



Once again the Gentleman does battle with some rather sour-faced meanies, while the Navvie makes his way north to trap him in the dead-end. The game's really taking shape now, with the Futureworld even more advanced than this, the Aztecworld. Excellent.

PART 4

CHAOS SERA SERA

CHAOS SE

PART 5

PROJECT: Chaos Engine 2
PUBLISHER: Renegade
DEVELOPER: The Bitmap Brothers: far too many to mention...
INITIATED: April 1993
RELEASE: September 1995

And now, the end is near... and we're at last approaching the completion of the Bitmap Brothers' meisterwerk. The engine, forgive the pun, for Chaos 2 is now complete, and the boys are currently adding finishing touches — like the level designs! Andy Nuttall pops in and asks them "how's it going?"

Left: **Simon Knight, chief designer on *Chaos 2*, last seen on a small balcony high above the Thames. Does he, or doesn't he? Use Daz, that is.**

Simon Knight's a busy man. Having overseen the bulk of the programming and design for *Chaos Engine 2*, there's still a lot to do, and the deadline's looming. Actually, as it happens there's been an extension, which means that you'll have to wait until September before getting your hands on the game.

No, wait — before you start sobbing, there is a good reason for this. Er, they haven't finished it yet. No, really.

"Basically, as last month, we're just adding levels, really," says Simon Bitmap, trying — and failing — to come up with something new and exciting which has happened in the last month. "Erm, having done basically the prototype of the demo that *The One*'s going to get, which we recently showed at the ECTS show in London, and having made that work with all the front end 'Renegade presents', and all that kind of stuff; we're now at the stage of building up the game. We're expanding that demo so that it contains the whole of the first world."

Ah yes, ECTS. This is the first 'public' outing the game has had, and, by all accounts, it was very well received: "We've been very encouraged by the reception it got at ECTS, from people who haven't seen it before," he enthuses. "even if, I'm bored with it, because I've played it so many times before! We're still having fun with it, because it's two player, but we're also quite glad to be moving on to new ground and doing new levels."

Los Bitmaps... looking surprisingly glum, given the fact that they've seen the last of Andy Nuttall.

Alongside Simon, the other Bros. are beavering away on 'parts' of the game: "Steve [Cargill]'s working on the A5/600 version of the game, making it work on both machines. He's cranking through it, I have to say; he only started at the end of last and it's already running, at a reasonable speed. The only problem, of course, is that we have to get new graphics for it."

The snag is that Dan Malone, the main graphic artist, is a stickler for detail — and he will insist on redrawing all of the graphics using fewer colours for the A500. "We're doing the whole game in 16 colours on the A500, because we'd have lots of problems with speed in 32 colours," Simon says. "We'll invariably end up doing some trickery with the status panel, getting some more colours out of it that way.

The size of the two sets of graphics means that two different versions of the game will be necessary; whereas before they were trying to make the game detect which machine it was running on, and adjust itself accordingly.

"It's all a question of size, really, because the more disks it goes on, the more inconvenient it is for the user, and the more it costs for us to produce. At the moment it all goes into memory at once [hence an 8Mb machine], so you

SERA SERA

Maule...

CHRIS MAULE

Chris Maule's the latest addition to the Bitmaps' team. He's a musician, previously working as a 'traditional' songwriter, who fell into the games industry by a chance meeting with Eric Matthews on holiday. Since then, he's completed the music for *Speedball 2 CD32*, and worked on tunes for *Flight of the Amazon Queen* and the Bitmaps' next PC game, *Z*.

Perhaps unexpectedly, the transition between songwriting and game musicking has been fairly smooth. "I'm overcoming that problem as we speak," he laughs. "Since I started with the Bitmaps last July, and also for the previous year before that when I was doing freelance for other games, I had to start thinking less in a songwriter mode, and more in an 'unobtrusive, random, but at the same time not too boring riffs' mode. Which will hopefully give the player a fighting chance of doing what he wants to do, but without the music blasting in his face." Sounds reasonable.

"It's been quite difficult to get out of the 'eight bars, verse, eight bars, middle-eight' type of stuff, and that way of thinking; but I've been doing nothing but that for 18 months, and I think I would actually find it harder to go back now!" he grins. "Over time I think you just get used to the way it works."

When he started on the project, Chris was given an overview of the game by the other Bitmaps, which describes the content of the game — and he then uses that to get a feel for the type of music necessary. "I've been looking into the music for *Chaos 2*, and I've got quite a few ideas up and running. When I have a better idea which area of the game those ideas will be best suited to, I'll then amend them to the theme.

Some of the levels dictate a... er, thematic style, you see; the Japanese level will have some kind of oriental pentatonic arrangement — unless it comes out really corny, of course! The Future level has loads of zaps, blips and bleeps, that sort of thing; but once I've got a central theme established I can then concentrate on the variations."

With game music such as that in *The Chaos Engine* to aspire to, it's difficult for a different musician to do the sequel in a similar style, for fear of treading on the toes of the original composer. "I listened to it, of course" admits Chris. "I thought what he did for *Chaos* was absolutely brilliant, but I wouldn't want to approach it for fear of being compared. I've run through the game as far as my skills allow me, to find out how the music fits in with the action, and I've also listened to the music separately, partly to check on length... and, er, other similarly boring professional details!"

just get a black screen for a while, and then it runs blindingly quickly. But once you start putting it onto floppy, setting up loading messages, and making sure the music plays as it loads, then you start hitting problems. It's the type of thing that programmers tell you is trivial, and will take five minutes — but five days later you still don't have it!"

Meanwhile, Steve Kelly's working not only with Simon on the map designs and programming, but he's also currently putting in the first end-of-level monster. "He's doing the Future one first, which also happens to be the simplest; basically a robot that's about five or six times the size of the characters, who wanders around shooting big bullets at you. As you get deeper into the game, the end-of-level baddies will have special moves; the one on the Medieval world thumps the floor and the whole screen shakes!" Wow!

"Once all that's done, it's then a question of getting it to play properly — one of those things we take years over!" he laughs.

And there we leave 'em. Knuckling down, churning out map after map, adding the character and background designs, and generally toying with new ideas. We'll be bringing you a review — and exclusive coverdisk, all going well — for the September issue. And, of course, there'll be the sillier entries for our -weapon competition next month. Don't miss it! 'Til then, er, then.